# UK farmer & grower research priorities

## Full report

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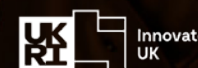
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## Funders



## Coordinators



## Workshop hosts



## Commissioning group

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# Executive summary

Farmers and growers in the UK are facing rapid changes in policy and trade on top of the emerging pressures relating to climate, nature and public health. There is a need for strategic engagement to ensure that their needs influence UK research and innovation priorities. To address this gap, a group of farming and research organisations have collaborated to understand research and innovation priorities for farmers and growers across the UK.

Insights were gathered from 92 farmers and growers, representing all major agricultural sectors across a wide diversity of farming systems, at 12 semi-structured workshops. There are also insights from businesses upstream and downstream of agriculture, as well as from environmental and other organisations that influence the industry's direction.

## What we found:

- The overarching themes highlighted by farmers and growers in a previous process, in 2013, remain topical today.

- The specific priorities within those themes, however, have shifted, particularly with respect to precision agriculture, and training and communications.

- The most common priorities were around 'how' research and farming is done, rather than 'what' it does, with adoption, farmer-led research, and future skills mentioned most often.

- The farmers and growers we spoke with are interested in sustainable agriculture, including regenerative farming. In particular, they are interested in understanding socio-economic barriers to sustainable practices and the value of environmentally sustainable farming.

- Farmers also raised challenges associated with adapting to new regulations, climate change and public perception.

- Agricultural research conducted by universities has limited overlap with the priorities highlighted by farmers and growers.

## What this means:

The differences that this project highlights between the priorities of farmers and growers, and those of researchers and funders, imply there is potential to:

- **Engage** farmers and growers more in innovation that reaches beyond the farm gate, relating to nutrition, waste and circularity, food systems and supply chain development.

- **Involve** farmers and growers more in the development, design and delivery of research, enabling dialogue about priorities in the shorter and longer term, and enhancing the practical relevance of research.

- **Integrate** the social sciences through greater emphasis on interdisciplinary research, given how focused farmers and growers are on questions of adoption, accessibility and impact.

# 1.0  Background and rationale

The agricultural industry is grappling with changes in policy and trade, heightened volatility, and climate, nature and public health crises. Research and innovation are important to help understand these challenges and find ways to address them. To make the most of the effort and money that research funders and providers are investing, they need to understand the industry's priorities on the ground. Most have established relationships with agri-tech, input, food processing and retail businesses, partnering with start-ups or larger businesses that are active in research. While many also work closely with farmers and growers, there is no routine strategic engagement to ensure their needs shape UK research priorities.

A diverse group of farming and research organisations have collaborated to address this gap. The aim was to understand research and innovation priorities for farmers and growers across the UK. Insights were gathered from across these organisations' networks, and other farmer and grower groups were invited to take part. Views have been collated and analysed from a range of agricultural sectors, across a wide diversity of farming systems.

The project looked to gather input from farmers and growers as people with practical experience in their sector. It builds on previous findings outlined in a collaborative report 10 years ago by the National Farmers Union (NFU), the Agricultural and Horticultural Development Board (AHDB) and the Agricultural Industries Confederation (AIC). That report, Feeding the Future,[1] was updated in 2017.[2] These reports had informed government research and innovation funding, principally the UK Agri-Tech Strategy[3] and the Transforming Food Production programme.[4]

# 2.0  Method

## 2.1 Recruitment

Participating organisations were provided with invitations to circulate with their farmer and grower networks, and encouraged to adapt these where appropriate (Figure 1).

The organisations recruited participants in a range of ways. Some circulated the invitation via email to their networks and sent calendar invitations for the appropriate workshop. Others created online booking systems (Eventbrite). Some workshops took place during pre-scheduled meetings where organisations were meeting farmers and growers routinely.

*Figure 1: The invitation shared by partner organisations during the workshop recruitment process.*
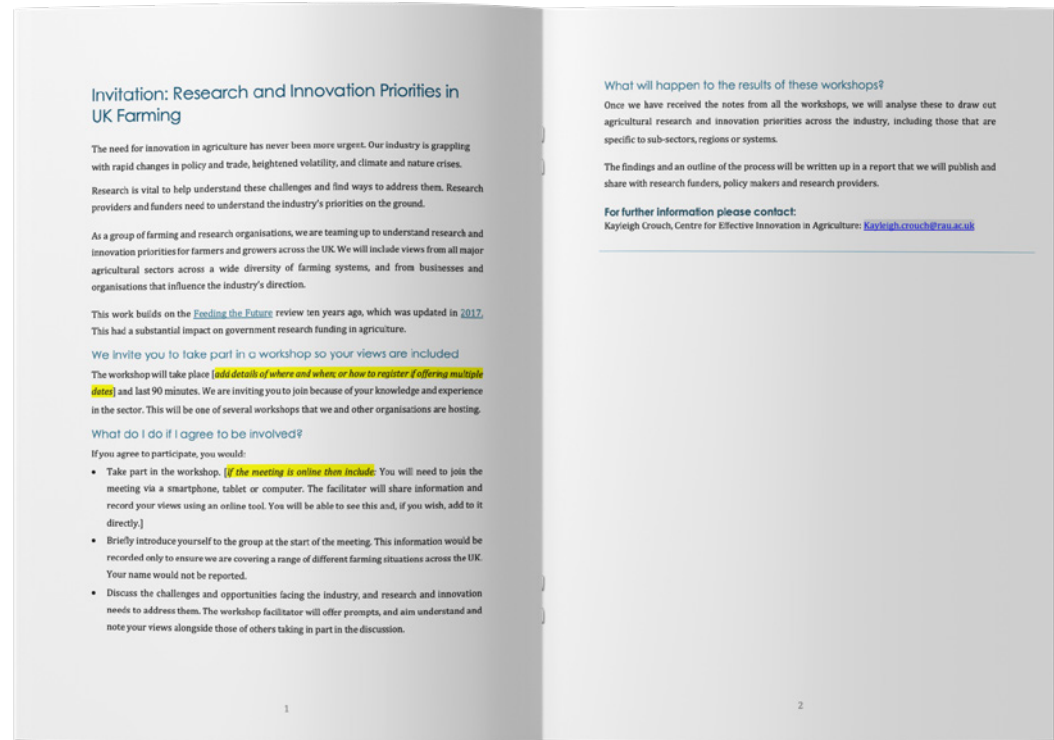
## 2.2 Participants

12 workshops were conducted by 7 partner organisations with their own farmer and grower networks. A total of 92 farmers and growers engaged with these workshops, reflecting a wide diversity of enterprises, scale and farming systems (Table 1). A total of 25 industry experts also participated in these workshops, mostly scientific advisors for their specialism and/or staff based at the organisations that convened the workshops.

