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STRATEGIC PRIORITIES FOR AGRICULTURAL RESEARCH INFRASTRUCTURE INVESTMENT IN THE UK

IRC Report No: 083

REPORT PREPARED BY

Pattanapong Tiwasing¹

Tom MacMillan²

Kayleigh Crouch²

Yang Bong³

Amr Khafagy⁴

Kate Pressland²

Katherine Lewis²

¹University of Nottingham

²Centre of Agricultural Research Impact

³Birmingham Newman University

⁴London Metropolitan University



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The core members of the research team for this project were as follows:

- » Dr Pattanapong Tiwasing, University of Nottingham
- » Professor Tom MacMillan, Centre of Agricultural Research Impact (Ag.Impact)
- » Dr Kayleigh Crouch, Ag.Impact
- » Dr Yang Bong, Birmingham Newman University
- » Dr Amr Khafagy, London Metropolitan University
- » Dr Kate Pressland, Ag.Impact
- » Katherine Lewis, Ag.Impact

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Contact

You are also welcome to email us if you have any questions about this report or the work of the IRC generally: info@ircaucus.ac.uk

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EXECUTIVE SUMMARY

This report examines strategic priorities for agricultural research infrastructure investment in the UK. It draws on four strands of evidence: an analysis of research funding, a national directory of research infrastructure, a survey of 604 farmers, researchers and stakeholders, and qualitative evidence from interviews and expert workshops.

The UK maintains a substantial agricultural research portfolio, with approximately £1.202 billion invested across 2,131 projects between 2022 and 2026. This investment is concentrated in a small number of topics, institutions and infrastructure types.

»» **Investment does not always match stakeholder priorities.** Farmers rank profitable farming (53.5%), food security (17.8%) and resilience (5.7%) as top priorities, yet funding is weighted towards biological and production-oriented research, with much less focus on the economics and social evidence these priorities also demand.

»» **Infrastructure is organised for institutions, not for wider use.** Facilities remain tied to single sites and are rarely used outside the host institution, whereas virtual and networked resources are accessed more widely. There is strong demand for shared data systems, coordinated platforms and stronger cross-institutional collaboration.

»» **Stakeholders consistently value knowledge and skills above investment in any specific technology or facility.** While researchers identify specific facilities, repositories and networks as important infrastructure needs, they place greater emphasis on coordination, data integration and long-term workforce capacity for investment.

Based on this evidence, the report sets out four strategic investment propositions, which are developed through analysis of the survey, interviews and stakeholder workshops and are subsequently subjected to independent scrutiny through a citizen dialogue:

»» **Preserve** existing high-value infrastructure through maintenance and renewal before committing substantial investment to new capital projects.

»» **Predict** future environmental conditions by investing in specialist infrastructure capable of modelling climatic conditions beyond those represented by current trial environments.

»» **Ground** innovation in farming practice through on-farm experimentation, distributed research platforms and closer collaboration between researchers, farmers and other end users.

»» **Connect** fragmented research activity and data through stronger coordination, shared digital infrastructure, interoperable systems and AI-assisted interpretation.

These propositions should not be regarded as competing strategies or as a ranked set of priorities. Rather, they represent complementary approaches that address different strategic needs and are most appropriately applied according to the specific investment context.

1. INTRODUCTION

Agriculture plays a central role in the UK's economy and society, contributing to food security, rural livelihoods, environmental stewardship and climate resilience (Dimbleby, 2021). At the same time, the sector faces a series of interconnected challenges, including feeding a growing and changing population, adapting to climate change, achieving the UK's legally binding net zero commitments, and maintaining the long-term viability of farming businesses (Ward et al., 2025). Addressing these challenges depends not only on advances in agricultural science and technology, but also on sustained investment in the research and innovation systems that support their development and adoption.

Public investment in agricultural research has historically generated substantial economic and societal returns through advances in plant breeding, animal health, soil science and farm management (Thirtle et al., 2008; van Dijk et al., 2025). Evidence consistently demonstrates that agricultural research and development (R&D) delivers among the highest returns of any form of public investment, with estimated benefit-cost ratios commonly ranging between 10:1 and 30:1 (Heisey and Fuglie, 2007; Alston et al., 2021).

Over the past decade, the UK Government has invested an average £400 million annually in agricultural research and innovation (ONS, 2026). Recent policy initiatives, notably England's Farming Roadmap 2050 (Defra, 2026), reaffirm the strategic importance of innovation in delivering productive, sustainable and resilient agricultural systems.

The benefits of research investment depend critically on the availability and quality of the infrastructure that supports it. Research farms, laboratories, genomics and precision breeding facilities, digital platforms, environmental monitoring networks, experimental field sites, and knowledge exchange systems collectively form the foundation of the UK's agricultural research capability (UKRI, 2023). International evidence indicates that inadequate or ageing research infrastructure can constrain scientific productivity, limit collaboration, slow the adoption of emerging technologies, and ultimately reduce the impact of public investment in research (Beintema and Elliott, 2009; OECD, 2025).

In recent years, concerns have grown regarding the condition and strategic direction of UK agricultural research infrastructure. In particular, research farms are widely seen as a key infrastructure asset that is undervalued and at risk, while rapid advances in agricultural

research methods are generating new questions about the appropriate balance between investment in physical and digital infrastructure (Salihu et al., 2025). Agricultural universities have identified infrastructure investment as a priority for strengthening national research capacity (AUC, 2023).

