NICRE
National Innovation Centre
Rural Enterprise

Farm business performance, marketing and adaptation strategies

State of Rural Enterprise Report

No 8, May 2024

Contents

At the National Innovation Centre for Rural Enterprise (NICRE), we put knowledge to work for an enterprising countryside combining research with practical innovation to find new ways of unlocking potential and supporting thriving rural businesses and communities.

Executive summary

This **farm survey,** conducted as part of NICRE's State of Rural Enterprise survey 2023, was designed firstly to examine the **cost of doing business** in the last 12 months; and secondly, to assess **business capacity to prepare for agricultural transition**.

Farm businesses characteristics

- In total, 586 farms across three regions of England - the North East (NE), South West (SW), and West Midlands (WM) - were surveyed. The majority are livestock farms (344). Measured by land area, most (357) fall into our 'large' farm category (more than 100 hectares). Farms surveyed across all three regions reported having between one to four employees (313 farms), which is consistent with farms in general, in England. There are a significant number of farms with no employees.

- Nearly 40% of the farms in the sample are businesses where 50% or more of the people who directly manage the farm are women. This share is similar to the results obtained for non-farm rural firms, where 53% of the surveyed businesses are women-led. However, it contrasts strongly with the reported situation in national farm structures data.

Farm performance: the cost of doing business

- Farms of all types were more likely to have seen no change or to have suffered decreased income, compared to the previous 12 months. Fewer crop farms saw a decrease in income, compared to livestock and mixed farms. By region, farms in the NE were markedly more likely to have suffered decreases in income than those in either the SW or WM regions.

- When comparing farm business performance to rural business performance in other sectors in the year prior to survey, we find that for other rural businesses, turnover growth was more common than it was among farms.

- Rural firms were more than twice as likely to report growth than to report declining gross income in the past year, whereas for farms the picture was reversed, with significantly more farms reporting an income decline than those reporting an increase.

- A very high proportion of farms reported that rising costs over the last year had a significant impact on cash flow. The impact was felt particularly strongly among mixed farms (91%), and more among larger farms (86%) than small farms (66%). Comparing to trends among other rural firms, farms, along with hospitality, have had the most widespread experience of significant impacts of rising costs upon business cash flow.

- Despite the cost challenges of the past year, the vast majority of farms have not changed their labour use, and more than twice as many have increased numbers of employees than decreased them among livestock and mixed farms, while among crop farms, the amount increasing and decreasing are the same (12%). Rural firms in all other sectors are more likely to have made changes in employment in the last 12 months, than farms did.

Contributory factors to explain rising farm business costs

- Importing costs was a significant factor. A significant share of farms had imported goods or services in the last year, with the highest being among livestock farms (90%). The pattern was similar across the three regions. It is likely that these imports relate to farm inputs and, particularly in the dairy, pig and poultry sectors, to animal feed.

- Survey results suggest that all broad types of farm in our sample are also likely to be feeling some effects of cuts in government support. Subsidies in the form of basic income support have reduced by around 50% on many farms since 2018, although new opportunities for gaining income from environmental schemes have also been created over that period.

An appetite for change? Marketing channels and direct sales

- The agriculture transition in England is challenging farm businesses to consider how they can increase their returns from the market, as income support payments are reduced, and shifting towards shorter supply chains may offer an opportunity to do this, for some.

- The share of sales accounted for by traditional marketing channels remains important: 24% for wholesalers and merchants, 23% for processors, and 20% for auctions and livestock markets. Sales to co-operatives (6%) and direct contract arrangements with supermarkets (4%) are less significant, although those selling to intermediate channels may then have those products sold on to supermarkets.

- Direct sales account for 11% overall, which is consistent with findings from other sources, with direct-to-consumer sales more concentrated among smaller surveyed farms (57%).

- More than a quarter of respondents expressed interest in increasing their direct/local sales in each of our three farm types, with 29% of livestock, 43% of crop and 36% of mixed farms responding positively. A higher proportion of large farms would like to increase their direct/local sales (37%). They are least likely to sell locally at present, which may explain why they are most keen to sell more locally. Smaller farms, on the other hand, already sell more locally so do not perceive a need to do more.

- Improving margins or enabling access to new market opportunities are the most frequently identified reasons overall for increasing the percentage of their total farm sales through direct or local channels, and particularly among large and medium-sized farms. However, a variety of motivations were indicated by respondents, particularly diversifying income sources and reducing risk and/or supporting local or community initiatives.

- For farmers who indicated that they were not interested in increasing farm sales via direct or local marketing channels, we observe some differences, with smaller farms indicating labour and digital infrastructure as key barriers, compared to medium and larger farm enterprises that highlighted a skills and knowledge gap. A significant proportion of respondents also cited infrastructures as a relevant barrier.

- Respondents were also asked about types of advisory support that could help them to overcome barriers to selling via local or direct channels. Larger farm businesses identified technical and financial support as business advice priorities. Small farms prioritised market channel/sales aspects.

Net zero and climate change: readiness for change

- The farm survey examined input-related practices, particularly fertiliser and energy use, which gives an indication of their climate readiness.

- Chemical Nitrogen (N) fertiliser inputs are higher than other reported inputs across all farm types and sizes, as expected given its importance for plant growth. We observe a difference in Nitrogen (N) fertiliser inputs between farms with, and farms without, crops. Organic fertiliser inputs increase on farms with livestock, as expected because most have on-site production of organic matter.

- Comparing input uses to the previous year, 38% and 24% of livestock and crop farms respectively reduced chemical P fertiliser inputs; 75% of mixed farms made no changes. Interestingly, 25% of crop farms increased their organic fertiliser inputs over the past year.

- We observe substantial differences between farm types in terms of overall expenditure, with crop farms spending the most and mixed farms the least. We observe differences also for expenditure on electricity and farm operations between farm types. Livestock farms spend £198/ha on fuel and £199/ha on electricity, while crop farms spend £413/ha and £325/ha respectively.

- Most farms (67%) across all types do not calculate their carbon footprint; however, higher levels of adoption are evident among livestock and mixed farms when they do this via working with external advisory services (31% and 26% respectively). Rates of adoption increase with farm size, especially for those working with external advisory services.

- In total, 88% of farms monitor their soil quality at various intervals. However, adoption of this strategy varies by size, with 69% of small farms never doing so. By contrast, 89% of medium-sized farms monitor soil quality. Almost all large farms monitor soil quality (97%).

Implications for farm business support and rural policy

- The findings highlight the negative economic conditions faced by farms across the country and in many types of production, arising from a combination of substantially higher input and energy costs and the reduction in public support payments. Together, these place the sector in a more challenging position than reported for most other rural business sectors, in respect of current incomes and growth trends.

- The 2023 survey explored how farms were responding to various drivers for transition. This was in respect of decision-making around selling their produce and the extent to which they are considering potential routes to higher added-value options, as well as the level of awareness and adoption of a range of 'green business' ideas and practices. Both these topics can be seen as indicators of potential business resilience, in current and future contexts. Considering these resilience issues, our survey results are generally encouraging. They suggest that a larger than anticipated number of farms, and especially those in sectors which have not previously done so, are thinking positively about opportunities to shorten their supply chains and sell more produce directly. At the same time, a significant minority of farms are monitoring the carbon footprint of the business, and the great majority are testing their soils on a regular basis.

- Finally, from the significant difference reported above concerning the key role of women in farm management decision-making, it could be time for the UK farm structures survey to reconsider how it tracks issues of gender equality in contemporary agriculture in England.

1. Introduction

Table 1 describes the sample by **farms' land area** (hectares), **farm type** (self-defined), and number of employees, in the three survey regions of England - North East (NE), South West (SW) and West Midlands (WM) respectively. The farm business interviews were conducted by telephone between May and August 2023 (see Annex 1 for further details about the survey method and sampling procedures). The farm survey was part of, and aligned with, a wider survey of 2,602 rural businesses reported through **NICRE's State of Rural Enterprise Reports**.

In total, 586 farms across the three regions were surveyed. The majority are livestock farms (344). The SW has the highest number of livestock farms in the sample, and the NE has the lowest. Crop and mixed farms are also present in the sample but to a lesser extent than would be the case for the whole of England. 'Others' is the smallest category of farm type (20 in total): this includes specialist production such as flowering plants and herbs. Crop farms (including horticulture) account for 27% of the sample compared to 41% of agricultural holdings in England reported in the June Survey (Defra, 2022). Livestock farms are represented by 59% of our sample, compared to 51%, and mixed farming makes up 11% compared to 7% in the June Survey.

Table 1: Overview of the farm sample

Land size (ha)	North East	South West	West Midlands	All sample
Small - less than 20	8	25	28	61
Medium - 20 to 100	46	63	53	162
Large - more than 100	129	111	117	357
Total	**183**	**199**	**198**	**580**

Farm type	North East	South West	West Midlands	All sample
Livestock	108	128	108	344
Crop	43	47	66	156
Mixed	31	14	21	66
Others	3	12	5	20
Total	**185**	**201**	**200**	**586**

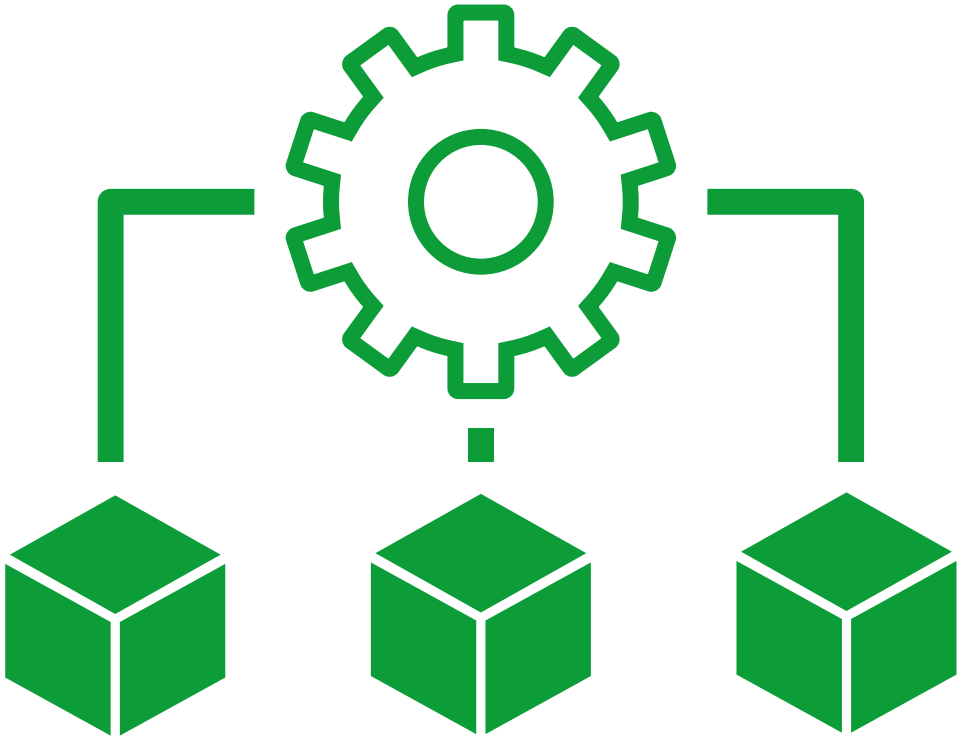
Number of employees	North East	South West	West Midlands	All sample
0	18	25	23	66
1 to 4	127	83	103	313
5 to 10	31	55	39	125
More than 10	9	38	35	82
Total	**185**	**201**	**200**	**586**

Measured by land area, the majority of farms in all three regions fall into our 'large' farm category (more than 100 hectares), with 357 in total. The SW sample has the highest number of large farms, followed by the WM and the NE. Small farms, defined here as less than 20 hectares, are the least represented in the sample (11%), compared to 39% of agricultural holdings in England. Medium-sized farms (between 20 to 100 hectares) represent 27%, compared to 37% in the June Survey 2022, while large farms (more than 100 hectares) represent 62%, compared to 24%. However, it should be noted that farms in the NICRE survey are recorded as individual businesses (i.e., total land area per business across one or more holdings as appropriate), unlike Defra's June Survey which records by holding number (i.e. holdings for a given farm are recorded separately).

The majority of surveyed farms across all three regions have between one to four employees (313), which is consistent with farms in general, in England. The SW sample has the highest number of such farms, while the WM has the lowest. There are a significant number with no employees, indicating small, owner-operated farm enterprises. Those with five to 10 employees are the next most common, and there are also some larger farms with more than 10 employees.

The rest of the report is organised into seven sections. First, a more detailed overview of surveyed farm businesses is provided. The second section considers farm business performance (e.g., labour use patterns, income sources, cash flow, importing and exporting behaviours), including comparisons with non-farm rural businesses. Section three takes a more detailed look at sources of farm business revenue. Sections four and five examine marketing channels and short food supply chains, and sections six and seven detail key facets of environmental business readiness. Short food supply chains and climate readiness are explored in-depth in these sections as issues that relate to farms' resilience and represent important adaptation strategies (added value, green growth) in the face of transition challenges. The report concludes by summarising key messages for policy and practice.

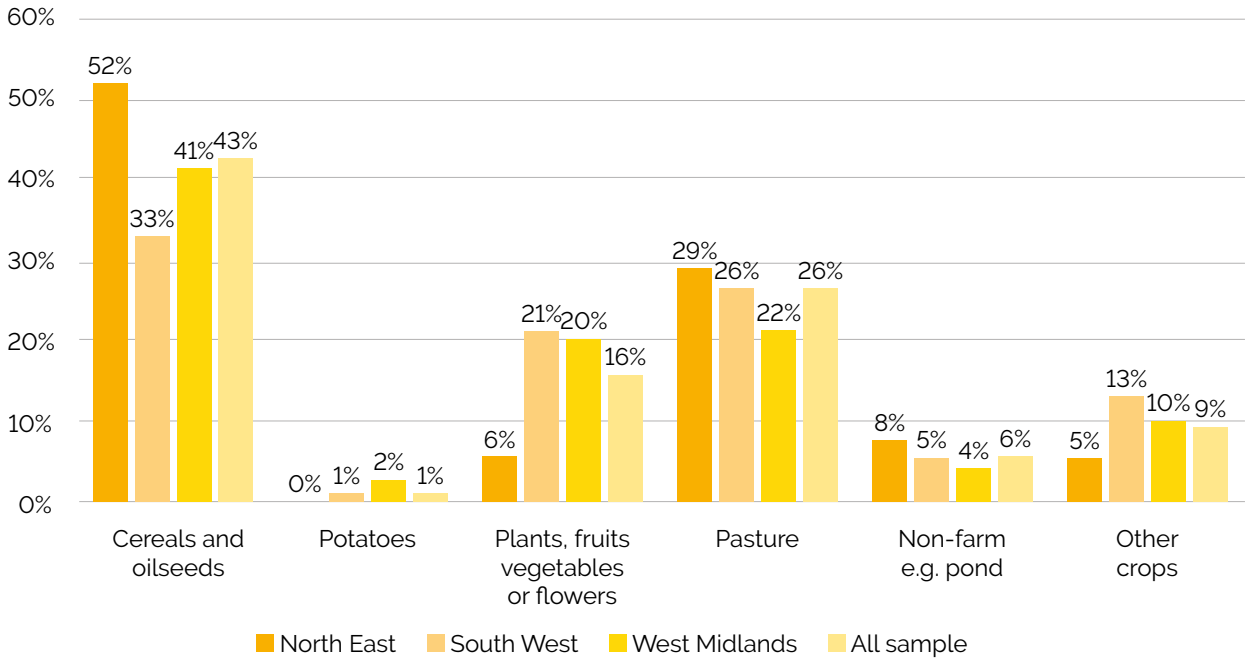
2. Farm business characteristics



This section examines farm business characteristics to give a deeper overview of **land use activities and farming practices**, and those involved in **business management and decision-making**.

Figure 1 shows the average distribution of land use on farms across the three regions. In the NE, 52% of agricultural area is utilised for the cultivation of cereals and oilseeds, compared with 33% in the SW and 41% in the WM. On average across all regions, cereals and oilseeds account for 43% of land use, compared to 53% of total farmed area for England in the June Survey (Defra, 2022). Farms in the SW use 21% of the land area for cultivating plants, fruits, vegetables or flowers, while farms in the NE and WM use 6% and 20%, respectively. On average, 16% of the land area is devoted to plants, fruits, vegetables, or flowers. Pasture accounts for 26% of the average land area of farms in the sample, specifically 29% in the NE, 26% in the SW, and 22% in the WM. Other crops account for 5% of the land in the NE, 13% in the SW, and 10% in the WM. In addition, across the sample, 6% of the land is categorised as non-farm-related activities, such as ponds, including 8% in the NE, 5% in the SW and 4% in the WM.