*Table 1: Workshop participants.*

| Workshop sector(s) | Number of workshops | Farmers and Growers (n=92) | Industry experts (n=25) | Host organisation | Enterprises represented |
|---|---|---|---|---|---|
| **Crops & arable** | 1 | 5 | | Agri-Tech Centre | Mixed organic farming, mixed farming. |
| **Horticulture & viticulture** | 1 | 6 | | Agri-Tech Centre | Vegetables, soft fruit, viticulture, potatoes, fruit, ornamental horticulture, environmental horticulture. |
| **Horticulture** | 1 | 8 | 2 | National Farmers' Union | Combinable crops, potatoes, horticulture, mixed horticulture, brassicas, root vegetables, outdoor salads, livestock. Plant health advisors. |
| **Livestock** | 1 | 2 | | Agri-Tech Centre | Poultry, arable, regenerative farming. |

| | | | | | |
|---|---|---|---|---|---|
| **beef, sheep and dairy** | 1 | 9 | 2 | National Farmers' Union | Grassland, SSSI, dairy, sheep, arable, cheese production, dairy, arable, carrots, bio recycling. |
| **Beef & Dairy** | 1 | 10 | 4 | Innovative Farmers | Suckler herd, sheep, beef, dairy, organic beef, arable and regenerative farming, PFLA, organic dairy, agronomist, farm advisor, curriculum leader for agriculture. |
| **Mixed Farming** | 5 | 6 | | Agri-Tech Centre | Arable, grass, fruit, woodland, sheep, cattle, agroforestry, market garden, mixed farming. |
| | | 9 | 7 | Landworkers' Alliance | Market gardening, dairy, fruit & veg rare types, goat dairy and meat, organic mixed farming, growing and composting agronomy and farmers markets. |
| | | 3 | | Innovation for Agriculture | Wheat, AB15, AB9, beef, sheep, biogas, red deer, calf rearing, cereals, kale. |
| | | 15 | 2 | National Farmers' Union Cymru | Livestock, grass, forage, soils. |
| | | 12 | 6 | Agricultural Industries Council | Mixed sectors workshop. |
| **Combinable crops & sugar** | 1 | 7 | 2 | National Farmers' Union | Combinable crops, sugar beet, dairy, potatoes and vegetables/ combinable crops advisors. |
| **Totals** | **12** | **92** | **25** | **7** | |

## 2.3 Workshops

A facilitation guide was circulated to host organisations. This comprised practical information on how to use the information-gathering platform (Miro Visual Workspace for Innovation, 2023), and how to navigate the boards designed for these workshops. Each organisation was sent a bespoke link for their workshop. The facilitation guide also contained a topic guide, to provide prompts for facilitating discussion and ensuring that the research questions were addressed. Prior to the workshops taking place, organisers were encouraged to pre-populate the Miro boards with known challenges and opportunities, and research and innovation needs. These were to be based on their own knowledge as industry experts and their understanding of the recent work and thinking within their networks. Full details of the workshop flow and data analysis can be found in the Appendices.

# 3.0  Research priorities

## 3.1 Farmer and grower challenges and research needs

Across the 12 workshops, farmers proposed 797 challenges and needs. There was a predominant focus on how research and farming are done (shown by the turquoise bars in Figure 2), particularly in relation to adoption, farmer-led innovation and future skills. These were then followed by challenges and needs relating to disease detection, nutrient management, breeding and digital tools. Soil health and regenerative farming then appeared closely after. Full details of the project findings can be explored interactively here.[5]

*Figure 2: Thematic analysis of challenges and needs proposed by farmers and growers.*
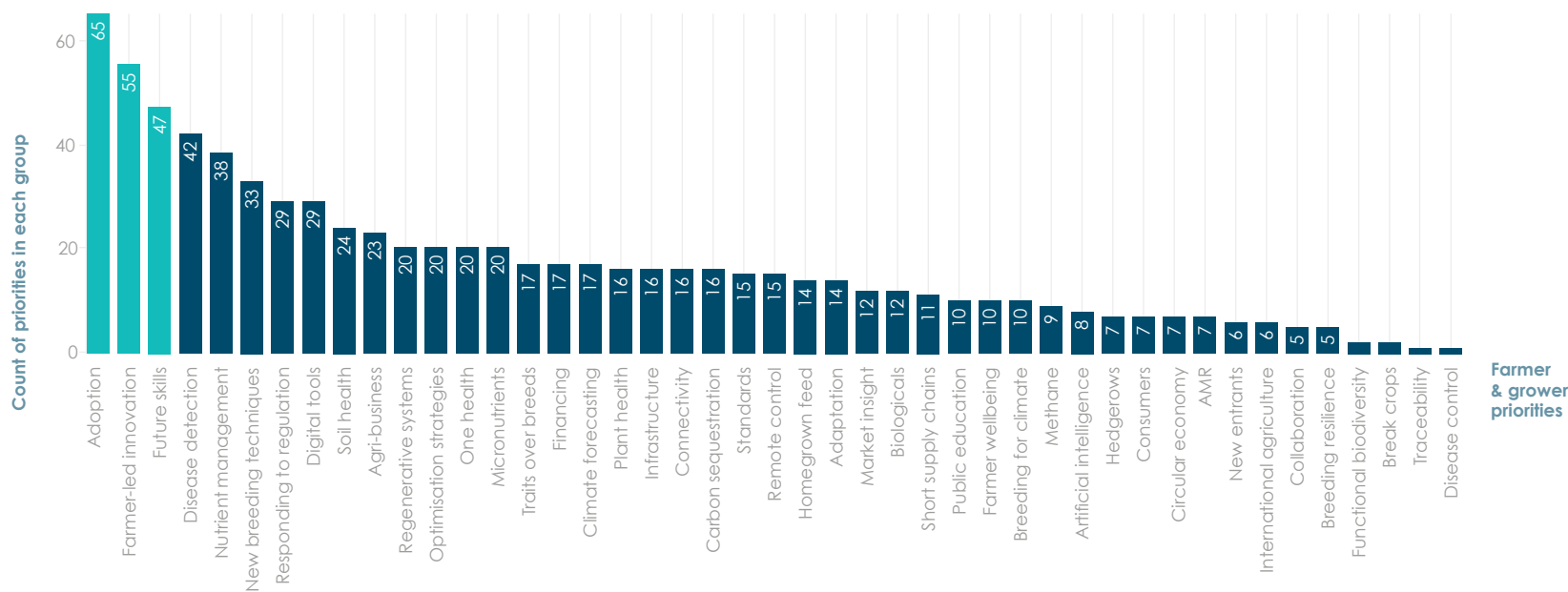
## 3.2 Farmer and grower priorities 10 years on