The evidence available to inform investment in agricultural research infrastructure remains limited. Existing studies have catalogued research infrastructure and documented previous investments, primarily from the perspectives of infrastructure owners rather than users (OECD, 2010; Coyne et al., 2021). Whilst there are recent attempts to map and understand agri-tech commercialisation infrastructure (e.g. Salihu et al., 2025), there is little evidence on the research infrastructure needs of researchers, farmers and other stakeholders, or on how investment priorities differ across research disciplines and farming systems. As a result, strategic investment decisions continue to be made with limited evidence on user demand and expected societal impact.

This report addresses that evidence gap. It is part of larger project, the State of Agricultural Research & Innovation (SARI), which provides a landscape analysis of UK agricultural research.¹ SARI analyses agricultural research funding and stakeholder priorities. This report focuses on the implications for research infrastructure investment, drawing on a new taxonomy and interactive directory of agricultural research infrastructure, a national survey of researchers, farmers and other stakeholders, in-depth interviews, and expert workshops to co-develop infrastructure investment propositions. It offers an evidence base to inform future investment decisions by BBSRC, UKRI, DEFRA and other organisations involved in shaping the UK's agricultural research and innovation system.

The report is structured as follows: Section 2 sets out the project objectives and methodological approaches used to achieve them. Each methodological approach is described in the relevant subsection alongside the corresponding project objective. Section 3 presents the results of the project funding data analysis, examining the current UK agricultural research landscape. Section 4 describes the results of the infrastructure taxonomy and directory. Section 5 presents the results of the survey analysis, covering

¹ SARI is led by the Centre of Agricultural Research Impact (Ag.Impact) on behalf of a Commissioning Group comprising UK public research funders and research organisations. More information and outputs are available at <https://www.ag-impact.org/sari>.

stakeholder research priorities. Section 6 sets out the strategic investment propositions, synthesising evidence from the survey, interviews, workshops and citizen dialogue. Section 7 draws together conclusions and policy recommendations.

2. OBJECTIVES AND APPROACH

2.1 Objectives

This report addresses the strategic question: what investments in agricultural research infrastructure would achieve the greatest societal impact? It pursues this through four main objectives:

- To map the current landscape of UK agricultural research activity and funding.
- To develop a taxonomy and interactive directory of research infrastructures relevant to UK agriculture.
- To assess current and future demand for agricultural research infrastructure through a national survey of researchers, farmers and other stakeholders.
- To critically evaluate strategic investment options, and co-develop a recommended investment proposition for UK agricultural research infrastructure.

2.2 Our approaches

We employ a mixed-methods design comprising four complementary components, each aligned to the project's objectives and overall aims. The four approaches move from descriptive mapping of the current landscape, through systematic cataloguing of infrastructure assets and empirical analysis of user demand, to strategic synthesis and investment prioritisation. Each approach is described in the sections below.

2.2.1 Analysis of project funding data

To provide a foundation for understanding research infrastructure needs, this project collated evidence on publicly-funded research activity relating to agriculture. The starting point for this analysis was an enhanced version of UKRI's Gateway to Research project database, GtR+, provided by the Department for Science, Innovation and Technology (DSIT), containing 406,993 entries for 168,380 projects. Text-mining methods were used to identify projects potentially relevant to agriculture, which were supplemented with additional data from Innovate UK, Defra, other public bodies and research institutions. This combined dataset was then

successively reviewed, cleaned and coded, manually and using LLM approaches, to remove false positives and duplicates and classify projects by theme. The final dataset comprised 2,131 primarily publicly-funded research projects for the period 2022-2026.

2.2.2 Taxonomy of research infrastructures relevant to agriculture

A research infrastructure (RI) taxonomy was designed to enable the categorisation of different RI's including RI format, geography and type (Table 1). This taxonomy was designed to be practically applicable to agricultural RIs and to enable the development of an agricultural RI directory, and was informed by existing RI taxonomies. RI formats were based on those from InstructERIC (2025), geographical regions are those used in InfraPortal (2025), and RI types draw on categories used in the SCAR AKIS inventory of R&I Infrastructures (CASA, 2019), the European Commission's taxonomy of RIs (European Commission, 2025), and the ESFRI's categorisations of RIs (InstructERIC, 2025).

Table 1: SARI agricultural RI taxonomy.