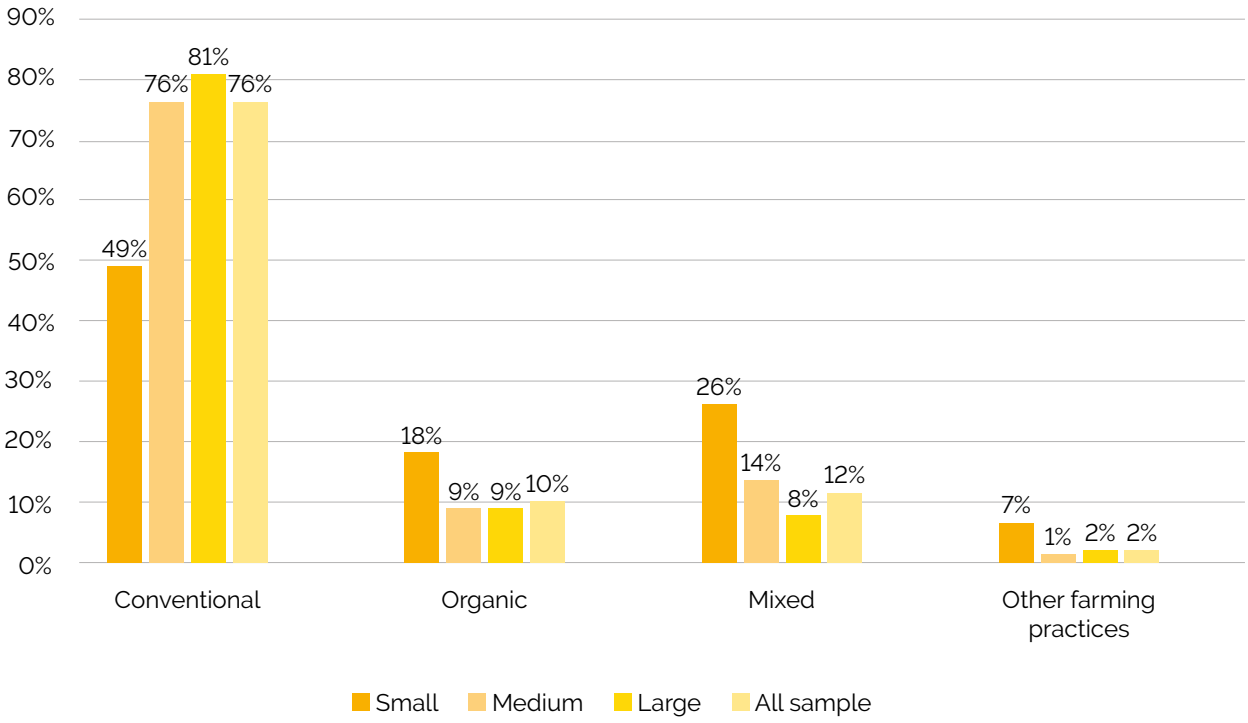
Figure 1: Breakdown of farm sample, by area, in terms of land use activities



Unweighted no. of observations 221 - NE 73, SW 61, WM 87.

Figure 2 presents farming practices adopted by farms in the sample. Organic-certified and mixed practices (i.e. instances where some of the farm is organic but not all) are adopted by more than 20% of the farms (10% organic and 11% mixed practices). There was no significant difference in this pattern between different farm types or across the three regions. Interestingly, by area of land farmed, small farms are more likely to adopt organic farming (18%) compared to only 9% of medium and large farms. Small farms are also more likely to have mixed practices that combine both conventional and organic farming (26%).

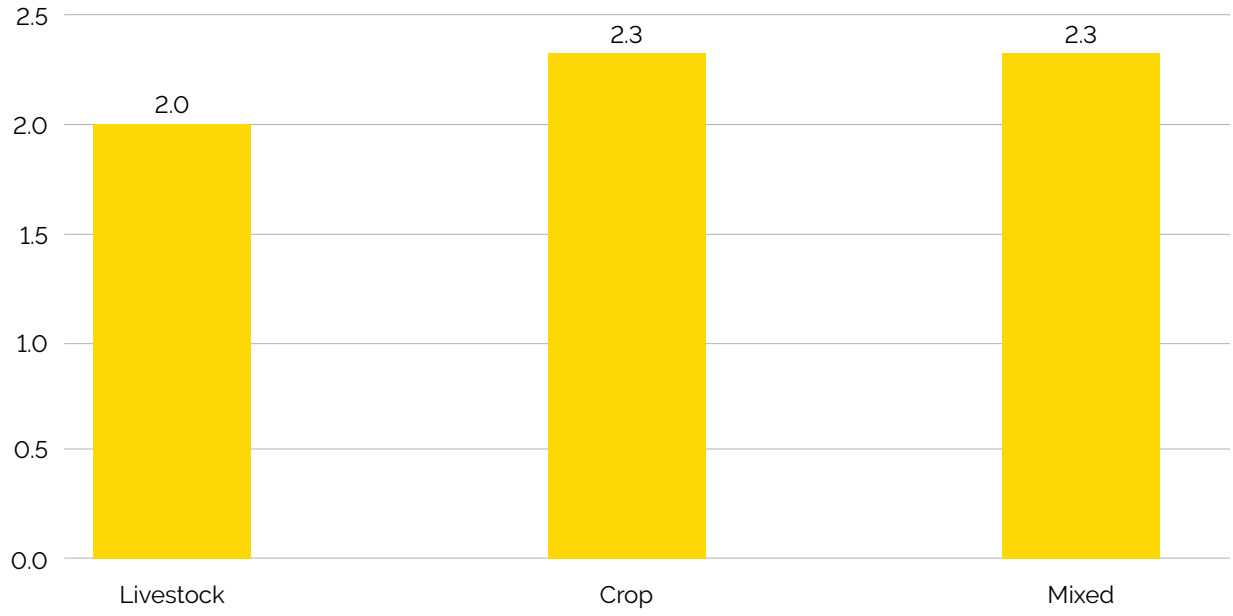
Figure 2: Farming practices by farm size and all the sample



Unweighted no. of observations 579 – Small 61, Medium 161, Large 357.

Farm business owners were also asked to explain how many people were involved in managing the business on a day-to-day basis. Overall, the average number of people directly managing each farm in our sample is between two to three people (2.3). There is no noticeable difference across the three regions, or between different farm types or different hectarage of farms (Figure 3).

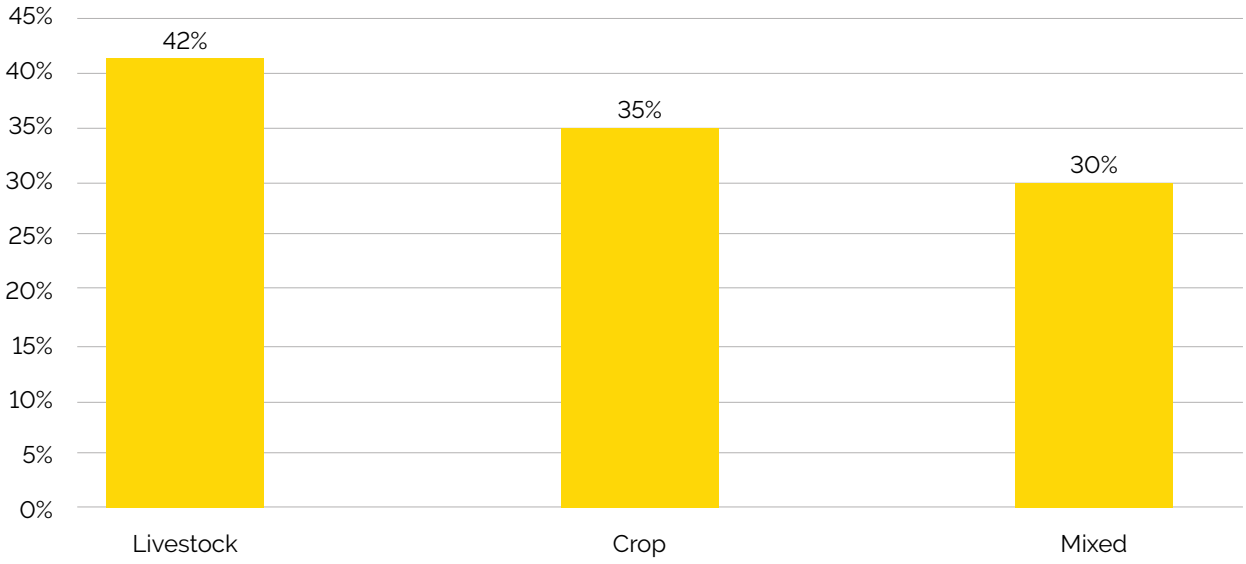
Figure 3: Number of people managing the farming business on a day-to-day basis, including owners or partners, by farm type



Unweighted no. of observations 566 – Livestock 344, Crop 156, Mixed 66.

Nearly 40% of the farms in the sample are businesses where 50% or more of the people who directly manage the farm are women. This share is relatively similar to the results obtained for non-farm rural firms, where 53% of the surveyed businesses are women-led (NICRE, 2023). However, it contrasts strongly with the reported situation in national farm structures data, which records the sex of the 'principal farmer' and for which the share of women is much lower, at only 12% in 2023 (ONS, 2023). In our sample in particular, there is a higher likelihood that livestock farms are managed predominantly by women (45% - using our definition of 50% or more of the farm's managers), compared to 35% of crop and 30% of mixed farms (Figure 4). Fewer farms in the WM are managed by women (33%), compared to 44% and 42% in the SW and NE respectively (Figure 5). A higher share of small farms are managed by women (54%), while almost half of medium-sized farms are managed by women, compared to only one-third of large farms in our sample (Figure 6).

Figure 4: Is the farm business led by women managers (more than 50% of the managers are women)? By farm size

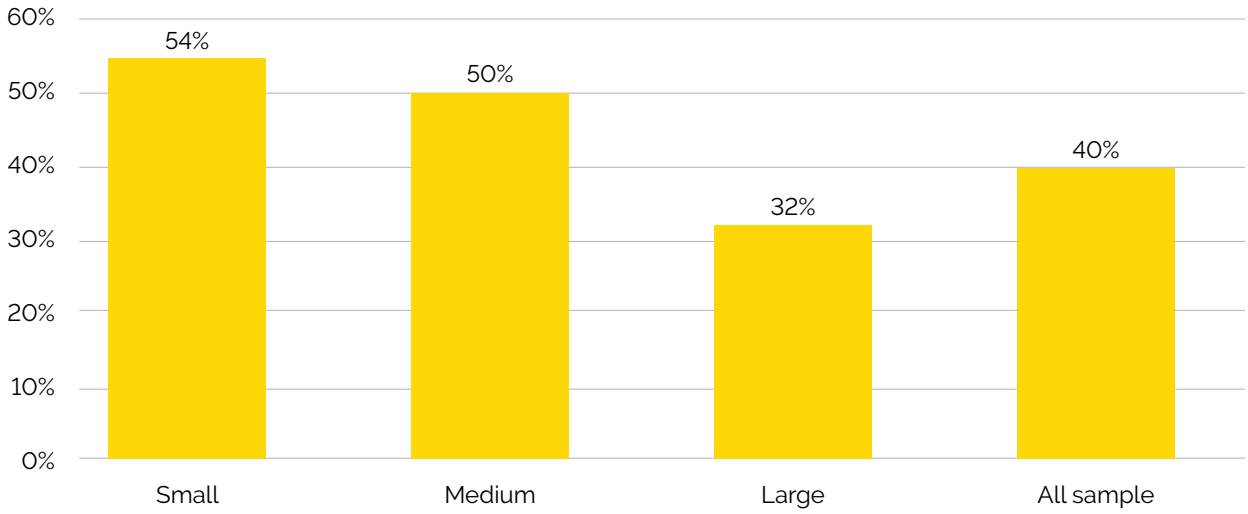


Unweighted no. of observations 565 – Livestock 343, Crop 156, Mixed 66.

Figure 5: Is the farm business led by women managers (more than 50% of the managers are women)? By region and all the sample

Unweighted no. of observations 585 – NE 185, SW 200, West Midlands 200.

Figure 6: Is the farm business led by women managers (more than 50% of the managers are women)? By farm size and all the sample



Unweighted no. of observations 579 - Small 61, Medium 161, Large 357.

These significant shares reflect the way in which women's role in managing farming businesses is now significant across England, even though many do not have the formal status of 'principal farmer'. As we have used a definition of women's business leadership that is common with its use outside of agriculture, our figures suggest that recording convention within the standard UK farm structures survey is now out of step with that elsewhere, and is thus, presenting a misleading picture of the sector.

3. Farm business performance and non-farm rural business comparison

Despite the cost challenges of the past year, the **vast majority of farms** in our sample have **not changed their labour use** (Table 2). More than twice as many have increased employees than decreased them among livestock and mixed farms, while among crop farms, the shares increasing and decreasing are the same (12%). Examined by region, farms in the SW were more likely to have lost staff during the year (11%) than those in the WM or NE (6% and 3% respectively).

Table 2: Changes in employment on farm businesses in the last 12 months, by farm type and by region

	Livestock	Crop	Mixed	North East	South West	West Midlands
Increased	11%	12%	17%	11%	14%	12%
Decreased	5%	12%	5%	3%	11%	6%
Or, stayed the same	84%	77%	79%	85%	76%	83%

Unweighted no. of observations: 564 (farm type) – Livestock 342, Crop 156, Mixed 66; 584 (by region) - NE 184, SW 200, WM 200.

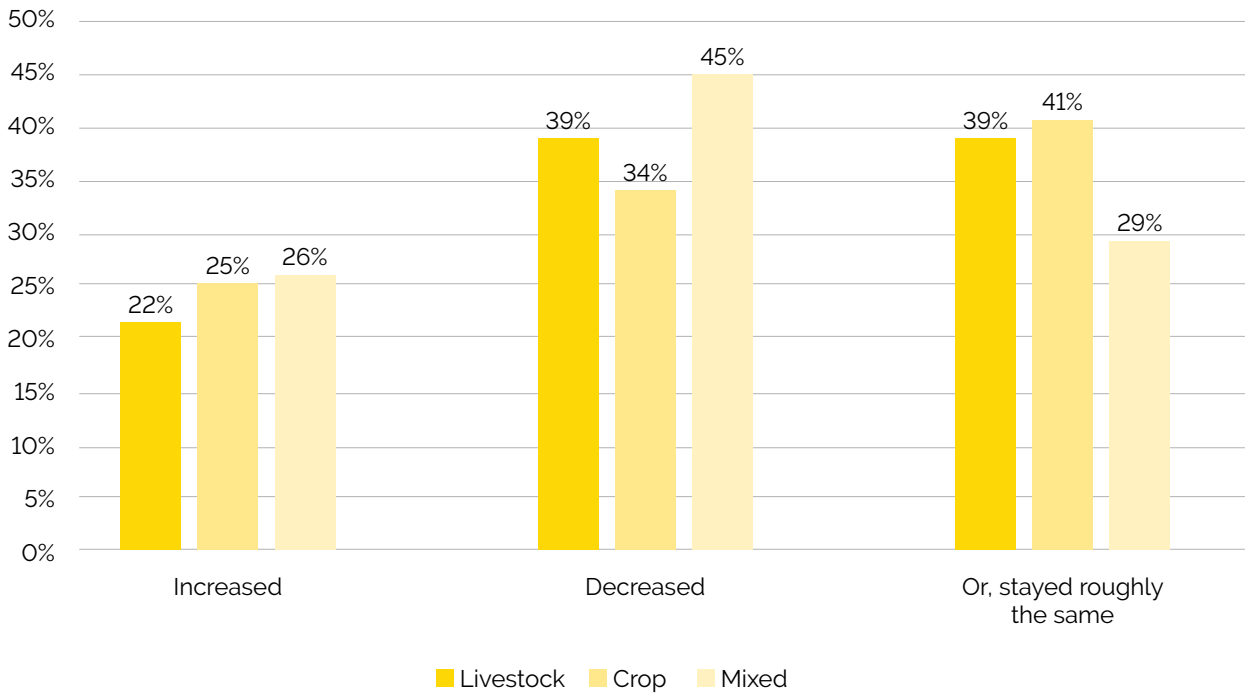
As Table 3 shows, rural firms in all other sectors are more likely to have made changes in employment in the last 12 months, than farms did. This may reflect their different structure, as firms in other sectors are more likely to employ larger numbers of people, so adding or shrinking the workforce may be a more feasible and common response to their changing economic circumstances. Interestingly, in all sectors except hospitality, more firms increased employment than decreased, which is similar to the pattern seen among farms and, overall, this highlights how hospitality in particular is still suffering from the greatest negative workforce 'churn', among rural business sectors.

Table 3: Changes in employment in rural firms (NICRE, 2023)

	Production	Construction	Wholesale retail and transport	Hospitality	Business services	Other services
Increased	13%	17%	11%	26%	14%	16%
Decreased	68%	64%	73%	55%	66%	63%
Or, stayed the same	19%	19%	16%	19%	20%	20%

Regarding incomes, farms of all types were more likely to have seen no change or to have suffered decreased income, than those where income increased in the past year, compared to the previous 12 months (Figure 7). Fewer crop farms saw a decrease in income, compared to livestock and mixed farms. By region, farms in the NE were markedly more likely to have suffered decreases in income than those in either the SW or WM. By area farmed, the balance of impacts was similar among small, medium and large farms (Table 4).

Figure 7: Changes in farm business income in 2023 compared with the previous 12 months, by farm type



Unweighted no. of observations 555 – Livestock 337, Crop 153, Mixed 65.

Table 4: Changes in farm business income compared with the previous 12 months, by farm size, by region and for all the sample

	North East	South West	West Midlands	All sample
Increased	12%	31%	24%	23%
Decreased	48%	28%	38%	38%
Or, stayed roughly the same	40%	41%	38%	40%
Unweighted no. of observations	**179**	**198**	**197**	**574**

	Small	Medium	Large	All sample
Increased	25%	16%	26%	23%
Decreased	30%	35%	40%	38%
Or, stayed roughly the same	45%	48%	34%	39%
Unweighted no. of observations	**60**	**159**	**349**	**568**

This pattern is similar to the national pattern of income changes as indicated from Farm Business Survey forecasts (Defra, 2023b Figure 8 below), in which cereal and dairy farms are expected to see increases in income, whereas other livestock and mixed farms will suffer falls in income.