The farmer and grower research priorities were compared with the broad themes outlined in the 2013 *Feeding the Future* report, to explore if and how their priorities had evolved over the last decade. The challenges and needs outlined by farmers fitted readily within the major themes identified in 2013 (Figure 3). The most persistent themes relate to agricultural systems, social science, and training and communications. There was less focus on animal health in the current round of workshops than there had been in 2013, despite significant involvement by livestock farmers.

While the overarching themes remained largely consistent, the emphasis within them had evolved. Table 2 shows which issues remained in focus, which were no longer raised as priorities, and what new aspects had come to the fore 10 years on.

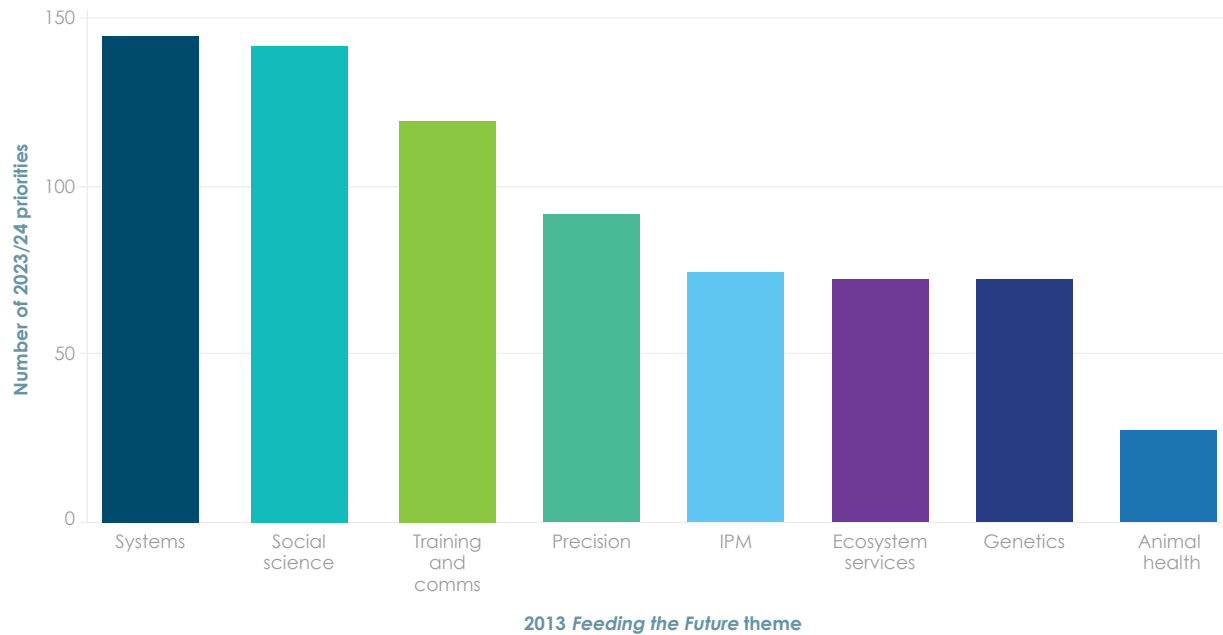*Figure 3: Farmer and grower priorities by 2013 theme.*

*Table 2: Evolving priorities between 2013 and 2023/24 by theme outlined in figure 3.*

| Theme | Theme description | 2013 | 2023/24 |
|---|---|---|---|
| **Systems** | Use systems-based approaches to better understand and manage interactions between soil, water and crop/ animal processes. | Soil health, Nutrient management and Homegrown feed | |
| | | | Regenerative systems, Carbon sequestration, Nutrients and Methane |
| **Social science** | Improve the use of social and economic science to promote the development, uptake and use of sustainable, resilient and profitable agricultural practice that can deliver affordable, safe and high-quality products. | Knowledge exchange | |
| | | Adoption and Optimisation strategies | |
| | | | Financing, Market insight, Adaptation and Consumers |
| **Training & comms** | Extend the training, professional development and communication channels of researchers, practitioners and advisors to promote delivery of the targets above. | CPD | |
| | | Knowledge exchange and Future skills | |
| | | | Farmer-led innovation and Farmer wellbeing |
| **Precision** | Use of modern technologies to improve the precision and efficiency of key agricultural management practices. | Infrastructure and Nutrient management | |
| | | Interoperability, Remote control and Digital tools | |
| | | | Climate & weather forecasting, Artificial intelligence, Collaboration and Traceability |

| | | Breeding resilience and Responding to regulation | |
|---|---|---|---|
| **IPM** | Develop integrated approaches to the effective management of crop weeds, pests and diseases within farming systems. | | Disease detection, Biologicals, Plant health, and Adaptation |
| **Ecosystem services** | Develop evidence-based approaches to valuing ecosystem service delivery by land users, and incorporate these approaches into effective decision-support systems at the enterprise or grouped enterprise level. | Functional biodiversity, Digital tools, Circular economy and Optimisation strategies | |
| | | | Adaptation and Agri-business |
| **Genetics** | Apply modern genetic and breeding approaches to improve the quality, sustainability, resilience and yield-led profitability of crops and farm animals. | New breeding techniques, Breeding for climate change and Traits over breeds | |
| | | | One health |
| **Animal health** | Develop integrated approaches to the management of animal disease within farming systems. | Disease control and One health | |
| | | | Functional biodiversity, Consumers, AMR, Disease detection and Infrastructure |