Category		RI Subtypes		
Format		1. Single site: A resource at a single location 2. Distributed: Resources at multiple sites 3. Virtual: Resources provided electronically		
Geography (UK region)		1. East England 2. East Midlands 3. Greater London 4. West Midlands 5. North East England	6. North West England 7. South East England 8. South West England 9. Scotland 10. Wales	11. Northern Ireland 12. UK - National 13. International 14. Virtual
Type	Institution	1. Agricultural university 2. Applied research institute/centre 3. Experimental farm		
	Repository	1. Database: Organised collection of data generally stored and accessed electronically from a computer system. 2. Digital library: Online database of digital objects that can include text, still images, audio, video, or other digital media formats which provide the means for organising, searching and retrieving content contained in the collection. 3. Knowledge platform: A participative tool to host all existing knowledge developed by research or derived from practical experience (AHDB knowledge hub/national library agrifood). 4. Research specimen archive. 5. Living collections: A collection of living organisms utilised for study and research purposes. 6. Physical library		
	Network	1. Formal network: An organised, governed consortium of actors (e.g. institutions, labs, farms, policy organisations). 2. Hub: A physical cluster or virtual coordination of independent actors. 3. Community: A peer-to-peer network.		
	Facility	1. Laboratory 2. Static equipment (including digital platforms or software) 3. Mobile equipment 4. Long-term research experiment 5. Advisory service/training service 6. Farm trials		

2.2.3 Interactive directory of agricultural research infrastructure

Combining data from UKRI's Infraportal and the Sustainable Farm Networks project, the team created an interactive directory of infrastructure available for agricultural research in the UK (Figure 1 and available in draft online [here](#)). Data were combined into one spreadsheet and manually coded using the RI taxonomy outlined above. The interactive directory was created using Flourish Studio. The directory has 250 entries covering four main types of research infrastructure - facilities, repositories and networks, plus some of the main institutions responsible for these. While not comprehensive, it illustrates the range and broad distribution of relevant infrastructure.

2.2.4 Survey analysis

A national online survey generated evidence on current and anticipated demand for agricultural research infrastructure across the UK. The survey was conducted with support from Grounded Research, who provided a stratified sample of their farmer panel, and was also distributed through professional networks, including research institutions, farming communities and the Agricultural Universities Council (AUC). A total of 604 respondents comprise three principal groups: farmers and farm managers (52%), researchers (32%), and wider stakeholders, including industry representatives, policymakers and representatives from non-governmental organisations (16%). The survey also collected demographic and background information, including respondents' gender, age, geographical region and self-assessed understanding of agricultural research. These variables were subsequently used for subgroup analyses and as control variables in regression models.

The questionnaire is structured around three core priority-ranking questions forming a Why–What–How framework. The first question asked respondents to rank ten priorities for UK agriculture, from most to least important (the Why dimension). The second question asked respondents to rank nine agricultural research themes (the What dimension), while the third question asked respondents to rank eleven pathways for research (the How dimension). Because respondents assigned ranks rather than scores, three complementary analytical approaches were applied: Top 1, Top 3, and normalised weighted rankings. These approaches provide complementary perspectives on stakeholder priorities and are presented together throughout the report. The normalised weighted rankings were also used in OLS regression models to examine whether the observed priorities remained robust after accounting for

respondent characteristics. Full details of the weighting procedure and regression analysis are provided in Appendix 1.

2.2.5 Stakeholder investment priorities

To develop and critically evaluate strategic investment options, we combined evidence from four sources: the national survey, in-depth interviews, expert workshops, and an independent citizen dialogue process. The national survey, described in Section 2.2.3, included two open-ended questions on infrastructure: one asking respondents to describe the repository, network, or facility they expect to need most in their research over the next five years, and one asking where they think investment is most needed in UK agricultural research infrastructure overall. These free-text responses form the evidence base for the infrastructure needs and investment propositions reported in Section 6.

Alongside the survey, we conducted in-depth interviews with a diverse range of researchers and stakeholders (n=21 plus one email participant) holding strategic perspectives on UK agriculture and research, and held a series of three expert workshops, covering crops, livestock, and horticulture, to discuss the future of agricultural research and investment priorities. The interview and workshop evidence was then synthesised by the project team into four high-level investment themes, which were then the focus of the SARI citizen workshops.

The project team synthesised the evidence from the interviews and workshops into four high-level investment themes that became the focus of the SARI citizen workshops.

The citizen workshops were held to provide independent public interest perspectives on the emerging findings of SARI and the research infrastructure investment propositions. The citizen workshops were recruited and facilitated by the Food, Farming and Countryside Commission (FFCC). The participants (n=20), were drawn from a wider expression-of-interest pool of 108 people invited from the larger groups who had taken part in the previous National Food Conversation and Defra Food Strategy Citizen Advisory Council (FFCC, 2025) and were drawn from across all four nations. Two virtual citizen workshops were held over two evenings (01.06.2026 and 03.06.2026) and lasted approximately 3.5 hours each. Workshops were planned and led by FFCC, with input and support provided by our project team. They took place online via Zoom.

The open-ended survey responses on infrastructure needs and investment priorities were analysed thematically using an LLM approach. This thematic analysis was assisted by Claude AI to identify recurring themes across the free-text responses, which were then manually reviewed and refined by the project team before being finalised into the themes and propositions reported in Section 6.

3. UK AGRICULTURAL RESEARCH LANDSCAPE

This section presents an analysis of the current UK agricultural research landscape, structured around five questions: how much is spent and by whom (3.1), how reliably that spending can be attributed to agriculture (3.2), which topics it covers (3.3), how it is expected to translate into impact (3.4), what type of research it represents (3.5).

3.1 Overview of research activity and funding

According to ONS (2026), the UK government spent around £570M on R&D relating to agriculture in 2024-25. Defra's R&D expenditure that year was £433M, some of which related to agriculture. UK businesses reported investing £333M (Figure 1). This analysis focuses on 2,131 projects, amounting to over £1,202m of primarily public R&D projects for the period 2022-2026. While this analysis focuses primarily on publicly funded research, it includes some philanthropic funding and industry funded projects.