Figure 8: Farm business income changes, 2021/22 and 2022/23 forecast (Defra, 2023b)

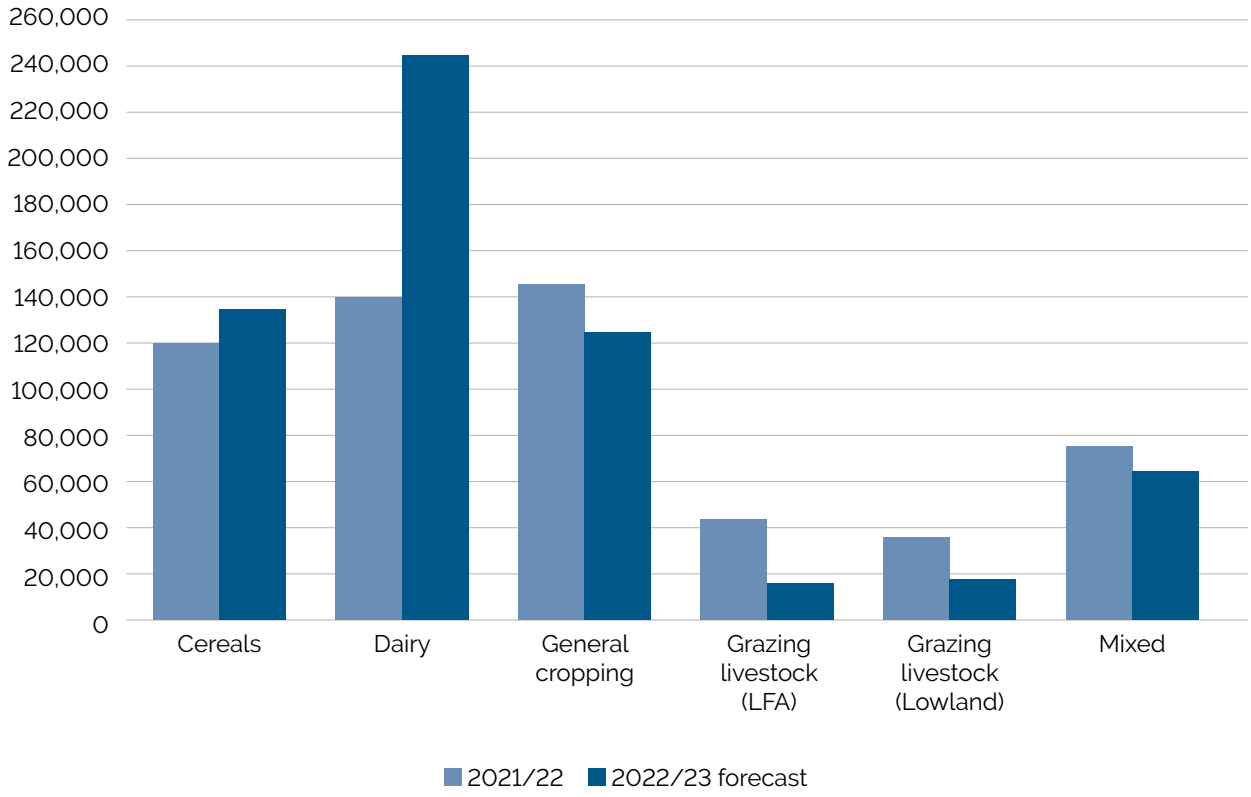
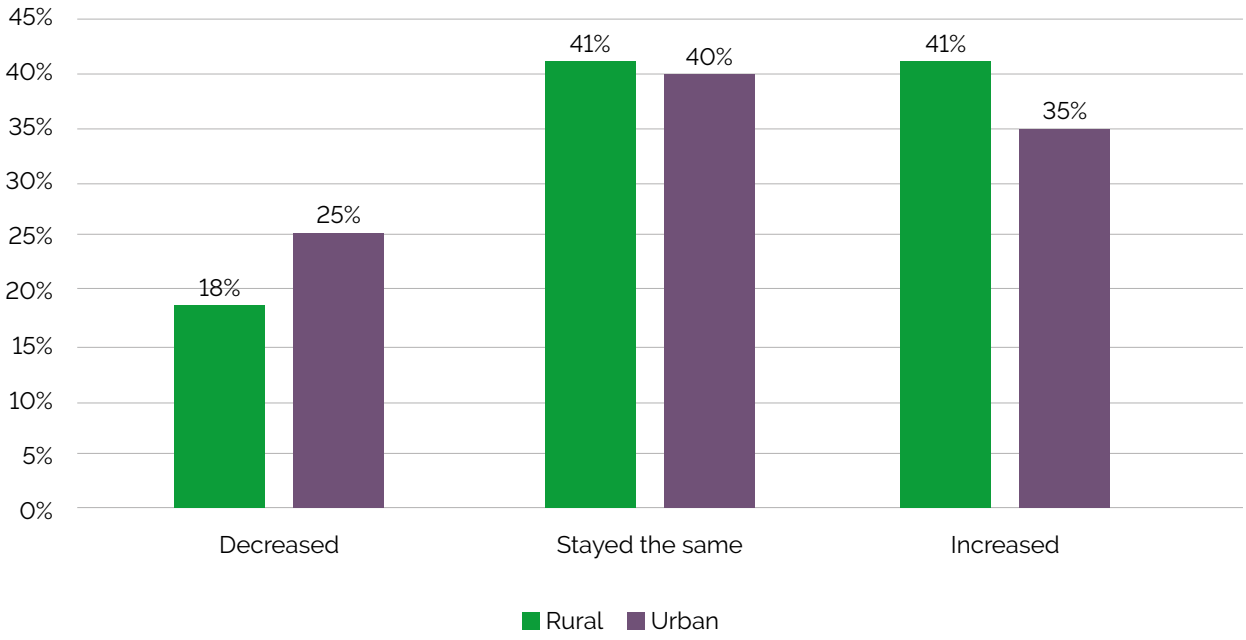


Figure 9 compares farm business performance to rural business performance in other sectors in the year prior to the survey. We can immediately see that for other rural businesses, turnover growth was a more common feature than it was among farms. Rural firms were more than twice as likely to report growth than to report declining gross income in the past year, whereas for farms, the situation was almost reversed, with 1.6 times as many farms reporting an income decline as those reporting an increase. Compared to other rural businesses, farms in England are particularly affected by declining levels of government support through the agricultural transition – we will examine later how far this factor is likely to be driving the differences observed here.

Figure 9: Non-farm business income changes compared with the previous 12 months (NICRE, 2023)



A very high proportion of farms in our sample reported that rising costs over the past year had a significant impact on cash flow. The impact was felt particularly strongly among mixed (91%) and more among large (86%) than small farms (66%) (Table 5).

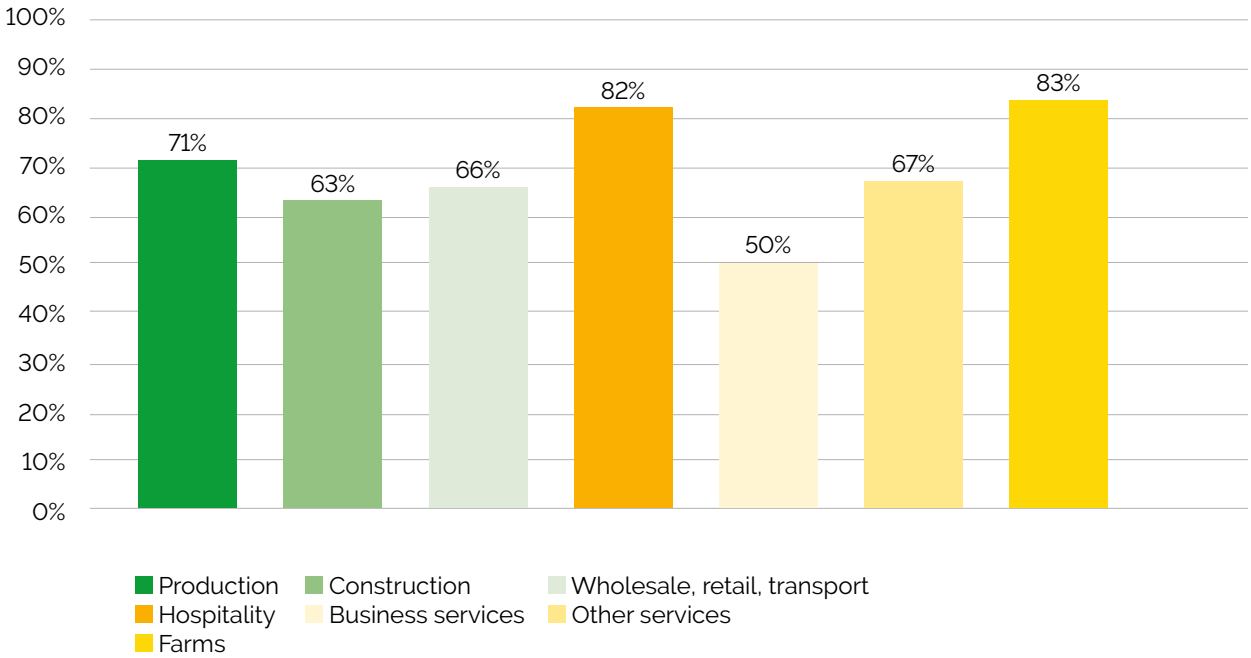
Table 5: Significant impact of rising costs on farm business cash flow in the last 12 months, by farm type, by farm size and for all the sample

	Livestock	Crop	Mixed	All sample
Yes	85%	75%	91%	83%
No	15%	25%	9%	17%
Unweighted no. of observations	**343**	**156**	**66**	**565**

	Small	Medium	Large	All sample
Yes	66%	83%	86%	83%
No	34%	17%	14%	17%
Unweighted no. of observations	**61**	**161**	**357**	**579**

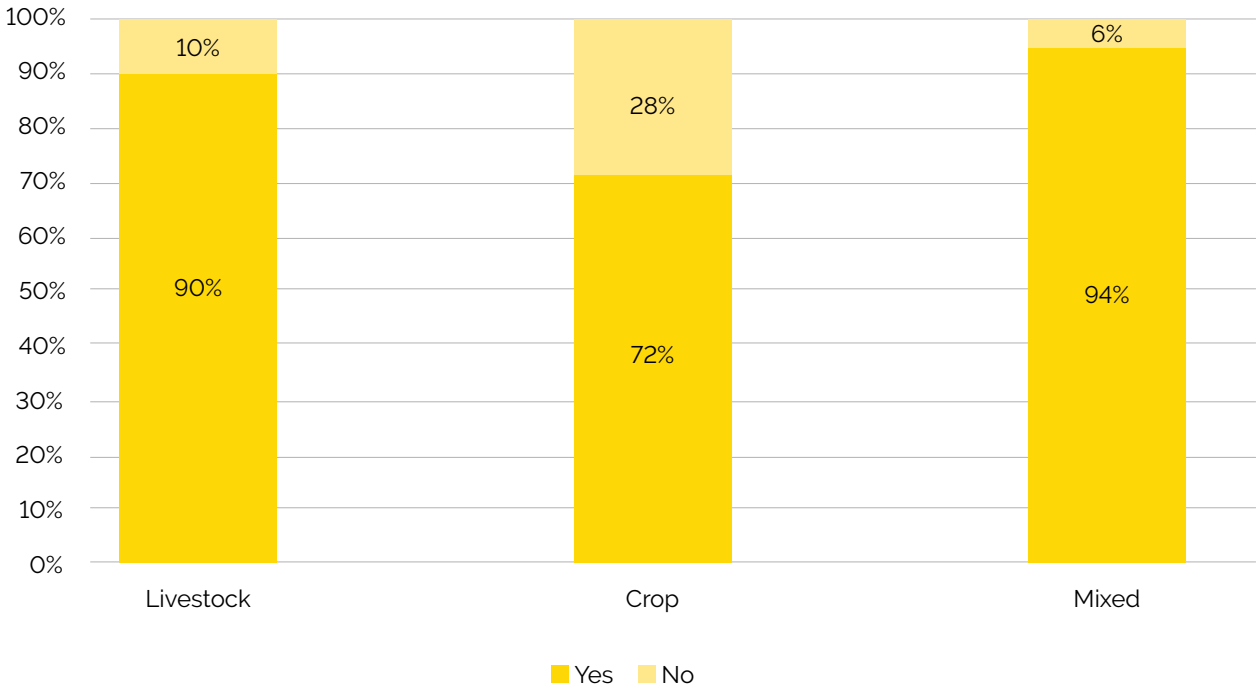
Comparing to trends among other rural firms, Figure 10 indicates the percentages reporting significant impacts of rising costs upon cash flow in the last year. This suggests that farms, along with hospitality, have had the most widespread experience of significant impacts of rising costs upon business cash flow.

Figure 10: Comparing farms in our sample with rural firms by sector in our sample – significant business impacts of rising costs upon cash flow (NICRE, 2023)



The next set of results examine importing and exporting behaviours. A significant share of farms in our sample had imported goods or services in the last year, with the highest shares being among livestock (90%) (Figure 11), and among those farming between 20 and 100 hectares of land (95%), compared to the sample as a whole (86%) (Table 6). The pattern was similar across the three regions. It is likely that these imports relate to farm inputs and, particularly in the dairy, pig and poultry sectors, to animal feed (Defra, 2023a).

Figure 11: Purchased or imported goods or services from outside the UK in the last 12 months, by farm type



Unweighted no. of observations 559 – Livestock 339, Crop 154, Mixed 66.

Table 6: Purchased or imported goods or services from outside the UK in the last 12 months, by farm size and for all the sample

	Small	Medium	Large	All sample
Yes	77%	95%	84%	86%
No	23%	5%	16%	14%

Unweighted no. of observations 573 - Small 61, Medium 158, Large 354.

A reported significant challenge has been increased costs of administration and paperwork associated with importing, over the past year, for around half of all farms which answered this question (Table 7). Responses to this question were for farms that were importing goods. Please note that fewer than 20% of our sample gave an answer to the question and differences by farm type, region and area farmed were not notable. Comparing this pattern to that seen for the main rural business survey (Table 8), the figures for farms are fairly similar to those for all rural firms in our sample.

Table 7: Changes in administration and paperwork costs associated with importing over the last year, by farm type

	Livestock	Crop	Mixed	All sample
Remained the same	54%	39%	25%	43%
Increased by less than 10%	0%	3%	25%	4%
Increased by 10-25%	23%	33%	25%	28%
Increased by more than 25%	23%	25%	25%	25%

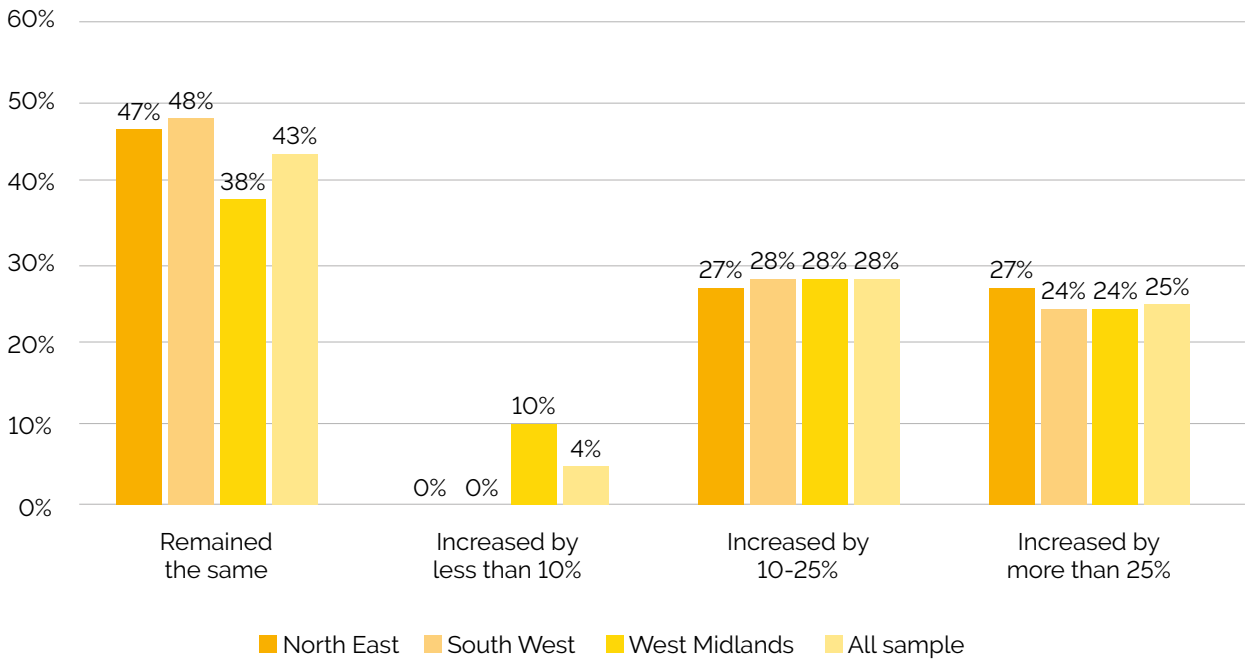
Unweighted no. of observations 66 – Livestock 26, Crop 36, Mixed 4.

Table 8: Changes in administration and paperwork costs associated with importing over the last year - comparing rural firms and farm businesses (NICRE, 2023)

	Rural firms	Farms
Decreased	1%	0%
Remained the same	36%	43%
Increased by less than 10%	12%	4%
Increased by 10-25%	25%	28%
Increased by more than 25%	26%	25%

The pattern does not vary markedly between regions among farms (Figure 12). In terms of farm size, for those that responded to this question, changes were least noticeable for larger farms but the number of observations are low (Table 9).

Figure 12: Changes in administration and paperwork costs associated with importing over the last year, by region and for all the sample



Unweighted no. of observations 69 - NE 15, SW 25, WM 29.

Table 9: Changes in administration and paperwork costs associated with importing over the last year, by farm size

	Small	Medium	Large	All sample
Remained the same	31%	17%	48%	42%
Increased by less than 10%	0%	0%	7%	5%
Increased by 10-25%	46%	50%	22%	29%
Increased by more than 25%	23%	33%	24%	25%

Unweighted no. of observations 65 - Small 13, Medium 6, Large 46.

In contrast, a very small proportion of all farms in our sample reported having directly exported any goods or services – fewer than 10% across all types of farm, all three regions and among medium and large size categories, whereas 12% of farms with under 20 hectares of land have exported (Table 10). The higher share among farms with little land is probably reflecting the greater likelihood of exports among intensive livestock producers (pigs and poultry), or those with specialist horticulture crops.