## 3.3 Comparison with the researchers' priorities

How do farmers' and growers' priorities compare with a strategic perspective from the research community? The priorities suggested by farmers and growers were compared with those identified by researchers involved in the Agri-Food for Net Zero Network+ (AFN+), which is "exploring pathways for a variety of scenarios to reach net zero through a sustainable UK agri-food system, bringing benefits for livelihoods, biodiversity and ecosystems.".[6]
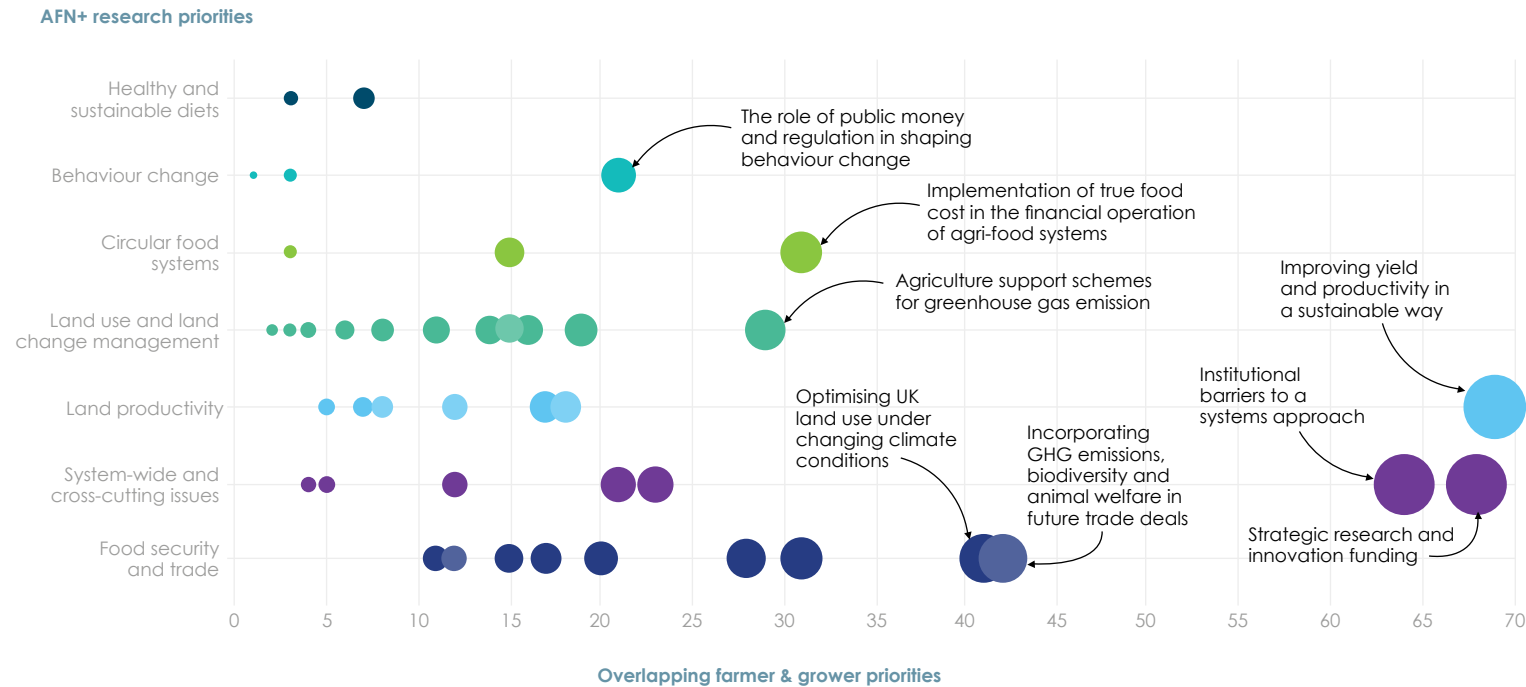
Famer and grower priorities most commonly aligned with four main AFN+ themes, as shown in Figure 4, which maps the needs and challenges of farmers and growers against the closest-fitting priority within the AFN+ themes. The most aligned themes were:

- Food security and trade, particularly optimising UK land use under changing climate conditions and ensuring that reduced greenhouse gas emissions, biodiversity and animal welfare are considered within future trade deals.

- System-wide and cross cutting issues, particularly strategic research and innovation funding, and understanding institutional barriers to a systems-based approach.

- Land productivity and land use change management, particularly policies for more effectively managing land for carbon sequestration, reconciling demands for net zero and environmental services.

In contrast, three themes were seen by researchers as strategically crucial, but were less apparent priorities for farmers and growers. These included circular food systems, wider behaviour change and healthy and sustainable diets. These areas are less immediately relevant on-farm, but drivers shaping agriculture.

*Figure 4: Farmer and grower priorities by AFN+ theme.*



**AFN+ research priorities**

Healthy and sustainable diets

Behaviour change — The role of public money and regulation in shaping behaviour change

Circular food systems — Implementation of true food cost in the financial operation of agri-food systems

Land use and land change management — Agriculture support schemes for greenhouse gas emission

Improving yield and productivity in a sustainable way

Land productivity — Optimising UK land use under changing climate conditions

Institutional barriers to a systems approach

System-wide and cross-cutting issues — Incorporating GHG emissions, biodiversity and animal welfare in future trade deals

Strategic research and innovation funding

Food security and trade

**Overlapping farmer & grower priorities**

## 3.4 Comparison research funding priorities

Do farmers and growers' see the same priorities as research funders? The farmer priorities were mapped against the strategic priorities for agriculture and food security identified by the BBSRC,[7] the main funding body for agricultural research (Figure 5).