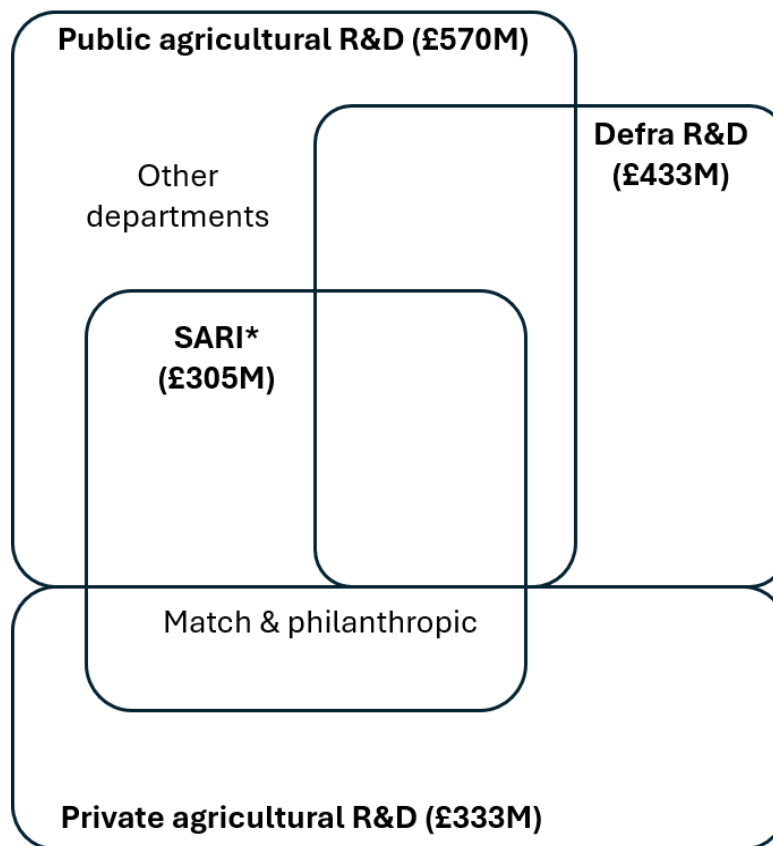


Figure 1: Overview of data on UK agricultural R&D expenditure (2024). *SARI's analysis includes spending on monitoring and surveillance science, which is generally not reported as R&D by Government. Source: Public and private R&D figures ONS (2026)

The value of the projects analysed is smaller than the totals reported by government because:

- In the official statistics, 'agriculture' includes forestry and fisheries.
- Defra's spending includes R&D on non-agricultural topics such as environmental monitoring.
- Some public R&D expenditure on agriculture, for example research delivered directly by Defra staff or agencies rather than funded or procured externally, is not consistently captured in the data sources used.
- The official statistics are compiled from broad expenditure information provided by government departments, rather than based on detailed analysis of specific projects. They are published as round percentages of overall public R&D expenditure, so are imprecise.

The projects analysed in SARI were funded primarily by UKRI, followed by Defra (Figure 2). The highest number (Figure 3) and value of projects (Figure 4) in the dataset was in 2023. This

may reflect lower availability of data for more recent projects, rather than a substantive trend. Over the same period, for example, Defra's science budget has grown.

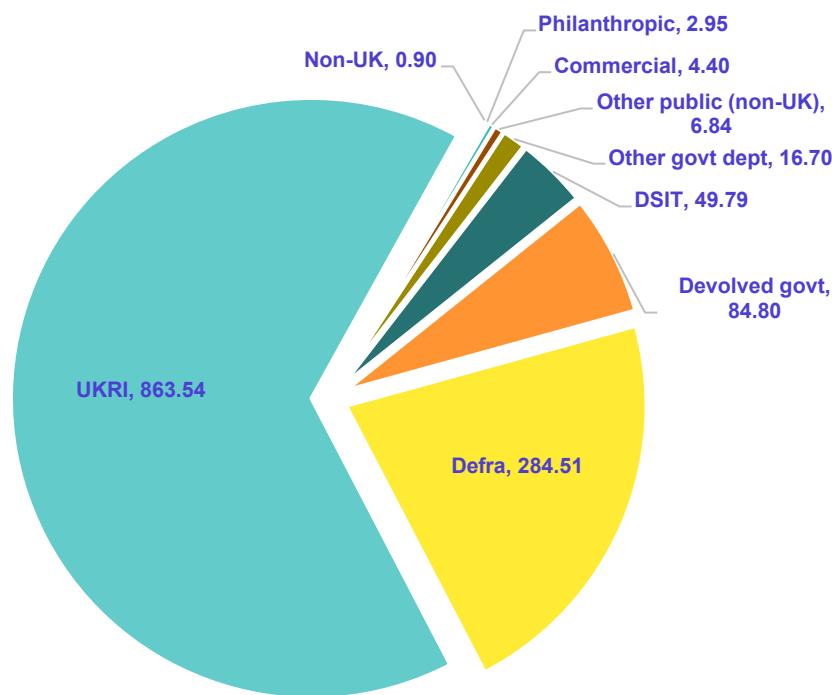


Figure 2: Funding awarded 2022-26 by funder (£M)