Table 10: Exported goods or services outside the UK in the last 12 months, by farm type, by region, by farm size and for all the sample

	Livestock	Crop	Mixed	All sample
Yes	2%	9%	6%	5%
No	98%	91%	94%	95%
Unweighted no. of observations	**342**	**154**	**66**	**582**

	North East	South West	West Midlands	All sample
Yes	3%	7%	4%	5%
No	97%	94%	96%	95%
Unweighted no. of observations	**183**	**200**	**199**	**582**

	Small	Medium	Large	All sample
Yes	12%	2%	5%	5%
No	88%	98%	95%	95%
Unweighted no. of observations	**60**	**161**	**355**	**576**

4. Farm business turnover and the agricultural transition

Taking the average for our sample of farms, total turnover was just **under £1million** per year (£831,346 + £68,416 + £36,814 = £936,576), which would put them in the category of **small businesses**, when compared to firms in general.

The share of total turnover reported as contributed from farming was 89% on average, with 7% coming from non-farming sources and 4% from government support. The farms in our sample reported fairly similar levels of turnover from agriculture across different broad farm types, whereas differences were greater when grouped by areas of land farmed (see Table 11). Farms with more than 100 hectares had average turnover above £1million, in 2022/23, while those farming less than 100 hectares were operating at or below one-third of that scale. All of these figures are excluding government support.

Table 11: Approximate turnover for farm businesses from agricultural activities in the past 12 months, excluding government support, by farm type

	Livestock	Crop	Mixed	All sample
Agriculture turnover (£)	847,833	722,983	771,544	831,346
Unweighted no. of observations	235	117	46	409*

	Small	Medium	Large
Agriculture turnover (£)	300,042	198,074	1,196,153
Unweighted no. of observations	48	106	254

*This figure presents the total number of farms surveyed, including 'Other' farm types.

Compared to agricultural turnover, farms' reported turnover from non-agricultural sources was much smaller, on average – less than one-tenth of the total, excluding government support. This pattern mirrors that in national data from the farm business survey (Defra, 2023b) which indicates that a large proportion of farms earn non-farm income, but its contribution to overall income is relatively modest, on average. Among our sample of farms, non-farm income is relatively more significant on crop farms and it represents a significant share - more than a quarter - of total turnover without government support, on those farms in our sample that manage under 20 hectares of land (Table 12 and Figure 13).

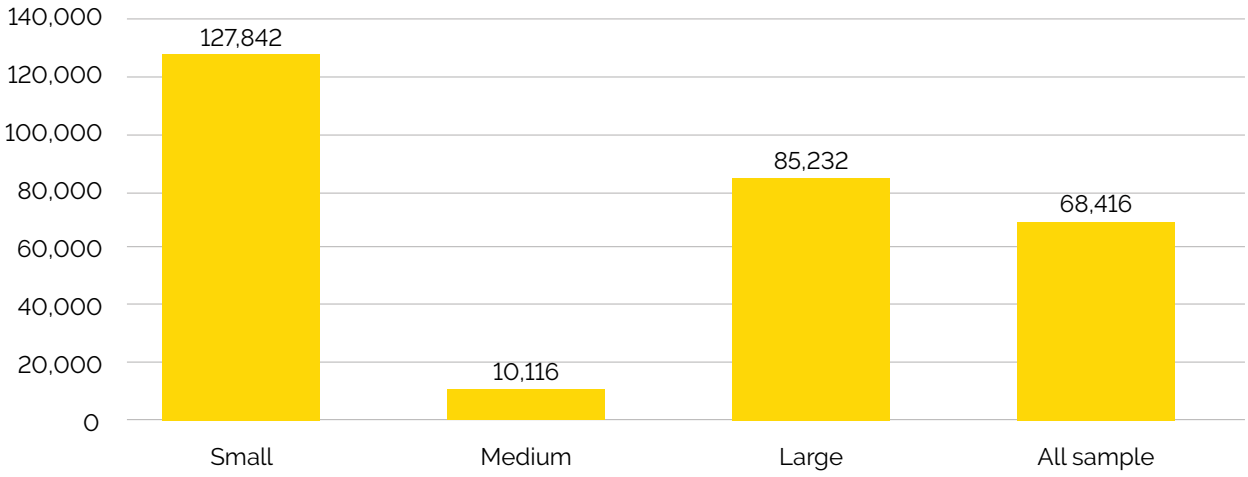
Table 12: Approximate turnover (£) for farm businesses from non-agricultural activities in the past 12 months, excluding government support, by farm type and size

	Livestock	Crop	Mixed	All sample
Non-agri income (£)	49,840	119,386	41,476	68,416
Unweighted no. of observations	324	145	63	548*

	Small	Medium	Large
Non-agri income (£)	127,842	10,116	85,232
Unweighted no. of observations	57	152	334

*This figure presents the total number of farms surveyed, including 'Other' farm types.

Figure 13: Approximate turnover (£) for farm businesses from non-agricultural activities in the past 12 months, excluding government support, by farm size and for all the sample



The third main component of farms' gross income in the year was from government support (Table 13), although this is decreasing year-on-year for many farms as a result of the agricultural transition, post-Brexit. Subsidies in the form of basic income support have reduced by around 50% on many farms since 2018 (Table 14) although new opportunities for gaining income from environmental schemes have also been created, over that period. Table 13 and Figure 14 suggest that all broad types of farm in our sample are likely to be feeling some effects of cuts in government support. The pattern of government support per farm by area of land farmed is as expected (Table 13), since both the basic farm payment and most environmental schemes pay per hectare, so farms with more land tend to receive higher levels of support.

Table 13: Approximate amount (£) of government support farm businesses received in the past 12 months, by farm type and farm size

	Livestock	Crop	Mixed	All sample
Government support (£) per farm	31,523	42,848	53,877	36,814
Unweighted no. of observation	292	138	57	501*

	Small	Medium	Large
Government support (£)	4,478	10,600	54,783
Unweighted no. of observation	58	134	306

*This figure presents the total number of farms including 'Other' farm types.

Figure 14: Approximate amount (£) of government support farm businesses received in the past 12 months, by farm type and for all the sample

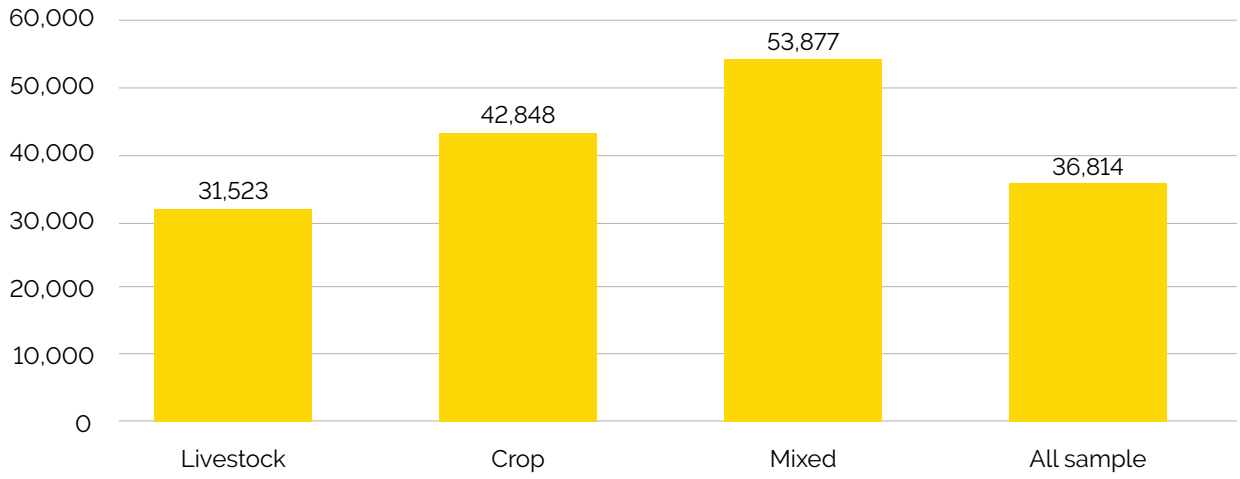


Table 14: Agriculture Transition in England: Planned reductions in Basic Payment Scheme (BPS) government support to farms (Defra, 2020)

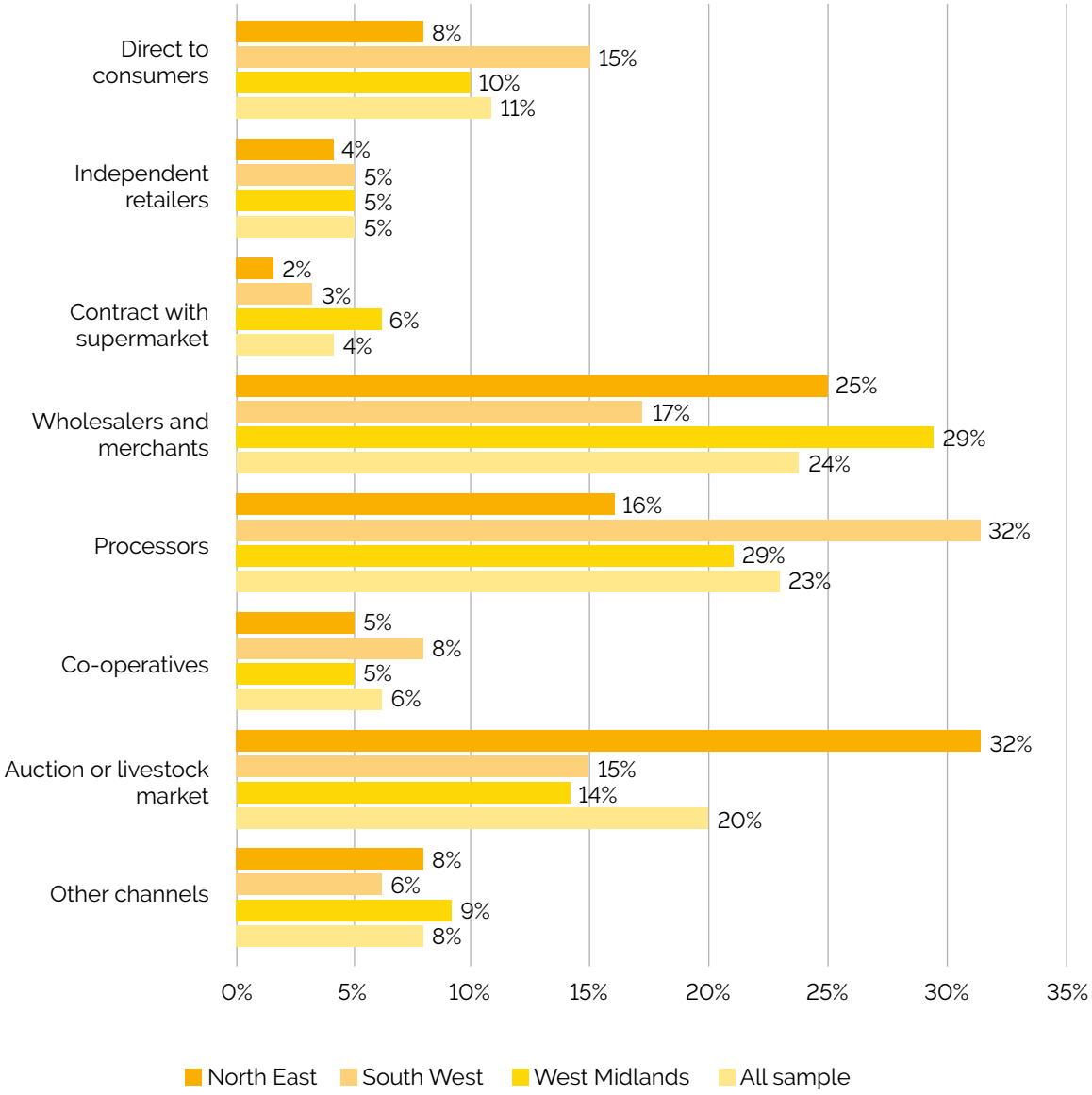
Year Payment Band	2018-2020	2021	2022	2023	2024	Est. for 2025	Est. for 2026	Est. for 2027	Est. for 2028
<=£30,000	0%	5%	20%	35%	50%	60%	75%	85%	100%
£30,000 - £50,000	0%	10%	25%	40%	55%	65%	75%	85%	100%
£50,000 - £150,000	0%	20%	35%	50%	65%	75%	85%	90%	100%
>£150,000	0%	25%	40%	55%	70%	80%	85%	90%	100%

5. Marketing channels

The report turns now to examine **farm business marketing channels**, particularly but not exclusively engagement with, and interest in, **direct food sales**. The focus is on examining how farms sell their products via different supply chains (i.e. downstream arrangements). The **agriculture transition** in England is challenging farm businesses to consider how they can increase their returns from the market, as income support payments are reduced, and shifting towards shorter supply chains may offer an opportunity to do this, for some.

Figure 15 provides a breakdown of total farm sales, by value, via different marketing channels. The percentages indicate average shares of sales by farms per sales channel, showing distribution across the different channels by region and for the sample overall. Traditional marketing channels are important, as indicated in the 'all sample' figures: 24% for wholesalers and merchants, 23% for processors, and 20% for auctions and livestock markets. By contrast, sales to co-operatives (6%) and direct contract arrangements with supermarkets (4%) are less significant, although those selling to intermediate channels may then have those products sold on to supermarkets. Direct sales, which includes pick your own, own farm sales (face-to-face and online), farmers' markets, farm shops and box schemes, account for 11% overall, which is not insignificant as an average share of sales by farms in the sample. Some respondents indicated selling also via 'other' channels (8% overall), which included farms selling to other farms online or for own consumption.

Figure 15: Farm sales, by value, to different marketing channels, by region and for all the sample



Unweighted total no. of observations 572 – NE 183, SW 198, WM 191.

The direct sales figures in Figure 16 are consistent with findings from other sources. The Farm Business Survey for England reported that 10% of farms (of an estimated 52,500 in total) undertook their own processing and/or direct sales of produce, as a farm diversification, in 2020/21, see Table 15.1 in (Defra, 2023a). A farm survey by Sustain and RSPB (2021) found that 86% of farms surveyed supplied their products to supermarkets, processors and manufacturers, while 12% made direct sales (Woodward and Hird, 2021).

Comparing marketing channels sales by region, the patterns overall are quite similar, with a few exceptions. Auction and livestock markets are more prominent in the NE (32%), for example, compared to the other two regions. Processors are more prominent in the SW (32%). The SW is characterised by a high concentration of dairy and other food processing companies, including Dairy Crest, Müller Wiseman Dairies, Wykes, Barbers, the Ilchester Cheese Company and Yeo Valley Organic, which supply domestic food retailers with a wide range of dairy products

including yoghurts and cheeses (Maye et al., 2018). As such, it would be reasonable to expect sales to processors to be relatively more common in this region than the other two.

The data are more revealing when marketing channels are compared by farm size, expressed as hectares of land farmed. In particular, we see that direct-to-consumer sales are much more concentrated among the smaller surveyed farms (57%) (Table 15). An oversimplified correlation between small businesses and selling direct is important to avoid though, given that 'smaller' farms could potentially include some big businesses, particularly poultry or pig farms, which do not have land but could be rearing large numbers of animals indoors. The majority of respondents (76%) reported no sales direct to consumers. Larger farms sell more often into wholesale and processing channels (57% of respondents, when both channels are combined).

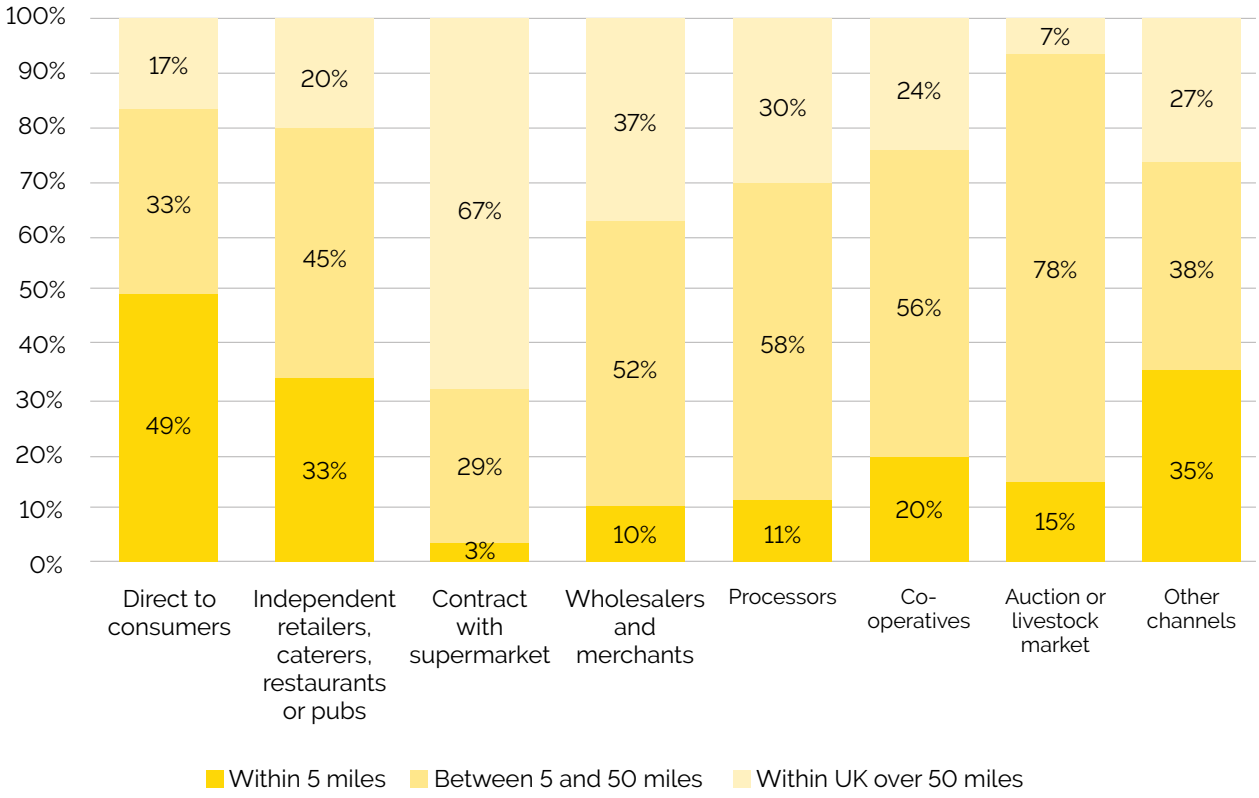
Table 15: Total farm sales, by value, into different marketing channels, by farm size in hectares and all the sample

	Small	Medium	Large	All sample
Direct to consumers	57%	9%	4%	11%
Independent retailers	14%	3%	4%	5%
Contract with supermarket	3%	2%	4%	4%
Wholesalers & merchants	9%	17%	29%	24%
Processors	1%	21%	28%	23%
Co-operatives	0%	3%	8%	6%
Auction or livestock market	3%	35%	16%	20%
Other channels	13%	11%	6%	8%

Unweighted total no. of observations 567 – Small 57, Medium 159, Large 351.