Many of the challenges and needs raised by farmers aligned with the focus areas highlighted by the BBSRC. These included:

- Sustainable agricultural systems, including the impacts of agriculture on biodiversity, soil, water and atmosphere in relation to climate change.

- Crop and farmed animal health, including strategies for managing pests and pathogens, tackling resistance with techniques underpinned by biology and developing novel management strategies for health.

- Precision agriculture and smart technologies, where farmers and growers particularly emphasised the importance of making such technologies more accessible.

There was relatively less interest from farmers and growers in genomics, which is a major focus area for BBSRC, in reducing waste, and food safety and nutrition.

Outside the scope of the BBSRC's focus areas were farmer and grower priorities concerning their direct participation in research.

*Figure 5: Farmer and grower priorities by BBSRC focus area.*
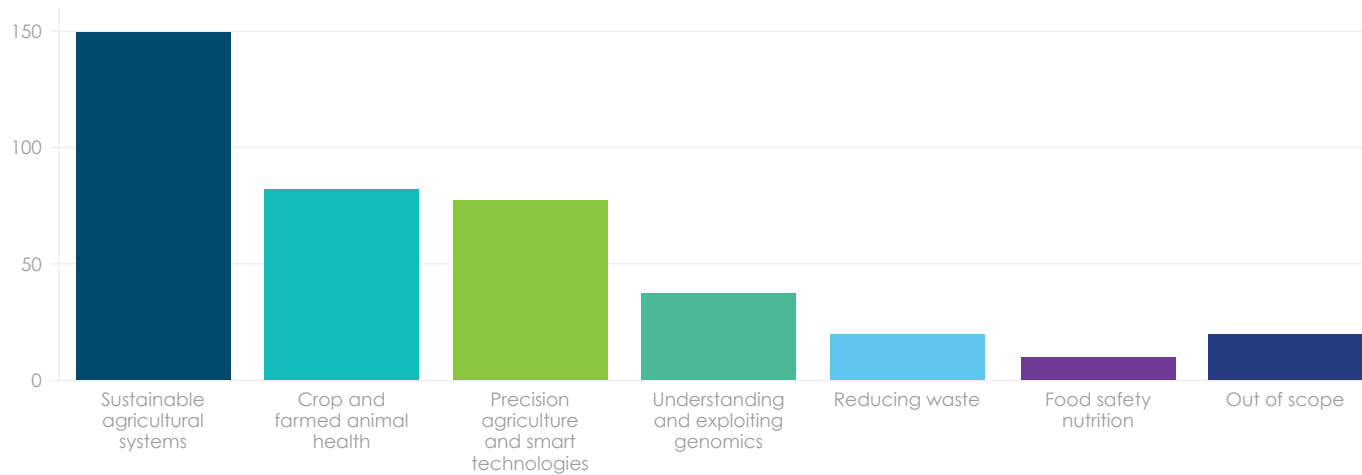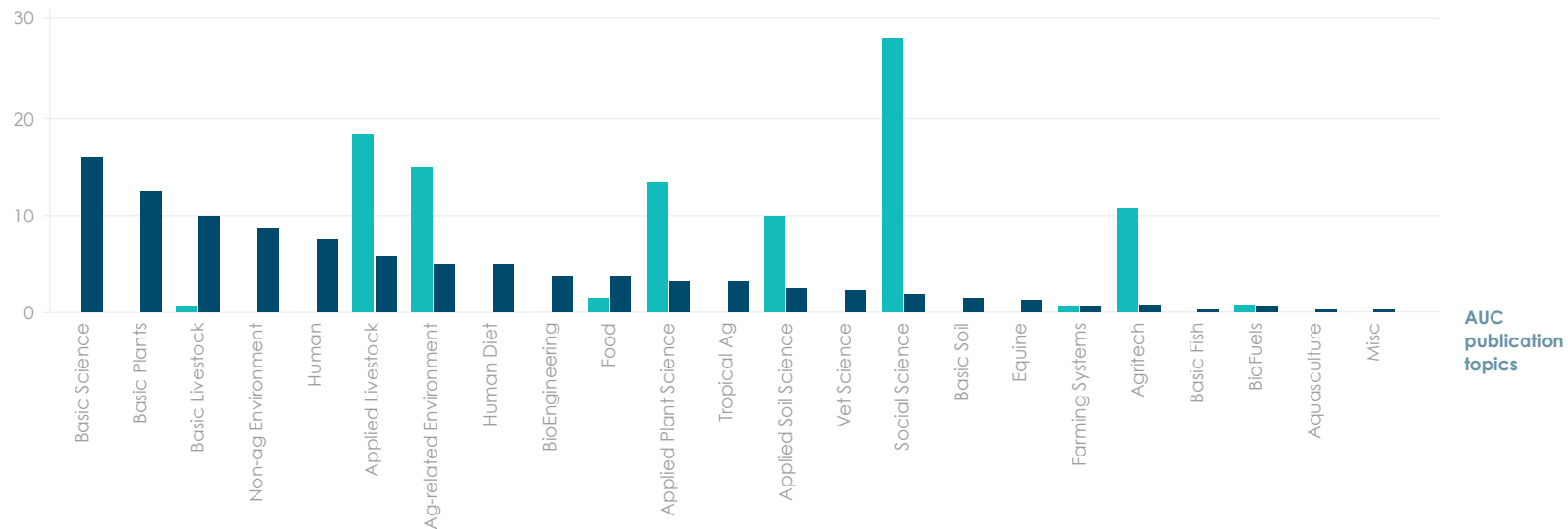
## 3.5 Comparison with research effort

As well as comparing with strategic themes identified by researchers and funders (what they say they will do), the farmers' and growers' priorities were compared with research outputs (what researchers and funders have published). A previous analysis of c.3,000 academic papers submitted to the latest Research Excellence Framework (REF) by members of the Agricultural Universities Council revealed a strong focus on basic science.[8] The applied sciences, social science and agri-tech themes that were the focus for farmers and growers were not such prominent areas of research publication (Figure 6). This contrast may be accentuated by relying on the universities' REF submissions, which would be expected to favour basic science.

Farmer and grower priorities mostly focused on near-term challenges and opportunities, to which applied research is most directly relevant. However, today's basic science can underpin future applied research. A strategic approach to agricultural science and innovation balances research that is relevant to shorter and longer-term challenges.