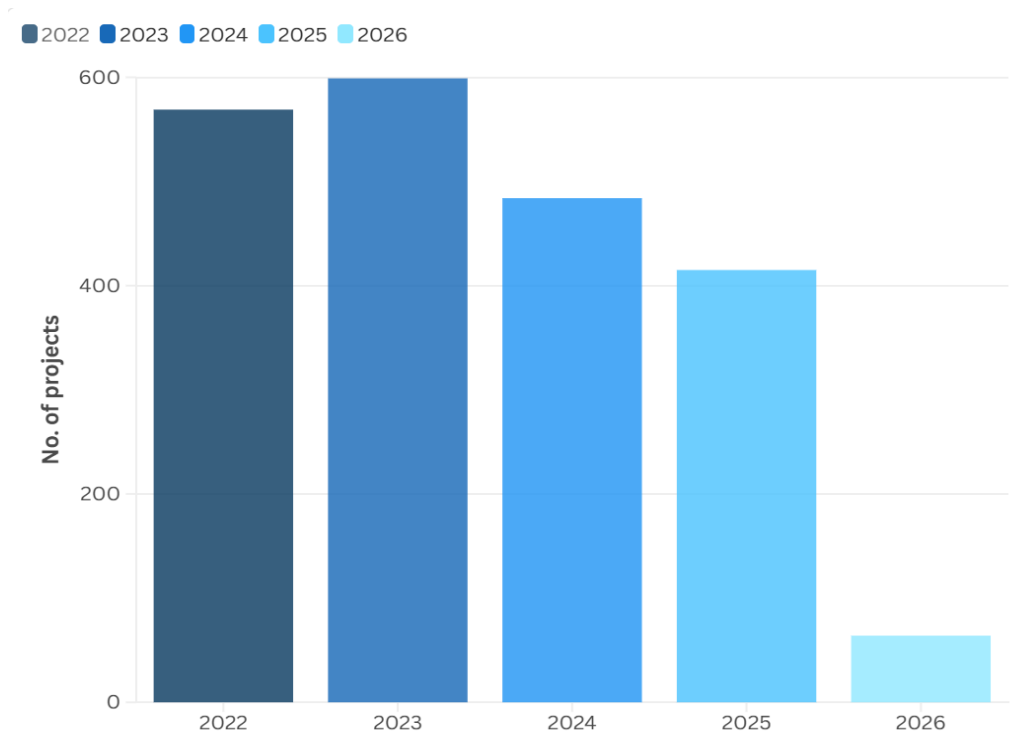


Figure 3: Projects by start year, 2022-26 (number)

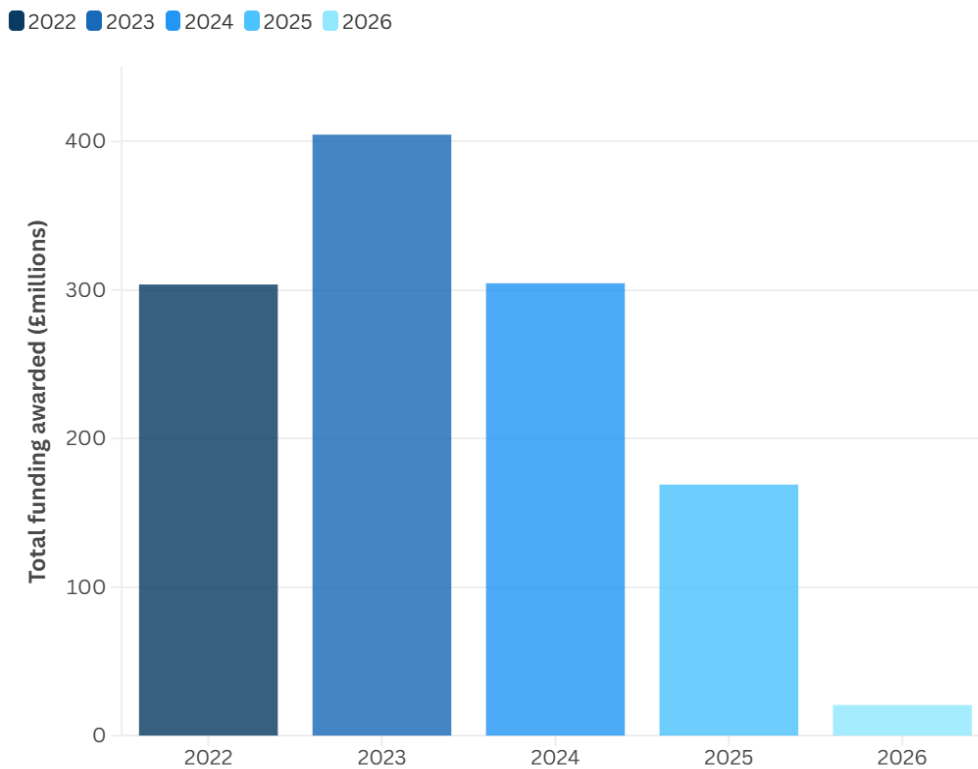


Figure 4: Funding awarded by project start year, 2022-26 (£M)