In Figure 16, sales using different marketing channels are analysed according to their distance from the farm. The results reflect a clear and consistent pattern, with direct sales concentrated within five miles of the farm (49%); 33% of sales to independent retailers are also to outlets located within five miles of the farm. More commercial mainstream channels are mostly located within 50 miles (78% of sales via auction markets, 58% of those to processors, 56% of sales to cooperatives and 52% of sales to wholesalers), while sales to supermarkets are mostly at a national level and more than 50 miles distant (67%).

Figure 16: Sales channels, approximate shares by distance from the farm



Unweighted no. of observations - Direct to consumers 133, Independent retailers, caterers, restaurants or pubs 69, Contract with supermarket 31, Wholesalers and merchants 189, Processors 209, Co-operatives 43, Auction or livestock market 163, Other channels 65.

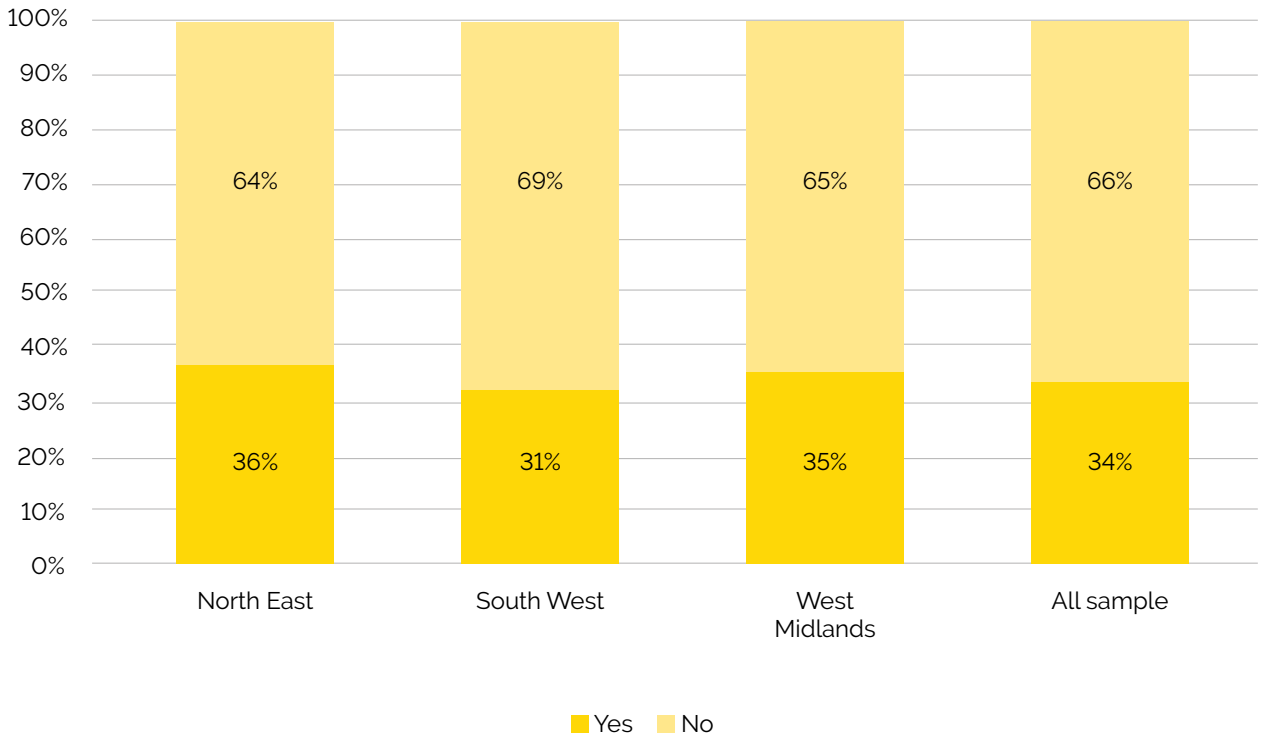
Respondents were asked if they would like to increase the share of their sales via direct or local sales channels. Responses are summarised below by sector, by region and by farm size in hectares. Over a quarter expressed interest in increasing their direct/local sales in each of our three farm types, with 29% of livestock, 43% of crop and 36% of mixed farms responding positively (Table 16). Similarly, positive responses are given by around a third of respondents in all three regions (Figure 17). The NICRE findings echo those reported by Woodward and Hird (2021), who found that 36% of farms in their survey would prefer to sell more products directly to consumers (the average of the three values in our study is 34%). We can see also differences, particularly between livestock and crop farms, with the latter most positive towards selling more locally. Interestingly, in the Sustain study, food hubs were the most preferred option for selling produce (59%). They also reported interest in co-operatives and buying groups. In our study involvement in co-operatives is currently very low.

Table 16: Willingness to increase or not their direct/local sales by farm type

	Livestock	Crop	Mixed	All sample
Yes	29%	43%	36%	34%
No	71%	57%	64%	66%
Unweighted no. of observations	**307**	**113**	**50**	**482***

*This figure presents the total number of farms including 'Other' farm types.

Figure 17: Willingness to increase or not direct/local sales by region and for all the sample



Unweighted total no. of observations 482 - NE 154, SW 166, WM 162.

The responses when analysed by farm size measured in hectares (Table 17) show a higher proportion of large farms would like to increase their direct/local sales (37%). Different factors may be influencing these responses. Large farms are least likely to sell locally at present, which may explain why they are most keen to sell more locally. Smaller farms, on the other hand, already sell more locally so do not perceive a need to do more and there may be little opportunity for increasing local sales further. During the Covid-19 pandemic, local and direct sales performed well and were viewed positively by those in the industry and sustainable food chain advocates (e.g. Sustain and RSPB, 2021, Dimbleby, 2020, Dimbleby, 2021, Krzywoszynska et al., 2022, Black et al., 2023, in press). These data may also reflect this renewed interest in local food and short food chains post-pandemic, with direct sales channels an increasingly attractive marketing option for some, but by no means all farm businesses, given that two-thirds of respondents indicated they were not interested in selling more locally.

Table 17: Willingness to increase or not direct/local sales, by size in hectares and for all the sample

	Small	Medium	Large	All sample
Yes	26%	28%	37%	34%
No	74%	72%	63%	66%

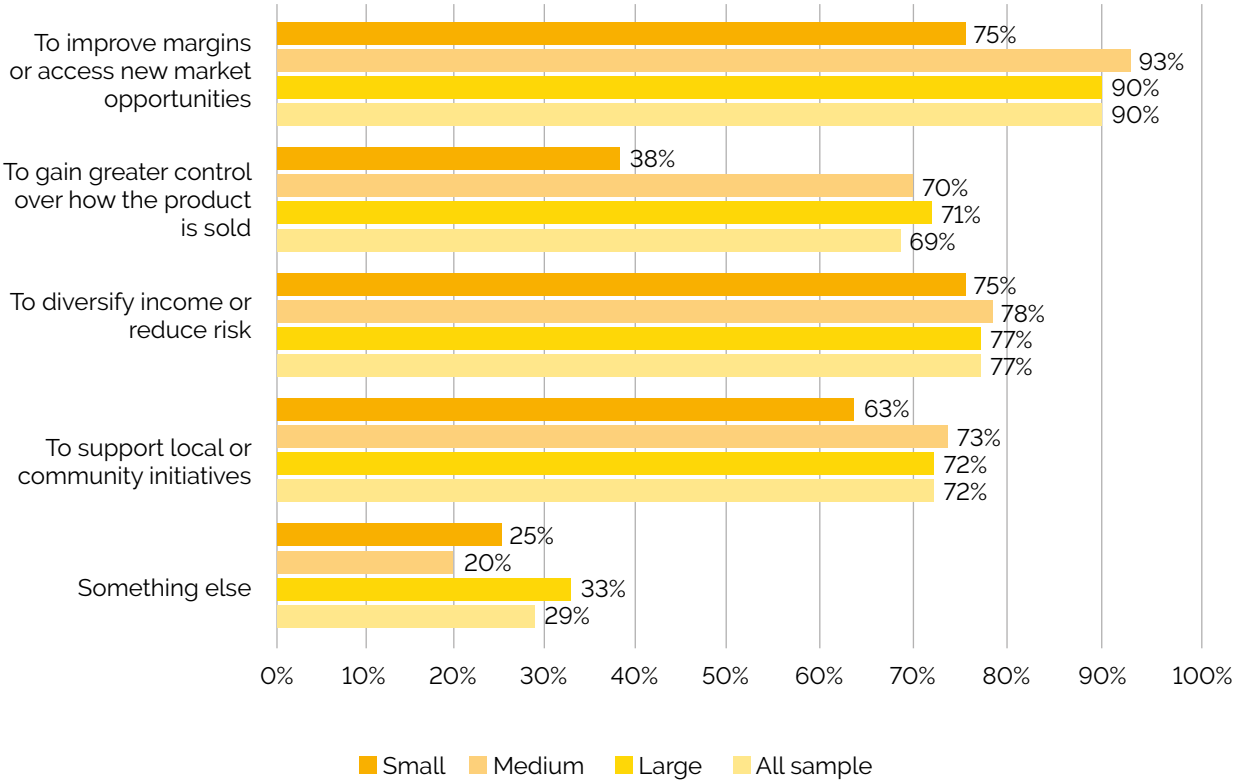
Unweighted total no. of observations 479 – Small 31, Medium 141, Large 307.

6. Direct marketing: opportunities, barriers, advice and support

This section further examines survey responses regarding **barriers and opportunities** to engaging more with **direct sales**, as one example of a potential route to increased market returns.

Farmers who expressed an interest in increasing the percentage of their total farm sales through direct or local channels were asked to explain why. Their responses were examined according to farm type, region and farm size. The responses by farm size are summarised in Figure 18 and show that improving margins or enabling access to new market opportunities are the most frequently identified reasons overall (90%) and particularly among large (90%) and medium-sized farms (93%). The same reasons were also the most common among respondents in each region and for each main farm type. However, as also observed in Figure 18, a variety of motivations were indicated by respondents, particularly diversifying income sources and reducing risk, gaining greater control over how products are sold, and/or supporting local or community initiatives. Previous studies have also tracked motivations to engage more with direct sales. Chivers et al. (2022), for example, reported community engagement and the provision of healthy food to local people as key motivating factors, with motivations varying depending on farming enterprise and business size. Other studies further confirm the motivation reported here to achieve better pricing/margins, as well as a means to support more resilient, diversified farm businesses (see Lawes-Johnson and Woodward, 2022).

Figure 18: Reasons to increase the percentage of farm sales through local/direct marketing channels by farm size and for all the sample

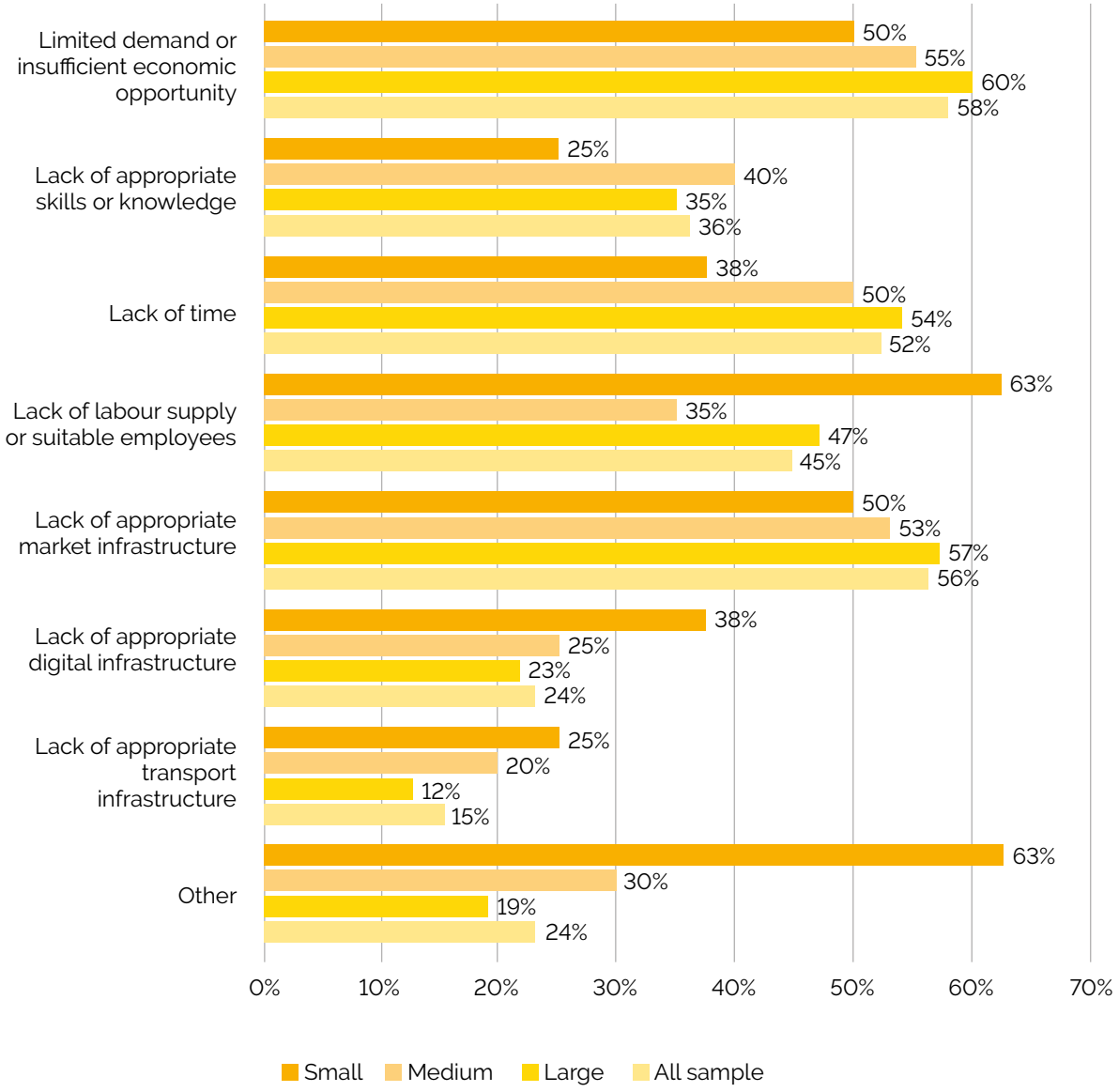


Unweighted no. of observations 163 – Small 8, Medium 40, Large 115.

For farmers who indicated that they were not interested in increasing farm sales via direct or local marketing channels, it is important to assess why and to identify perceived barriers. Overall, the main factors relate to limited demand (58%), lack of market infrastructure (56%) and lack of time (52%). From an infrastructure perspective, the key barriers would appear to be market-based physical forms of infrastructure (access to a local processing unit, for example) and less digital or transport-related.

In relation to farm size (Figure 19), we observe some differences, with smaller farms indicating a lack of labour and digital infrastructure as key barriers, compared to medium and larger farm enterprises that highlighted a skills and knowledge gap. Whilst the number of small farms in the sample answering these questions is small, and so should be treated with some caution, these findings correspond with analysis discussed in section 5, finding that smaller farms were already more involved in these channels (so more likely to have good knowledge of them), whereas larger farms have less existing direct experience of local marketing. Other recent studies have noted the absence of physical/material infrastructure as a major factor preventing more widespread use of short food chains (Woodward and Hird, 2021, Franks and Peden, 2021 in relation to livestock supply chains), as well as personal and financial reasons, such as feeling too old and/or risk aversion to making changes to the farm business. As can be seen below, a significant proportion of respondents also cited infrastructures as a relevant barrier. Lack of suitable labour and skills are also widely identified barriers.

Figure 19: Main barriers to increasing farm sales via local/direct markets by size in hectares and for all the sample



Unweighted no. of observations 163 - Small 8, Medium 40, Large 115.

We observe some regional differences (Table 18), with lack of labour more of a concern in the NE (54%) compared to the other two regions and lack of skills more of an issue in the SW (43%); poor digital infrastructure is more significant in the NE (30%). Transport infrastructure is much less of a concern in the WM (7%).