*Figure 6: Comparison with AUC outputs reported to the latest REF.*



**Number of farmer & grower priorities and publications**

Similarly, farmer and grower priorities were compared with 800 current AUC PhD topics, which represents a snapshot of the interests of emerging researchers (Figure 7). These fit more closely with farmers' and growers' research priorities. Farmers and growers appear to want relatively more research effort on applied soil science, agri-tech and, in particular, social science.

*Figure 7: Comparison with AUC PhD research projects.*



Farmer & grower priorities     AUC PhDs

**Number of farmer & grower priorities and PhDs**

**AUC PhD research projects**
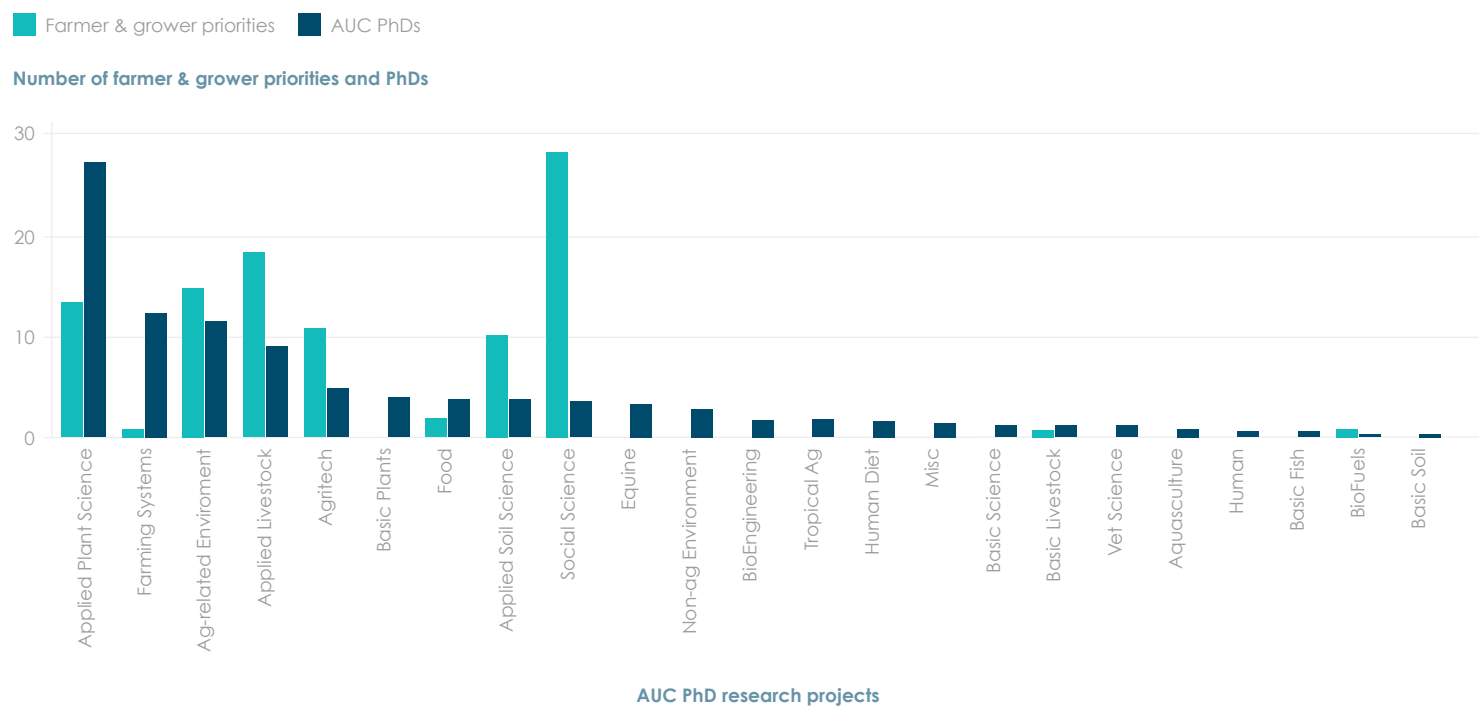
# 3.6 Regenerative agriculture

Given the prominent current interest in regenerative agriculture, the farmer and grower priorities were mapped against strategic priorities for regenerative crop and soil research identified the Organic Research Centre, NIAB and Agri-tech-E.[9] Just over half (55%) of the 797 Farmer and Grower priorities aligned with the five priority areas that their review had highlighted (Figure 8).

Farmers and growers were particularly interested in: the environmental impact of regenerative systems; developing better indicators of soil biological function; socio-economic barriers to the uptake of regenerative agriculture; breeding for disease and insect tolerance; and the impact of cover crops on pests and integrating livestock to arable regenerative systems.