3.2 Scope and breadth

The overall values in Figures 4 and 5 include all projects within the total sample analysed that might reasonably be considered relevant to agriculture. For example, they include projects in fields that are included within agriculture by some definitions or stakeholders but not others, such as engineering biology or ornamental horticulture. They also include projects with a wider scope, for example in landscape ecology or basic bioscience, within which agriculture is one of several aspects or identified use cases. Projects were therefore reviewed for relevance, respectively, by scope (Figure 5) and by breadth (Figure 6). By scope, the large majority of funding (£1,042M) is unambiguously agricultural; the remainder sits in adjacent fields such as non-UK agriculture (£54.7M), engineering biology (£50.2M) and biofuels (£34.8M), where inclusion is a matter of definition. By breadth, £697M of funding is mainly agriculture-focused, while a further £506M sits within broader remits, principally basic bioscience (£182M) and food systems research (£133M), where agriculture is one focus among several rather than the primary driver of the project. Together these findings indicate that, while the great majority of the £1,202M analysed is clearly agricultural, a meaningful minority depends on where the

boundary of 'agricultural research' is drawn, which matters for how the totals in this section should be interpreted and compared against other sources.

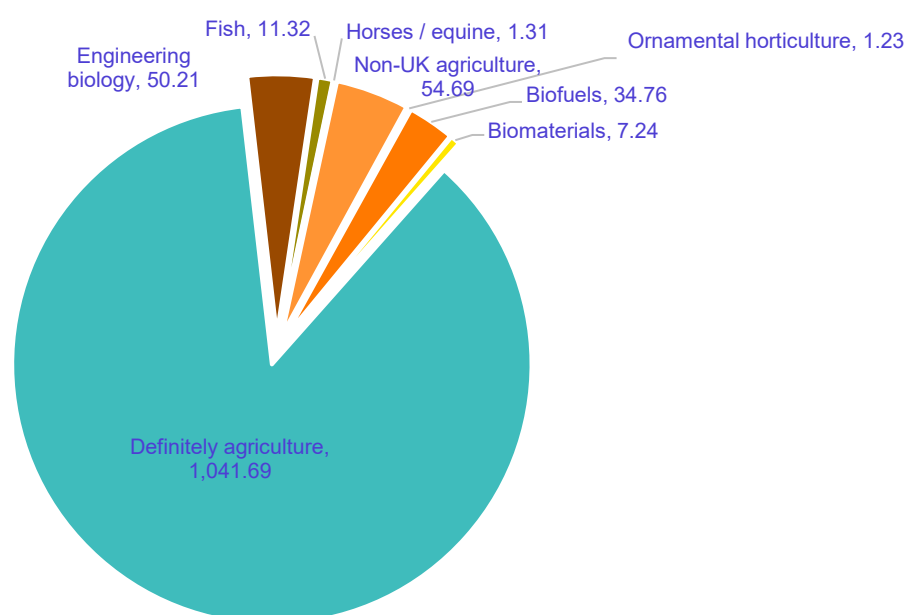


Figure 5: Scope of project funding, 2022-26 (£M)

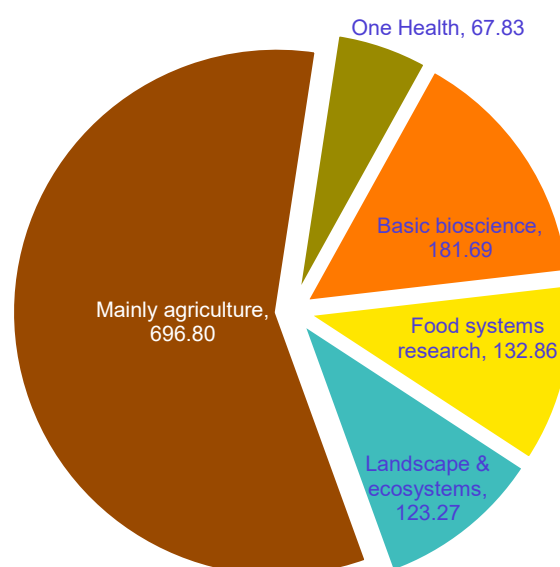


Figure 6: Breadth of project funding, 2022-26 (£M)

3.3 Research topics

What topics are currently addressed in UK agricultural research? To explore this, a taxonomy of nine broad topic areas, or 'what' themes, was developed (Table 2).