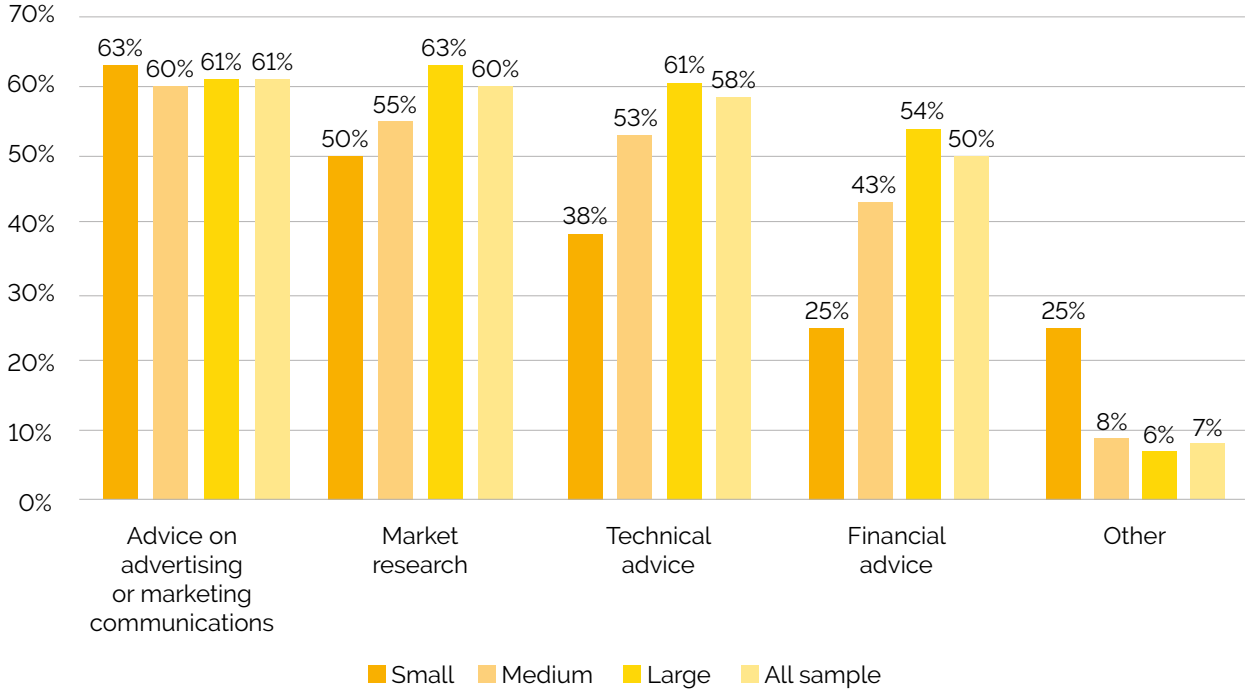
Table 18: Main barriers to increasing farm sales via local/direct markets by region and for all the sample

	North East	South West	West Midlands	All sample
Limited demand or insufficient economic opportunity	66%	63%	46%	58%
Lack of appropriate skills or knowledge	32%	43%	32%	36%
Lack of time	48%	55%	54%	52%
Lack of labour supply or suitable employees	54%	41%	39%	45%
Lack of appropriate market infrastructure	66%	57%	45%	56%
Lack of appropriate digital infrastructure	30%	22%	20%	24%
Lack of appropriate transport infrastructure	16%	22%	7%	15%
Other	18%	22%	32%	24%

Unweighted no. of observations 163 - NE 56, SW 51, WM 56.

Respondents were also asked about types of advisory support that could help them to overcome barriers to selling via local or direct channels. The responses are organised below in relation to farm size (Figure 20) and type (Table 19). Of most interest is the differences in relation to farm size, with larger farm businesses identifying technical and financial support as business advice priorities (61% and 54% respectively), compared with small farms that view these advisory support services as less of a priority (38% and 25%). Small farms prioritised market channel/sales aspects (63%) but this is not unique to them - advice on marketing, market research and communications is important across all farm sizes. Considering the observations earlier that larger farms are less likely to be previously involved in local/direct sales, the greater emphasis placed on technical advice compared to small farms potentially already involved makes sense.

Figure 20: Types of advisory support that could help local/direct sales by farm size and for all the sample



Unweighted no. of observations 163 - Small 8, Medium 40, Large 115.

For responses by farm type, marketing communications is the priority for crop (76%) and market research for livestock (62%), with more technical advice noted for mixed farms (72%) (Table 19). Differences by farm type are not large and the number of observations are quite small, so caution is needed for interpretation of these figures.

Table 19: Types of advisory support that could help local/direct sales by farm type

	Livestock	Crop	Mixed
Advice on advertising or marketing communications	56%	76%	56%
Market research	62%	59%	50%
Technical advice	51%	63%	72%
Financial advice	53%	41%	61%
Other	7%	12%	0%

Unweighted no. of observations 157 – Livestock 90, Crop 49, Mixed 18.

In summary, this section reveals how farmers use and express interest in different marketing channels, particularly what farms are currently doing in terms of preferred sales channels, engagement with, and interest in, local and direct sales, and differences both in terms of sectors and farm size. Shorter supply chains are often identified as one way of seeking to increase the added value of products as realised by farms. Of particular interest is the reported interest in more direct selling among larger farms and crop farms which may reflect future adaptation strategies, signifying a shift to new markets and an interest in short food chains in sectors that are more usually associated with commodity chains. However, the responses also indicate significant recognition of challenges in making such a shift, perhaps reflecting the reality that crop farms and larger farms are less experienced in direct selling than smaller farms in other produce sectors.

7. Environmental practices: fertiliser and energy use on farms

Another key principle of the agricultural transition in England is to encourage farms to adopt more **pro-environmental practices** and to consider **key environmental goals** such as moving towards decarbonisation as a contribution to the UK's net zero ambitions. This and the following section present analysis of environmental practices on surveyed farms, with a view to assessing how farm businesses are prepared for the future transition challenges in relation to **climate change, net zero and wider environmental sustainability**. This section covers input-related practices, particularly fertiliser and energy use and associated costs. The next section starts with a wider view of environmental sustainability and then looks at farms' adoption of practices and technologies to monitor environmental performance. Data in both sections were again analysed in terms of farm type (system), size, and location (region). However, regionally differentiated results are not reported because the findings closely follow farm type data, likely reflecting the dominant farming systems in each region.

Table 20 presents fertiliser inputs at farm level by farm type, calculated in kilograms (or tonnes) per hectare. First, we see that chemical nitrogen (N) fertiliser inputs are higher than other reported inputs, across all farm types. This is an expected result given the importance of nitrogen fertiliser for plant growth. We observe a difference in N fertiliser inputs between farms with, and farms without, crops (243 kg/ha for crop and 199kg/ha for mixed against just 113 kg/ha for livestock). Organic fertiliser inputs, on the other hand, increase on farms with livestock (53/kg/ha for livestock and 50kg/ha for mixed) compared to farms without livestock (6kg/ha). This again is an expected result, as most livestock farms have on-site production of organic matter that generally will be incorporated into the system.

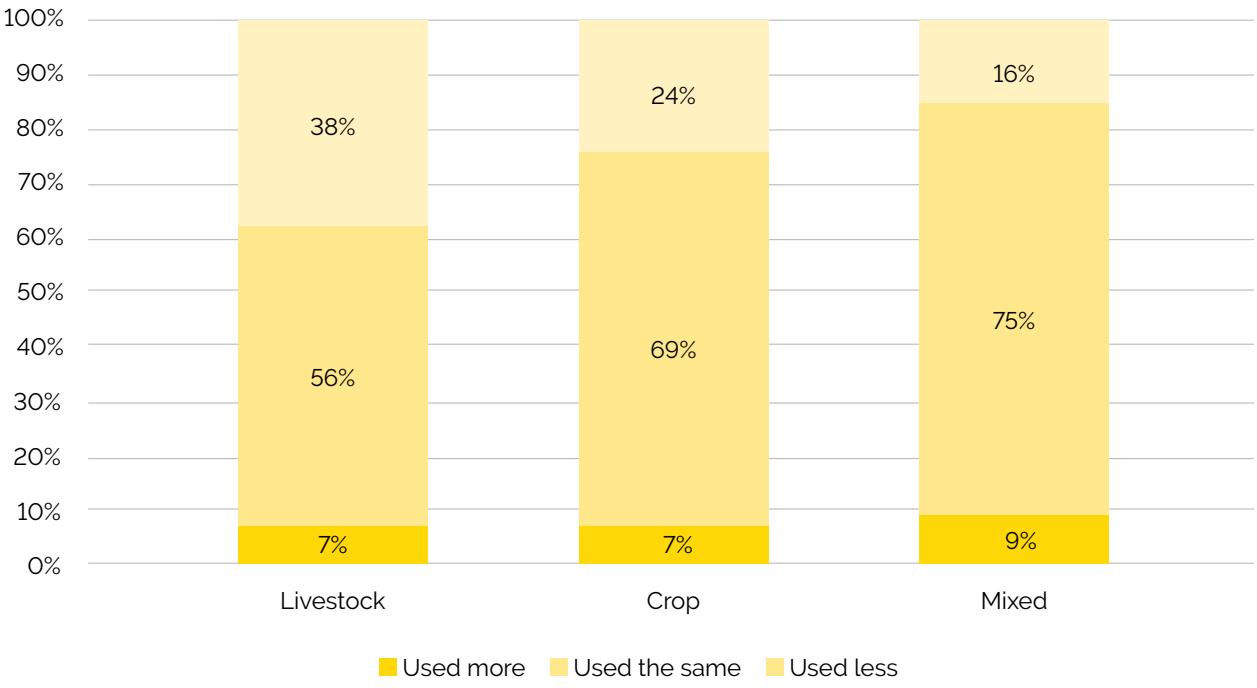
Table 20: Fertiliser allocation by farm type

	Livestock	Crop	Mixed
Chemical P fertiliser (kg/ha)	18	126	49
Chemical N fertiliser (kg/ha)	113	243	199
Organic fertiliser (tonnes/ha)	53	6	50

Unweighted no. of observations: Chemical P fertiliser 464, Chemical N fertiliser 465, Organic fertiliser 418.

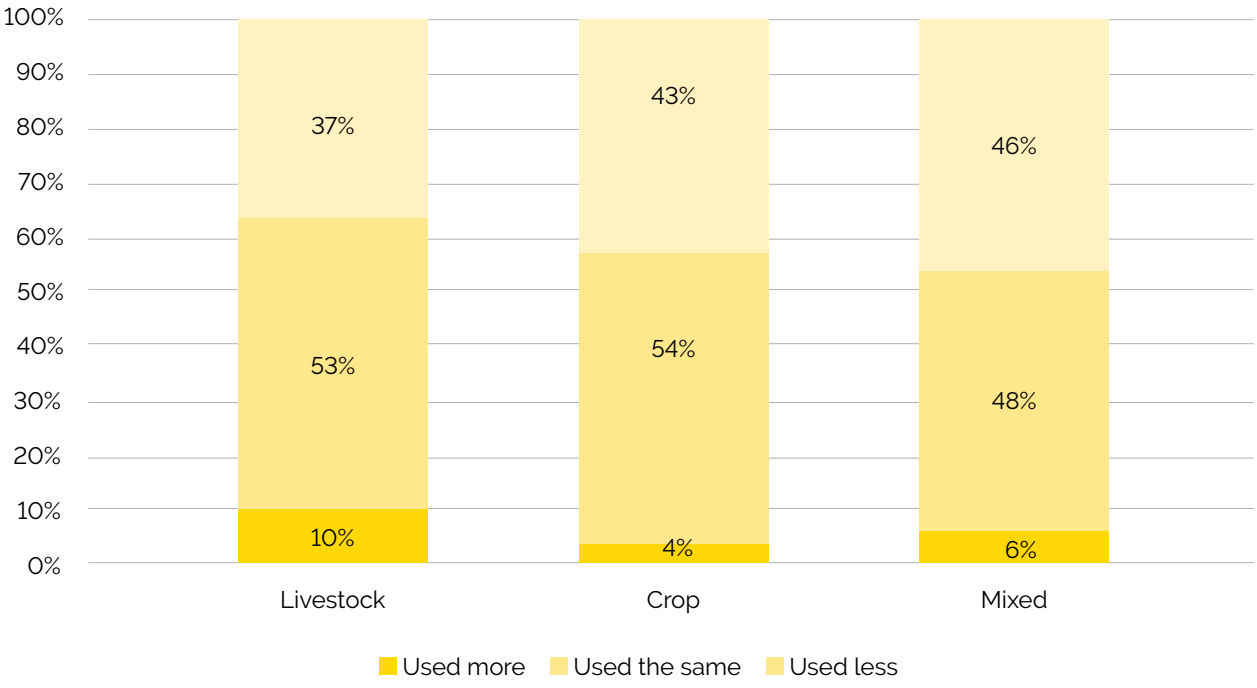
When input uses are compared to the previous year, 38% and 24% of livestock and crop farms respectively reduced their chemical phosphorus (P) fertiliser inputs, while 75% of mixed farms made no changes (Figures 21, 22 and 23). On the other hand, 46% of mixed farms reduced their chemical N inputs, whereas 53% of livestock farms and 54% of crop farms made no changes. Most livestock and mixed farms did not change their organic fertiliser inputs (81% and 84% respectively), reflecting its most likely source being on-farm manures and slurries. It is also noticeable that 25% of crop farms increased their organic fertiliser inputs over the past year, which combined with the reported decrease in chemical N (noted above) may be a positive environmental result. However, it is to be expected that rates of input use might change in response to variations in growing conditions from one year to the next so it could be premature to assume that these patterns reflect sustained changes in practice.

Figure 21: Chemical P fertiliser input compared to the previous year by farm type



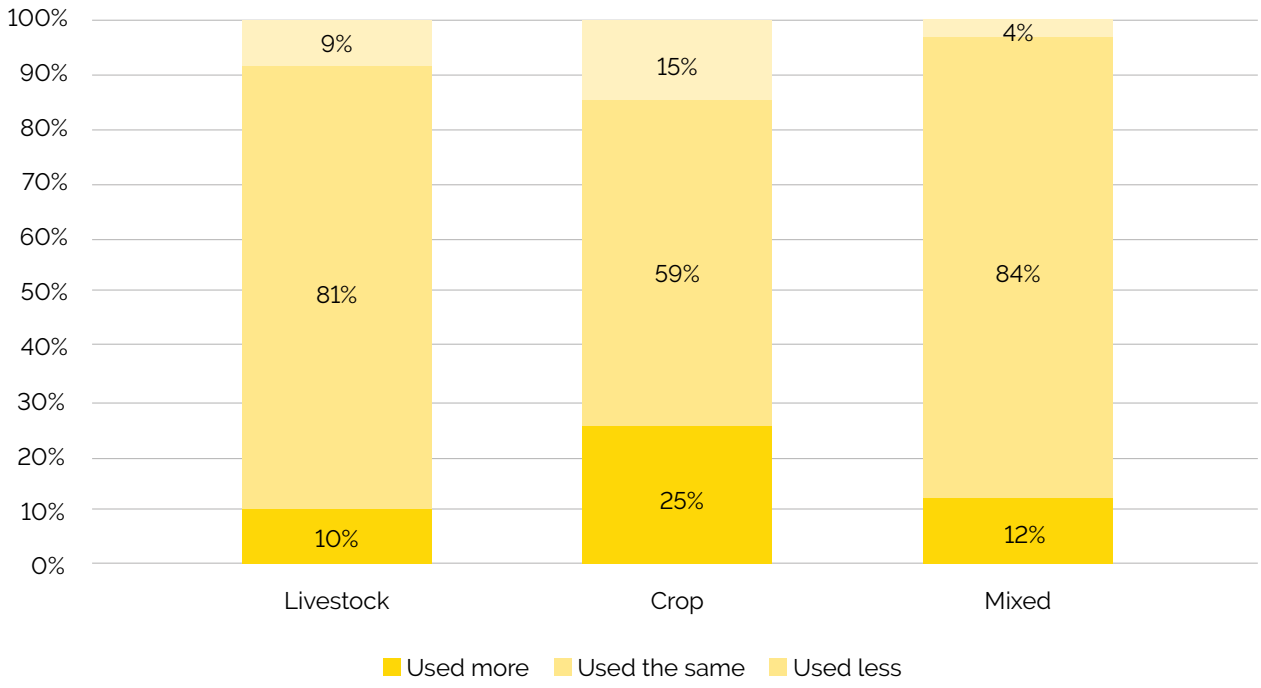
Unweighted no. of observations 149 – Livestock 72, Crop 45, Mixed 32.

Figure 22: Chemical N fertiliser input compared to the previous year by farm type



Unweighted no. of observations 306 – Livestock 172, Crop 84, Mixed 50.

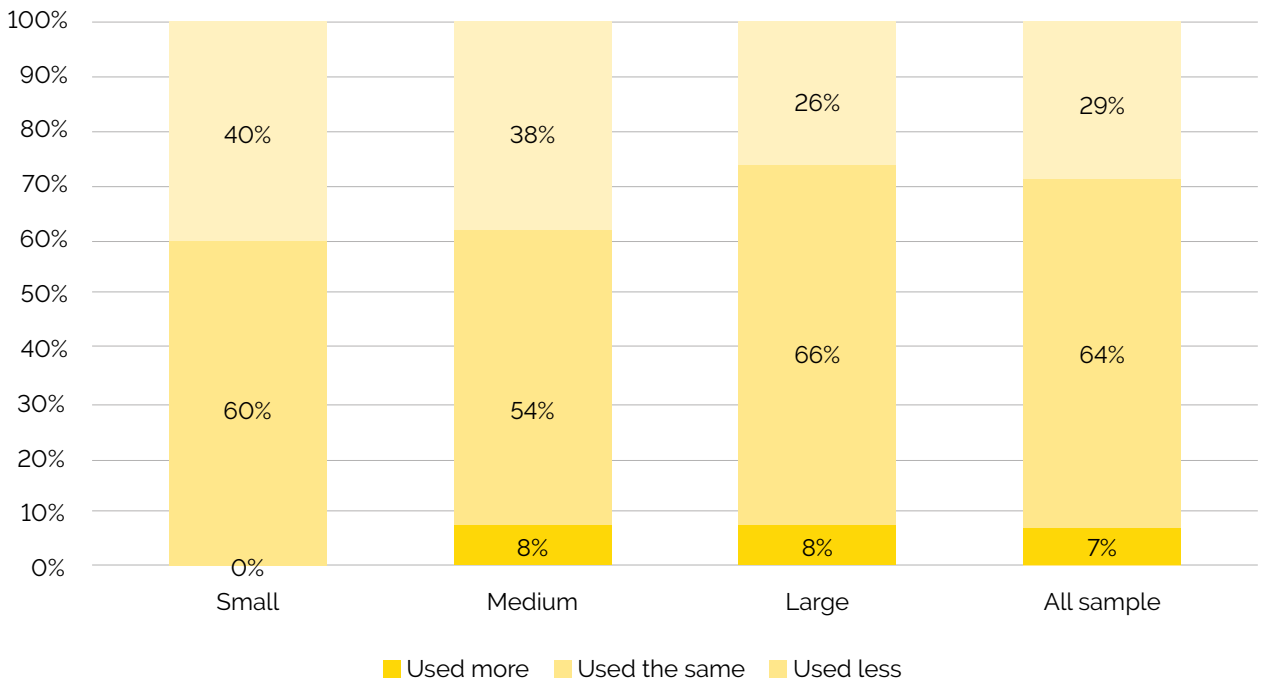
Figure 23: Organic fertiliser input compared to the previous year by farm type



Unweighted no. of observations 278 – Livestock 156, Crop 71, Mixed 51.