*Figure 8: Comparison with regenerative crop and soil science priorities.*



**Regenerative agriculture priorities**

Overlapping farmer & grower priorities

Research priorities
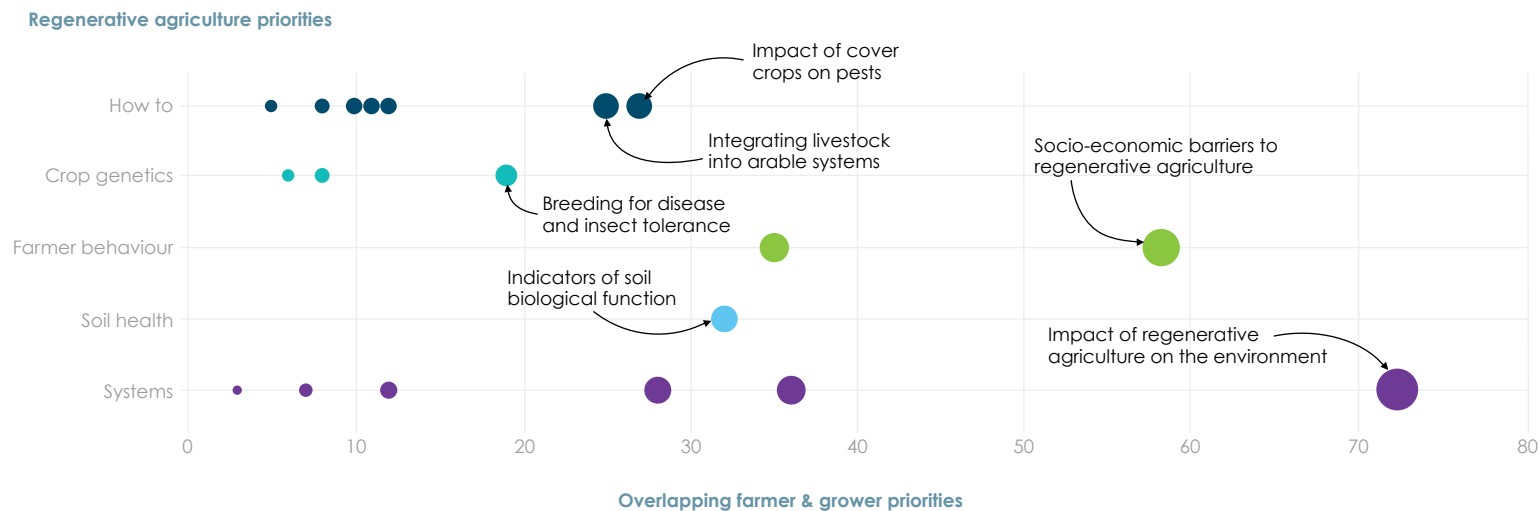
# 4.0   Conclusion

This report provides an overview of farmers' and growers' evolving research and innovation needs, highlighting issues that are of rising importance to the industry within longstanding areas of interest (Table 2).

While many of the priorities raised by the industry fall within areas that have been identified by researchers and funders as important, the differences in emphasis are noteworthy. Taken together, they suggest potential to:

- **Engage** farmers and growers more in innovation that reaches beyond the farm gate, relating to nutrition, waste and circularity, food systems and supply chain development.

- **Involve** farmers and growers more in the development, design and delivery of research, enabling dialogue about priorities in the shorter and longer term, and enhancing the practical relevance of research.

- **Integrate** the social sciences through greater emphasis on interdisciplinary research, given how focused farmers and growers are on questions of adoption, accessibility and impact.

# Appendices

## Appendix 1: Workshop flow

**Opening the session (1)** involved a short presentation to introduce the project, and why it is important, and introducing each participant to the group. This section also included reminding participants of their right to withdraw, anonymity, and to gain consent to participate.

**Populating challenges and opportunities (2)** involved discussing key challenges faced by participants as the people who farm and grow every day (yellow sticky notes). Prompts were provided to support the facilitator to encourage discussion and a second person was recording these directly onto the Miro board. Prompts for this stage included: *'On a day-to-day basis what are your main challenges or concerns which influence your farming/ growing practices? What do you see as the big issues on the horizon? Do you think your business model or way of farming/growing will face any systematic/fundamental challenges in the foreseeable future? Are these shared challenges for your sector or specific to your business? What do you see as the biggest shared challenges?'*

**Organising challenges and opportunities into an approximate timeframe and level of priority (3)** to reflect when these challenges might be most prominent. The newly populated sticky notes (yellow sticky notes), together with the pre-populated sticky notes (blue sticky notes) under the heading 'challenges and opportunities' were to be considered in the context of time and priority. The following prompts were provided to support the workshop facilitator: *'How important is this [challenge or opportunity] to ensure that you can continue to farm successfully? Is this challenge like going to impact your practices/business or sector? Does this [challenge or opportunity] need to be considered in the next 0-5, 6-10 or 11-20 years? Is this challenge going to be pressing within the next 0-5 or 6-10 years or is it likely to become more of a challenge in the next 11-20 years?'*

**Populating research and innovation needs (4)** that reflect the views of participants was the next stage (green sticky notes). Similarly, to phase 2, the following prompts were provided in the context of addressing the previously discussed challenges and opportunities: 'What research is required to help tackle these challenges? What areas do you feel would benefit most from better understanding? What support is needed to ensure that your farming enterprise/sector continues successfully and sustainably? Besides any incremental improvements and efficiencies, is there anywhere you see a need for more systemic changes in your business or sector? What areas of research do you feel would be beneficial to the industry/sector?'

**Organising research and innovation priorities into an approximate timeframe and level of importance (5).**
The newly populated sticky notes (green sticky notes), together with the pre-populated sticky notes (pink sticky notes) under the heading 'research and innovation priorities' were to be considered in the context of time and priority. The following prompts were provided: 'How important is this [research and innovation priority] to ensure that you can continue to farm successfully? Is this research likely going to impact your practices or sector? Does this [challenge or opportunity] need to be considered in the next 0-5, 6-10 or 11-20 years? Is this research need going to be pressing within the next 0-5 or 6-10 years or is it likely to become more of a challenge in the next 11-20 years?'

**Closing the session (6)** involved sense checking the final table to ensure it fully reflected the views of the participants. Sticky notes that spanned across multiple cells were duplicated in each one for analysis purposes, ensuring that they were captured across the correct timeframes and priorities. Finally, facilitators provided an opportunity for any other contributions that were not captured in the workshop so far and these were added to the Miro board.

# Appendix 2: Data analysis

Thematic analysis is a research method used to identify, analyse and report patterns within data. Literature has identified that the use of AI (ChatGPT) can be a beneficial addition to this analysis methodology by providing AI-driven analysis to text data (Zhang et al., 2023).[10] However, in order for AI to analyse text data in this way effectively, clear research questions should be presented before the data. As such, the following, specific research questions were developed.

Defining specific research questions:

- What are key challenges faced by farmers and growers in UK agriculture?
- What level of priority is attributed to these challenges by farmers and growers and over what timeframe are they expected to arise?
- What are the key research and innovation priorities needed to address these challenges?
- What level of priority should be given to these research and innovation priorities and over what time frame should they be addressed?