Table 2: Research topics ('what' themes) used in this analysis

Topic	Scope
Soils & water	Soil health, soil management, soil biology, nutrients in soil, water quality, water management, flooding, irrigation, groundwater, freshwater systems linked to agriculture, or soil-water interactions.
Climate & weather	Climate change, greenhouse gas emissions, carbon sequestration, mitigation, adaptation, weather risk, drought, extreme weather, climate modelling, or atmospheric impacts linked to agriculture or land-based production.
Land use & ecosystems	Biodiversity, habitats, agroforestry, landscape management, ecosystem services, conservation, invasive species, land-use change, pollinators, environmental impacts, or ecological interactions in agricultural/rural landscapes.
Crops	Crop plants, crop varieties, crop breeding, crop disease, crop pests, crop nutrition, crop quality, plant health, horticulture, forage crops, viticulture, nursery production, or crop productivity.
Livestock	Farm animals, animal breeding, animal disease, animal welfare, animal nutrition, dairy, poultry, pigs, sheep, cattle, aquaculture, fisheries production, or livestock product quality.
Post-farm gate	Food processing, storage, packaging, supply chains, logistics, traceability, food safety, alternative proteins, cellular agriculture, fermentation, post-harvest systems, biomaterials, biofuels manufacturing, or movement of agricultural products beyond the farm.
Society	People, behaviour, attitudes, knowledge, skills, wellbeing, mental health, social practices, farmworker housing, community impacts, public engagement, education, or social dimensions of agriculture and food systems.
Economy	Markets, trade, prices, business performance, labour markets, farm income, financial productivity, investment, economic modelling, entrepreneurship, or financial aspects of agriculture and food systems.

Topic	Scope
Systems	Projects that are genuinely cross-cutting and cannot be reduced to one of the above themes: whole-system transitions, integrated agri-food systems, circular economy, sustainable diets, food system resilience, complex systems modelling, or projects spanning multiple agricultural domains without one dominant focus.

In the period 2022 to 2026, crops (£367M), livestock (£242M) and post-farm gate (£205M) research topics were awarded the most funding. The lowest funded research topics for this period were Economy (£28M) and Society (£10.7M). Figure 7 shows the distribution of funding, distinguishing the overall sample from the subset of projects that were most relevant, being unambiguously and exclusively focused on agriculture.

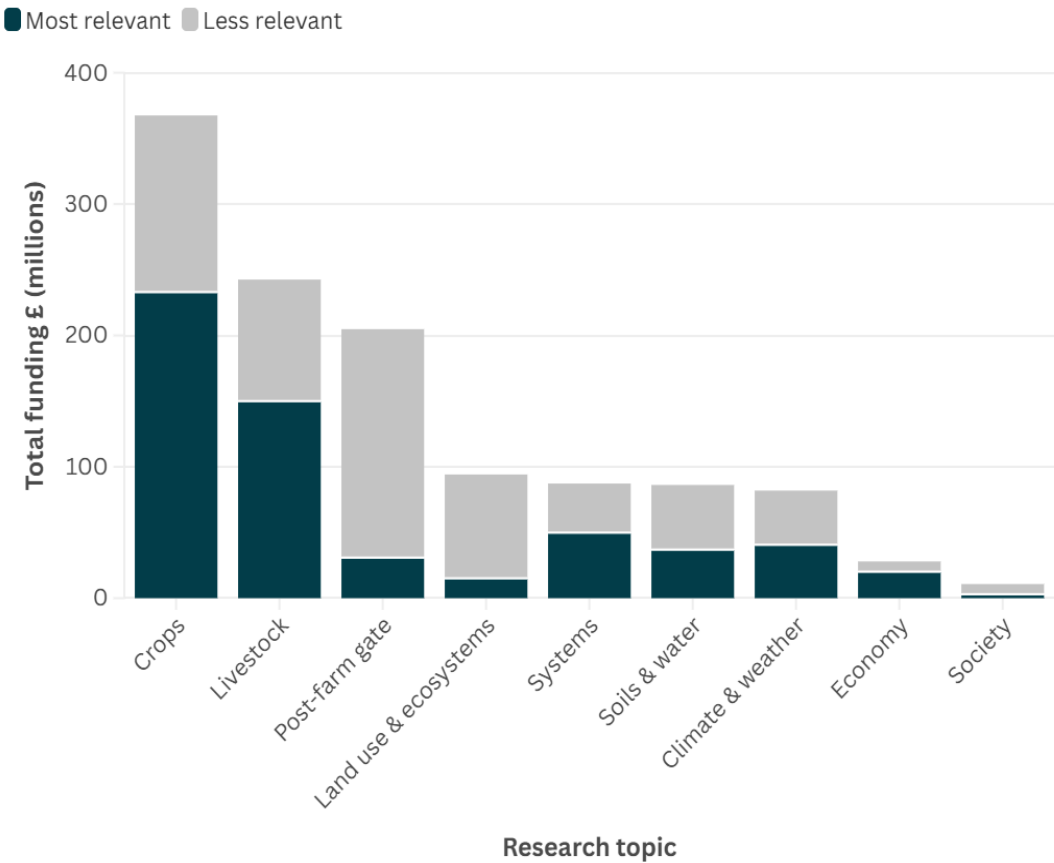


Figure 7: Funding awarded by research topic, 2022-26 (£M)

3.4 Paths to impact

As well as analysing what topics were the focus of UK agricultural research, how projects were expected or likely to have an impact on agriculture was explored, i.e. what type of intervention, tool or approach they proposed or implied. Table 3 defines these potential paths to impact, or 'how' themes.