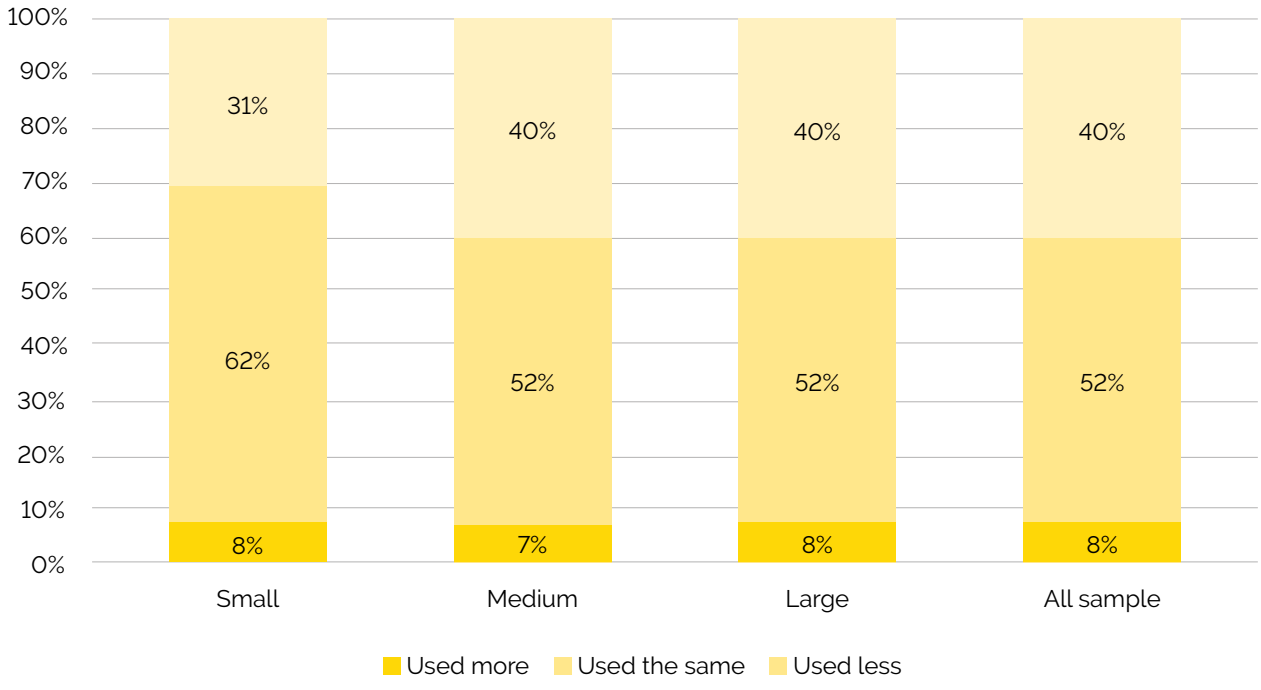
When comparing the use of inputs by farm size (Figures 24, 25 and 26), the majority of farms in each size category maintained application rates of P chemical fertiliser (Figure 24). However, a large proportion of small and medium farms (40% and 38% respectively) reduced chemical P fertiliser inputs, whilst the percentage is smaller for large farms (26%). More than half of all farms (52%) used the same amount of chemical N fertilisers (62%, 52% and 52% for small, medium and large farms respectively - Figure 25). A reasonable percentage of small farms (22%) reported a reduction in organic fertiliser application rates even though they made changes in chemical inputs, but overall, the vast majority of farms (76% of the sample) did not change their organic inputs (Figure 26).

Figure 24: Chemical P fertiliser change from previous year by farm size



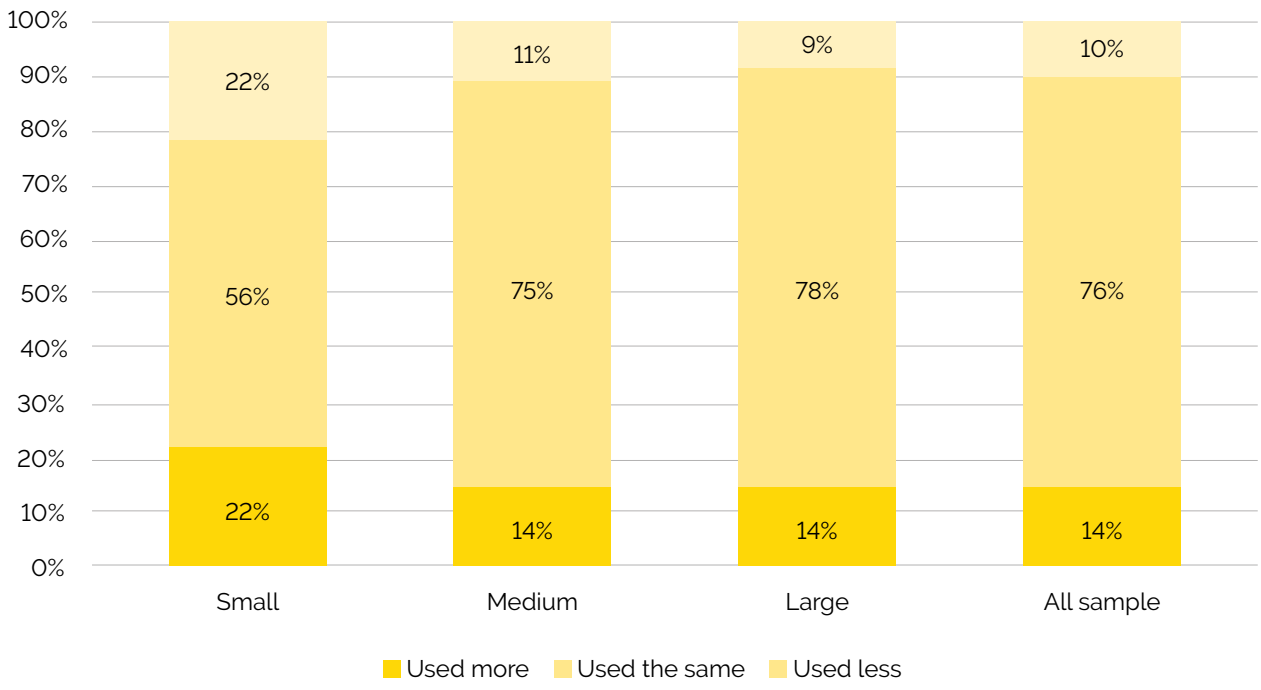
Unweighted no. of observations 149 - Small 5, Medium 26, Large 118.

Figure 25: Chemical N fertiliser change from previous year by farm size



Unweighted no. of observations 308 - Small 13, Medium 67, Large 228.

Figure 26: Organic fertiliser input change from previous year by farm size

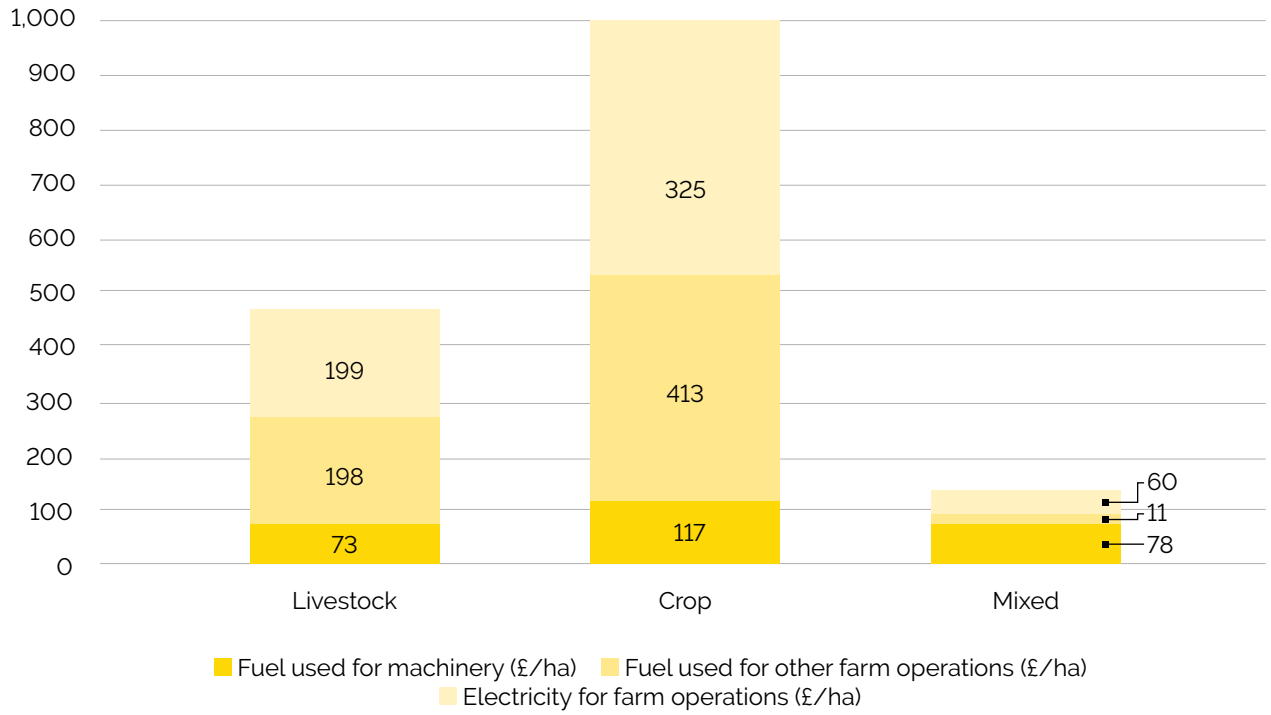


Unweighted no. of observations 282 - Small 9, Medium 63, Large 210.

Figure 27 presents analysis of farm expenditure on energy (£/ha) by farm type. We observe substantial differences between farm types in terms of overall expenditure, with crop farms spending the most and mixed farms the least. In terms of fuel used for machinery, the differences are not so pronounced, although crop farms again spend the highest amounts (£117/ha). However, for expenditure for electricity and farm operations, the difference between types is more pronounced, as livestock farms spend £198/ha on fuel and £199/ha on electricity, while crop farms spend £413/ha and £325/ha respectively. One major reason for higher spending by crop farms can be related to grain drying and storage costs, as well as more use of machinery in day-to-day farm management operations (although dairy farms will use significant energy for milking-related machinery and milk storage).

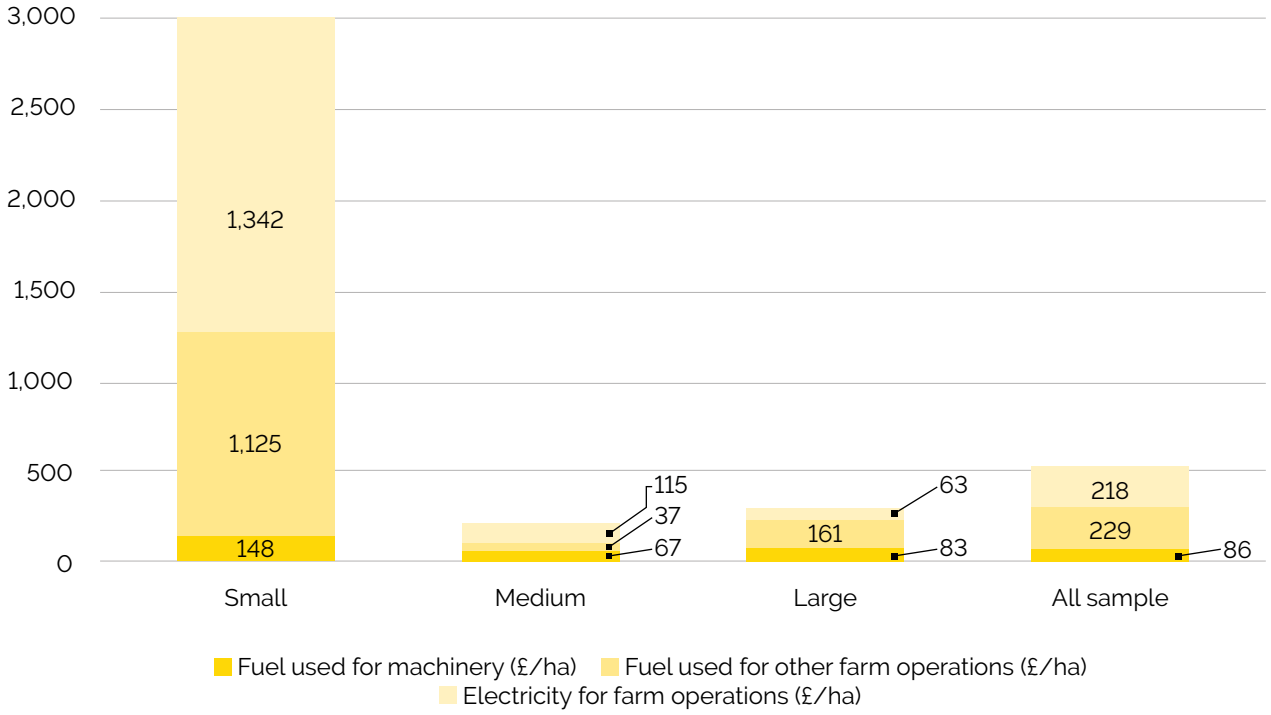
Comparing expenditure on energy costs by farm size reveals very high expenditure rates for small farms (Figure 28), particularly electricity and fuel for farm operations. For example, expenditure on fuel for farm operations is £1,125/ha for small farms compared to £229/ha on average for all sizes. Expenditure on electricity is £1,342/ha compared to £218/ha for the sample overall. This may reflect certain types of 'small farm' measured in relation to hectares. Intensive pig and poultry, for example, are small in terms of land but have high energy use. Medium farms report the least expenditure on fuel for farm operations. Large farms report the smallest expenditure on electricity, an expected result given that the figures are reported on a per hectare basis.

Figure 27: Expenditure on energy by farm type (£/ha)



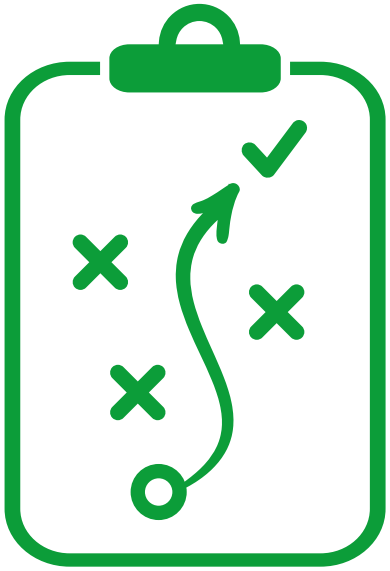
Unweighted no. of observations: Fuel used for machinery 396, Fuel used for other farm operations 422, Electricity for farm operations 427.

Figure 28: Expenditure on energy by farm size (£/ha)



Unweighted no. of observations: Fuel used for machinery 403, Fuel used for other farm operations 430, Electricity for farm operations 434.

8. Sustainability goals and technology adoption for climate readiness

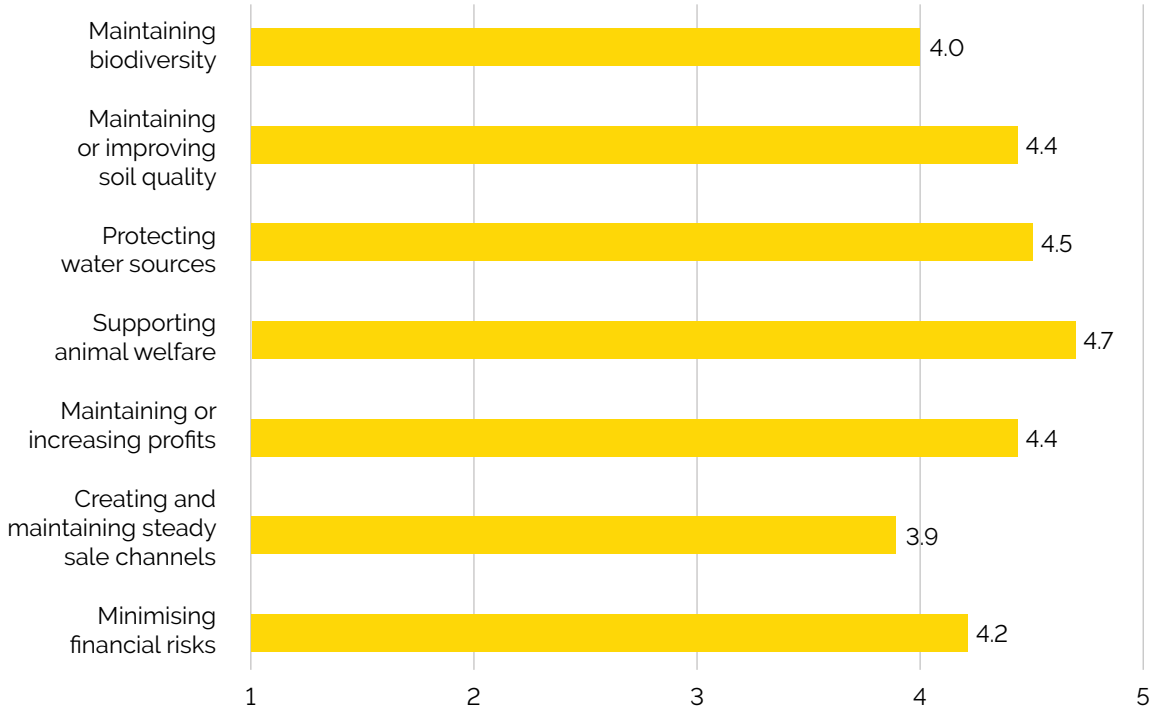


We turn now to examine **sustainability motivations and practices on farms**, first to get a sense of farm management decision-making as influenced by different measures of sustainability, and then looking at two popular forms of technology adoption/diffusion for **climate readiness**: carbon footprint measurement and soil testing.