Zhang et al, (2023) also noted the importance of effective prompting when using AI assisted thematic analysis. Zamfirescu-Pereira et al, (2023)[11] reported failed commands when using multiple prompts in AI to extract key themes and subthemes within datasets. As such, it is recommended that multiple prompts are merged into one comprehensive prompt detailing specifically what is needed from the data.[12] For example, three individual prompts such as:

- (1)"Help me perform qualitative analysis on the provided data and identify appropriate themes", target prompt
- (2) "Process feedback from each interviewee individually", and target prompt
- (3) "Categorize feedback from the interviewees based on common themes',
- May instead be merged into one more comprehensive prompt: **"Help me perform qualitative analysis on the provided data on a per-interviewee basis, identify appropriate themes, and merge Redefining Qualitative Analysis in the AI Era: Utilising ChatGPT for Efficient Thematic Analysis."**

A similar approach was therefore employed for the current workshop data sets as follows.

**Context:** Multiple workshops with farmers and growers from [sector] enterprises met to discuss the challenges and opportunities and research and innovation priorities for farmers and growers in UK agriculture. These workshops will contribute to research strategies and research funding priorities in future work. The following data were listed as areas which need consideration in the next [0-5, 6-10, 11-20] years.

**Instruction [merged prompt]:** Help me perform qualitative, inductive, thematic analysis on the provided data by each workshop, identify appropriate themes derived from within the data, in the following categories: high priority challenges and opportunities (1), high priority research and innovation needs (2), low priorities challenges and opportunities (3), low priority research and innovation needs (4). Under each of those headings, please provide summarized themes and subthemes that are discussed across all workshops.

Please merge the data from all workshops to provide an overall summary of these themes. I would like one output (not summaries of two workshops) which covers high priority challenges and opportunities (1), high priority research and innovation needs (2), low priorities challenges and opportunities (3), low priority research and innovation needs (4) identified from all workshops.

Text input: Data from each workshop was clearly labelled so that GPT could identify individual workshops and bring together the cross-cutting themes from each.

*Table 3: An example of the data input table*

| | | 0-5 years | 6-10 years | 11-20 years |
|---|---|---|---|---|
| **High Priority** | **Challenges & opportunities** | Data | Data | Data |
| | **Research & innovation needs** | Data | Data | Data |
| **Low Priority** | **Challenges & opportunities** | Data | Data | Data |
| | **Research & innovation needs** | Data | Data | Data |

*Note: All data was input to ChatGPT in a list format with the categories shown below at the start of each section. Where the input was too long, analysis was run on a cell by cell basis, e.g. High priority challenges.*

Outputs generated by AI were then manually coded to identify recurring themes from the data. These codes were then organised to form supporting subthemes for recurring topics. Overall themes highlighted in the results section were then identified to describe each topic group.

The specific challenges and needs raised by farmers and growers were also manually coded against the themes identified in previous reports and strategies outlined in the report.

# Appendix 3: Strengths and limitations

Overarching themes were developed to provide an accessible summary to research funders and providers. This therefore meant that more discrete challenges were not necessarily captured in the overall workshop output summary. Whilst this approach enabled the presentation of clear and succinct research and innovation priorities, further work by sector-specific organisations, or with more targeted discussion and reporting from specific sector workshops could offer an opportunity for more fruitful and actionable research needs based on farm-level concerns.

Discussion and workshop outputs were often focused on immediate challenges faced on farm at the present time, with limited consideration of long-term challenges and needs (11-20 years). It is possible that these challenges and needs are not yet perceptible to farmers, given the plethora of challenges and research needs outlined in the more immediate future. However, there was some acknowledgement within workshops that longer term research planning warrants further consideration to secure a sustainable and positive future for the agricultural industry. Further work on how to refine and focus discussion to capture more long-term discussion is warranted.

Some workshop organisers required changes to be made to the Miro Board layout to enhance usability during workshops. Those who had access to multiple screens during workshops were mostly able to navigate the board and capture the information live during the workshops. Others who were working from one screen or on a tablet required adjustments of frames to allow a full screen view of all sticky notes. This was easily adapted to meet the needs of each workshop organiser but does highlight the need to consider how best to run workshops in a more standardised way in the future.

Some organisations did not utilise the Miro board, and instead provided comprehensive summaries in a summary report format. Whilst these summaries and priorities provided a useful contribution to the overall themes identified by other workshops, they could not be clearly linked to the time frames and priority levels, which this work aimed to provide. A more standardised approach and engagement from organisations with the Miro board/or other agreed mechanisms of data capturing might be beneficial to allow for timeframes and priority levels to be attributed to farmer and grower challenges and research priorities.

# Appendix 4: Feedback from organisations convening workshops

Some workshop facilitators noted that despite using clear and accessible language, it was still challenging to identify relevant information from participants. Ordering participant thoughts, within the workshop discussion, into the framework provided, was difficult on occasions because challenges and research needs could not always be clearly attributed to discussion points. As such, further consideration of how to capture individual lived experiences, challenges and priorities may be warranted.

Connecting what participants understood to be the rationale of this work with the immediate issues faced on farm at that particular point in time was sometimes challenging. Further work on how to extract information from ongoing discussions within existing farmer and grower networks would be beneficial to fully utilise the potential of this methodological approach.

Some organisers acknowledged challenges within the industry that they are aware of, but did not surface in these workshops. It was sometimes difficult to facilitate without using leading language, yet some steering of conversation was necessary to ensure discussion remained on topic.

Participants were often keen to offer their opinions and experiences during discussion. However, given the time constraints, it was not always possible to fully delve into deeper issues, particularly when more immediate challenges took priority in discussion during these workshops.

It was noted that whilst farmers and growers understood research and development needs to happen to secure a sustainable future for the industry/sectors, they felt that funding organisations do not always recognise the pressures of daily issues. These included physical, mental and financial challenges faced by farmers and growers. As such, while there was effort to discuss long-term challenges and research needs, participants often wanted support with the more immediate constraints they face on a day-to-day basis. To tackle these challenges, farmers and growers wanted more direct knowledge sharing and active on-farm interactions with stakeholders to drive research.

# Authors and acknowledgements

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## Workshop hosts

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## Farmers

Last but not least, all the participating farmers for providing helpful insights and frank discussion about their farm businesses. Thank you to all the farmers and growers who gave up their time to participate in the workshops and for providing helpful discussion and comments.

## Funding

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**Detailed report**

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