Figure 29 shows the extent to which farm management decisions fulfil some established sustainability goals (Lynch et al., 2019, Firbank et al., 2018). To acquire this information, respondents were presented with seven statements designed to capture the main drivers of economic, social and environmental sustainability at farm level (Micha et al., 2022) and they were then asked to indicate the level to which these affect their farm management decisions. Responses were recorded on a 5-point scale, ranging from 1 = strongly disagree and 5 = strongly agree.

All statements scored quite highly, indicating that respondents consider multiple elements of farm-level sustainability in their decision-making. Supporting animal welfare (social sustainability) is a high driver of farm management decisions (4.7 out of 5), followed by protecting water resources (4.5/5, environmental sustainability) (Figure 29). The sustainability goals least aligned with farm management decision-making were creating and maintaining steady sales channels (3.9/5, economic sustainability), followed by maintaining biodiversity (4.0/5, environmental sustainability), but even these were scored as influential by a majority of respondents.

Figure 29: Extent to which farm management decisions aim at achieving different sustainability outcomes (scale 1-5) by all farms



Unweighted no. of observation: Maintaining biodiversity 549, Maintaining or improving soil quality 548, Protecting water sources 551, Supporting animal welfare 521, Maintaining or increasing profits 561, Creating and maintaining steady sale channels 540, Minimising financial risks 558.

Table 21 and Table 22 present the level of adoption by farm managers of two specific strategies widely suggested to assist in improving and maintaining farm-level environmental sustainability: a) calculating a farm's carbon footprint to assist in seeking low(er) level greenhouse gas emissions; and b) performing regular soil tests to assist in efficient nutrient management, reducing risks of run-off or leaching into surface and ground waters.

Table 21: Frequency of monitoring farm carbon footprint by farm type

	Livestock	Crop	Mixed	All sample
No	61%	82%	58%	67%
Yes, using an on-line calculator or tool (e.g. Farm Carbon Calculator)	9%	7%	9%	8%
Yes, working with a consultant or external company	31%	11%	26%	24%
Yes, using internal staff / expertise	5%	4%	7%	5%
Other	1%	1%	2%	1%

Unweighted no. of observations 477 – Livestock 288, Crop 132, Mixed 57.

Table 22: Frequency of monitoring farm carbon footprint by farm size

	Small	Medium	Large	All sample
No	92%	82%	57%	67%
Yes, using an on-line calculator or tool (e.g. Farm Carbon Calculator)	0%	4%	11%	8%
Yes, working with a consultant or external company	2%	12%	33%	24%
Yes, using internal staff / expertise	4%	3%	6%	5%
Other	2%	1%	1%	1%

Unweighted no. of observations 488 - Small 49, Medium 130, Large 309.

Most farms across all our survey farm types do not calculate their carbon footprint (Table 21); however, higher levels of adoption are evident among livestock and mixed farms when they do this via working with external advisory services (31% and 26% respectively). This is an expected result given the nature of such farms and their probable regulatory compliance requirements or concerns regarding livestock emissions. The results are similar across all farm sizes (Table 22). The majority of farms (67%) do not calculate their carbon footprint. However, rates of adoption increase with farm size, especially for those working with external advisory services (33% for large, compared to 2% for small and 12% for medium-sized farms). These findings highlight the key role that advisers can play in promoting these kinds of approach and suggests that the use of external advisors or consultants is rare among smaller farms.

According to Table 23, 90% of livestock and 97% of mixed farms monitor their soil quality. The majority of livestock farms in the sample do so once every five years (40%), while for mixed farms there is a more even distribution between soil testing every five years, every two years or every year (22%, 37% and 37% respectively). A slightly lower, yet still high percentage of crop farms (83%), monitor their soil quality and 29% of them do so every five years.

Table 23: Frequency of monitoring soil testing by farm type

	Livestock	Crop	Mixed
Never	10%	17%	3%
Once every 5 years	40%	29%	22%
Once every 2 years	23%	26%	37%
Once every year	26%	24%	37%
More than once a year	1%	4%	2%

Unweighted no. of observations 553 – Livestock 338, Crop 150, Mixed 65.

Table 24 shows that, in total, 88% of all farms monitor their soil quality at various intervals. However, adoption of this strategy varies by size, with 69% of small farms never doing so. By contrast, 89% of medium-sized farms monitor soil quality, 47% doing so once every five years. Almost all large farms monitor their soil quality (97%), with 33% performing a soil test every five years and another 33% doing so once a year.

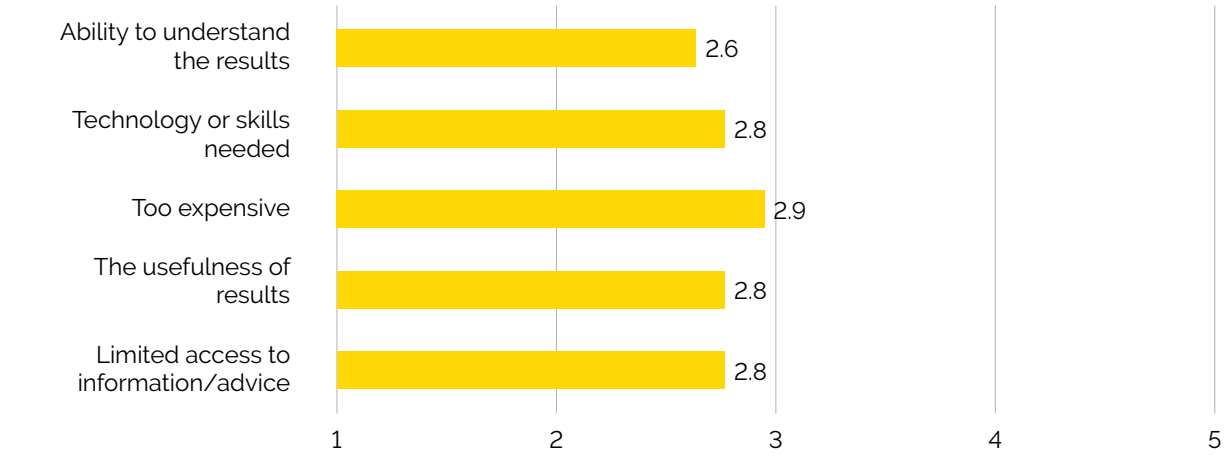
Table 24: Frequency of monitoring soil testing by farm size

	Small	Medium	Large	All sample
Never	69%	11%	3%	12%
Once every 5 years	15%	47%	32%	34%
Once every 2 years	7%	24%	29%	26%
Once every year	9%	16%	33%	26%
More than once a year	0%	3%	3%	2%

Unweighted no. of observations 566 - Small 55, Medium 157, Large 354.

The main barriers and drivers for the inclusion or exclusion of the carbon footprint and soil testing strategies in farm management planning are examined in Figure 30 and Figure 31 respectively. Participants were asked to evaluate (on a scale 1-5) a number of statements illustrating most commonly-reported barriers and drivers for adoption of these innovations (Micha et al., 2020). The most frequently mentioned barrier is the cost of implementation (2.9/5), while the barrier with least perceived impact was limited ability to understand the results (2.6/5) (Figure 30). Having the required skills, doubting the usefulness of the results and limitations in getting information and advice all had an equal impact (2.8/5).

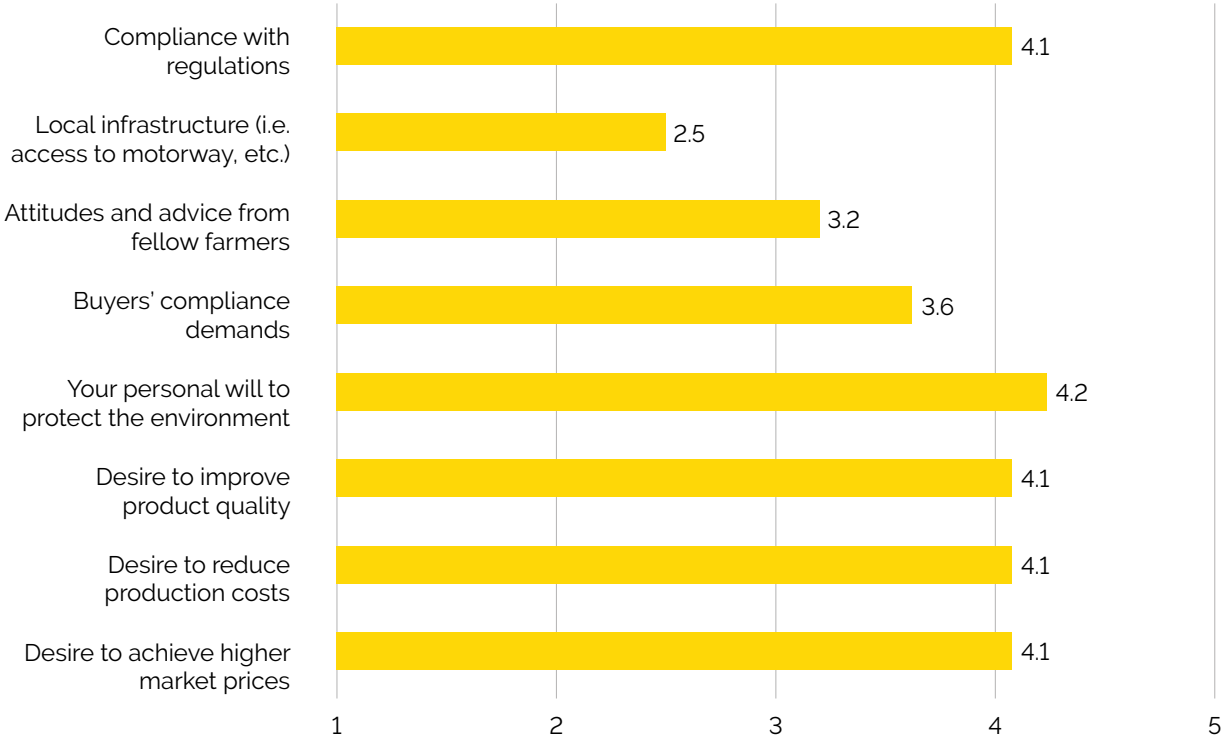
Figure 30: Extent to which each of the following is a barrier to measuring your carbon footprint or monitoring the quality of the soil on your farm (scale 1-5) by all farms



Unweighted no. of observation: Ability to understand the results 549, Technology or skills needed 546, Too expensive 531, The usefulness of results 546, Limited access to information/advice 555.

Figure 31 shows responses to the most common drivers for adopting either strategy. Respondents' personal wish to protect the environment was the most influential, scoring 4.2/5, and the driver with the least influence was local infrastructure (2.5/5), followed by the attitudes and beliefs of other farmers (3.2/5) and buyers' compliance demands (3.6/5). However, a group of drivers all related to business performance also scored highly: improving product quality, reducing costs and achieving higher market prices, as well as meeting regulatory requirements.

Figure 31: Extent to which each of the following is a driver to measuring your carbon footprint or monitoring the quality of the soil on your farm (scale 1-5) by all farms



Unweighted no. of observation: Compliance with regulations 580, Local infrastructure (i.e. access to motorway, etc.) 551, Attitudes and advice from fellow farmers 578, Buyers' compliance demands 559, Your personal will to protect the environment 581, Desire to improve product quality 581, Desire to reduce production costs 577, Desire to achieve higher market prices 575.

8. Conclusions

These survey findings present a picture of a sector of the rural economy which is particularly challenged by **current economic conditions**, but with farmers generally seeking to be **proactive in response**.

The evidence highlights the negative economic conditions faced by farms across the country and in many types of production, arising from a combination of substantially increased input and energy costs that have created cashflow challenges as well as affecting incomes. Policy change – most notably, the reduction in public support payments in the form of basic income support (BPS) that is being gradually withdrawn from agriculture in England over the period 2020-2027, as part of the government's 'Agriculture Transition Plan' – is also a factor. Overall, farming is in a more challenging position than reported for most other rural business sectors, in respect of current incomes and growth trends. The contrast with our SORE 2021 (see NICRE 2022) report findings is marked: at that time, it was clear that farms suffered relatively less from the negative economic impacts of the Covid pandemic, than other rural firms.

The 2023 survey has been able to explore how farms are responding to various drivers for transition, in respect of decision-making around selling their produce and the extent to which they are considering potential routes to higher added-value options, as well as the level of awareness and adoption of a range of 'green business' ideas and practices, in line with the sustainability and climate transition. Both these topics can be seen as indicators of potential business resilience, in current and future contexts. We observe some key barriers for these green markets. In relation to net zero, most farms across all farm types do not calculate their carbon footprint, for example, with a major challenge ahead across all farm types and sizes to encourage greater uptake of this practice. A significant proportion of respondents cited infrastructures as critical barriers. Farm business assessment of market opportunities varies by type, size and regional context. Smaller farms not interested in increasing farm sales via direct or local marketing channels, for example, highlighted labour and digital infrastructure as key barriers, compared to medium and large farm enterprises that highlighted a skills and knowledge gap. This supports wider calls for the need to target farm business engagement and knowledge exchange to reflect differences, institutional and cultural lock-ins and supply chain dynamics.

Considering these resilience issues, and despite noting some potentially significant barriers, our survey results overall are generally encouraging. They suggest that a larger than anticipated number of farms, and especially farms in sectors which have not previously done so, are thinking positively about opportunities to shorten their supply chains and sell more produce direct. At the same time, a significant minority of farms are monitoring the carbon footprint of the business, and the great majority are testing their soils on a regular basis, for a mix of both environmental and business performance reasons. There are also some signs of reduced chemical input usage compared to the situation in the previous year, but this may arise as much due to fluctuations in external conditions as to any environmental motivations on the part of people managing the farm.

Finally, in comparing our sample of farms to other sources of information on farming in the UK, we note a significant contrast in respect of how the sector is generally portrayed. The biggest difference in our sample's characteristics, compared to standard reference data such as in the UK farm structures survey, relates to the key role of women in farm management decision-making. We find that almost half the farm businesses are managed as much or more by women as by men. By contrast, the Farm Structure survey asks only for the sex of the principal farmer, on which basis it records that women only make up 12% of the UK's farmers. This significant difference would suggest that it could be time for the UK Farm Structure survey to reconsider how it tracks issues of gender equality in farming, since it would appear that the current approach is significantly under-recording the important influence of women upon farm management, in contemporary agriculture in England.

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Appendix A: Farm survey methodology and data analysis

The population of interest to NICRE is the rural business community, including both for-profit and not-for-profit private sector enterprises employing at least one person. The farm survey was designed to understand the cost of doing business in 2023 and farming practices related to key inputs, climate readiness and marketing channels to inform government policy to support farm businesses. The survey was completed by a person responsible for the operation of the farm. Participation in the survey was voluntary and the target sample was randomly selected from a list purchased from a commercial sampling provider. The survey was conducted between May and August 2023 by an independent market research agency on behalf of NICRE research teams at the Universities of Warwick, Newcastle and Gloucestershire respectively. The survey took approximately 15 to 20 minutes to complete and was carried out using Computer Assisted Telephone Interviewing (CATI), which is widely used to access key individuals within a business to obtain high quality data.

A total of 586 farms were surveyed in three regions of England: 186 farms in the NE, 201 farms in the SW and 200 farms in the WM. An overview of the farm sample is given in Table 1 in the main report, including a breakdown by farm size, type and the number of employees. The sample and analysis in the main report distinguishes between three farm types: livestock, crop and mixed. Comparisons between farms located in the three different regions and for the sample overall are also provided. Farms are also analysed where appropriate according to their size: small (less than 20 ha), medium (20 ha to 100 ha) and large (more than 100 ha), as well as the whole sample. Depending on the nature of the variable in question, analysis in the main report presents the results either as a percentage of the sample that responded, as an average, or as an approximate input rate (in pounds, kilograms per hectare, and tonnes and pounds per hectare). There is a corresponding number of observations for each response to the survey questions.

For the purposes of this report, analysis of current farm business characteristics are presented, including the distribution of land use on the farms in the three regions, the farming practices used by the farms in the sample, and the extent to which the farms are managed by women. Analysis then compares the performance of farms and non-farm rural businesses in 2023 compared with the previous 12 months, including: changes in their use of labour; changes in farm business income; increasing costs to farm business cash flow; goods or services purchased or imported from outside the UK; changes in administrative and paperwork costs associated with imports over the past year; and exports of goods or services from outside the UK. The analysis also includes the farm businesses' turnover from agricultural and non-agricultural activities and the amount of government subsidies received during the last 12 months. Current farm sales to different marketing channels, including approximate shares of sales by distance from farm and willingness to increase or not increase direct/local sales, provide valuable data on the balance of marketing channels and value-added potential. As an example of a potential route to increased market returns, more detailed survey responses on the barriers and opportunities to increasing direct sales are then reported. There is then assessments of fertiliser and energy use on farms and sustainability motivations and technology adoption practices for climate readiness: carbon footprints and soil testing.

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Contact:
Enquiries about the content of, or issues raised by the report, should be addressed in the first instance to nicre@newcastle.ac.uk

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For further information about NICRE:

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National Innovation Centre for Rural Enterprise
Newcastle University
The Catalyst
3 Science Square
Newcastle Helix
Newcastle, NE4 5TG

Founding research partners:

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