Table 3: Potential paths to impact ('how' themes) used in this analysis

Path	Scope
Infrastructure	Developing, testing, or improving physical systems: animal housing, crop storage, electrification, irrigation, field drainage, water systems, controlled-environment facilities, laboratory infrastructure, long-term experimental sites.
Hardware	Developing or testing physical devices or machines: robots, drones, sensors, tractors, harvesters, processing equipment, precision application machinery. Distinguished from Infrastructure by being movable/deployable equipment rather than fixed built environment.
Software	Implementing or evaluating digital tools: AI, machine learning, decision support systems, digital twins, farm management platforms, apps, modelling tools, dashboards. The output or primary innovation is a software system.
Genetics	Research on biological material: developing crop varieties or animal breeds, plant/animal breeding programmes, genomics, trait selection, gene editing, germplasm banks, seed development including those suited to future climates.
Inputs	Research on what is applied to land or animals: fertilisers, pesticides, herbicides, fungicides, biologicals, feed additives, growth regulators, soil amendments. Includes research on reducing reliance on inputs or finding alternatives.
Practices	Evaluating or developing on-farm management techniques: tillage methods (e.g. direct drilling), cover cropping, crop rotation, grazing management, integrated pest management, application timing, intercropping. The focus is on what farmers *do*, not what they *use* or *deploy*.
Systems	Measuring or designing whole-system approaches: regenerative agriculture, agroecology, agroforestry, organic farming, vertical farming, cellular/cultivated meat, precision fermentation, integrated crop-livestock systems. Distinct from Practices in that it evaluates the whole system rather than a single technique.
Knowledge & Skills	Generating and sharing knowledge for human capacity: training programmes, knowledge exchange networks, advisory services, farmer education, extension services, curriculum development, evidence synthesis for practitioners.

Path	Scope
Markets	Research on economic and commercial dimensions: supply chain analysis, standards development, consumer behaviour, market access, value chain mapping, certification schemes, food labelling, trade dynamics.
Policy	Providing evidence to inform governance: payments for ecosystem services, agri-environment scheme design, regulation, tax, trade policy, subsidy reform, land use planning, food policy, rural development policy.
Monitoring	Developing or applying tools to observe and measure: remote sensing, satellite imagery, sensor networks, early warning systems, baselining, environmental monitoring, surveillance for pests/diseases, emissions measurement.

Overall, Genetics received the most funding in 2022-2026 (£340M), followed by Monitoring (£167M), and Infrastructure (£132M) (Figure 8). Whilst there are predictable relationships between Genetics and Crops and Livestock, and Markets and Post-farm gate research topics, other paths to impact are relatively distributed amongst topics (Figure 9).

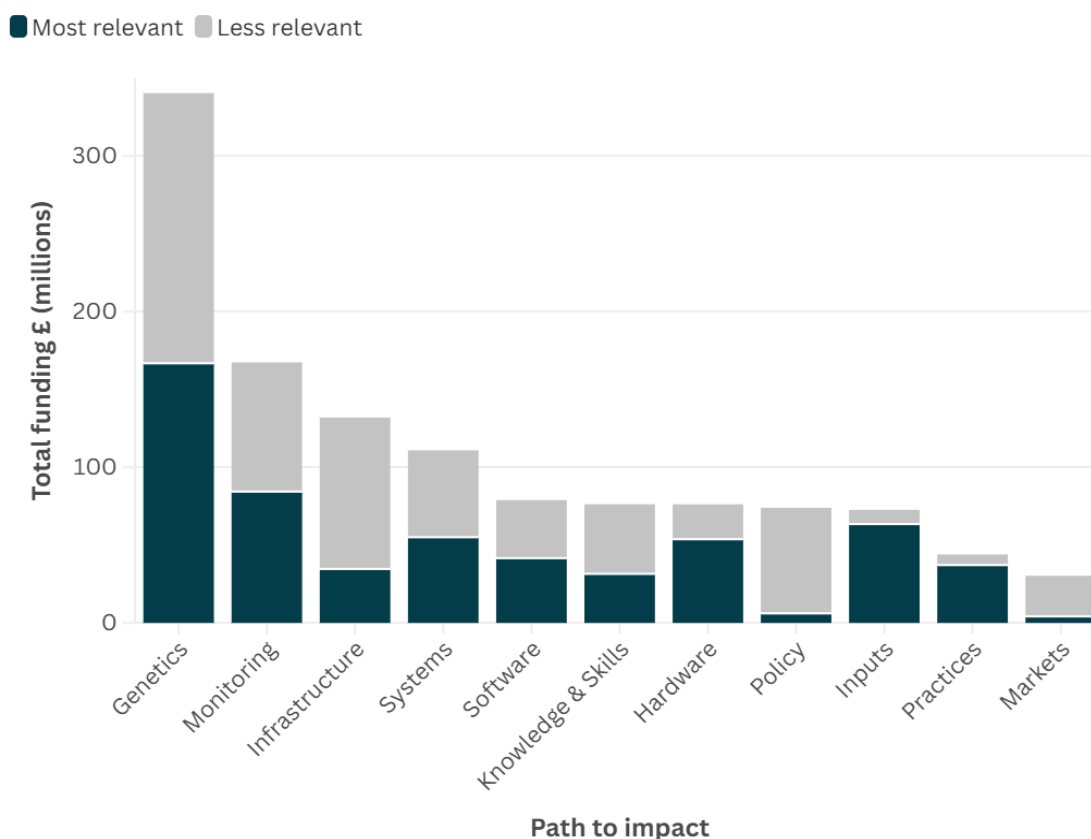


Figure 8: Funding awarded by path to impact, 2022-26 (£M)

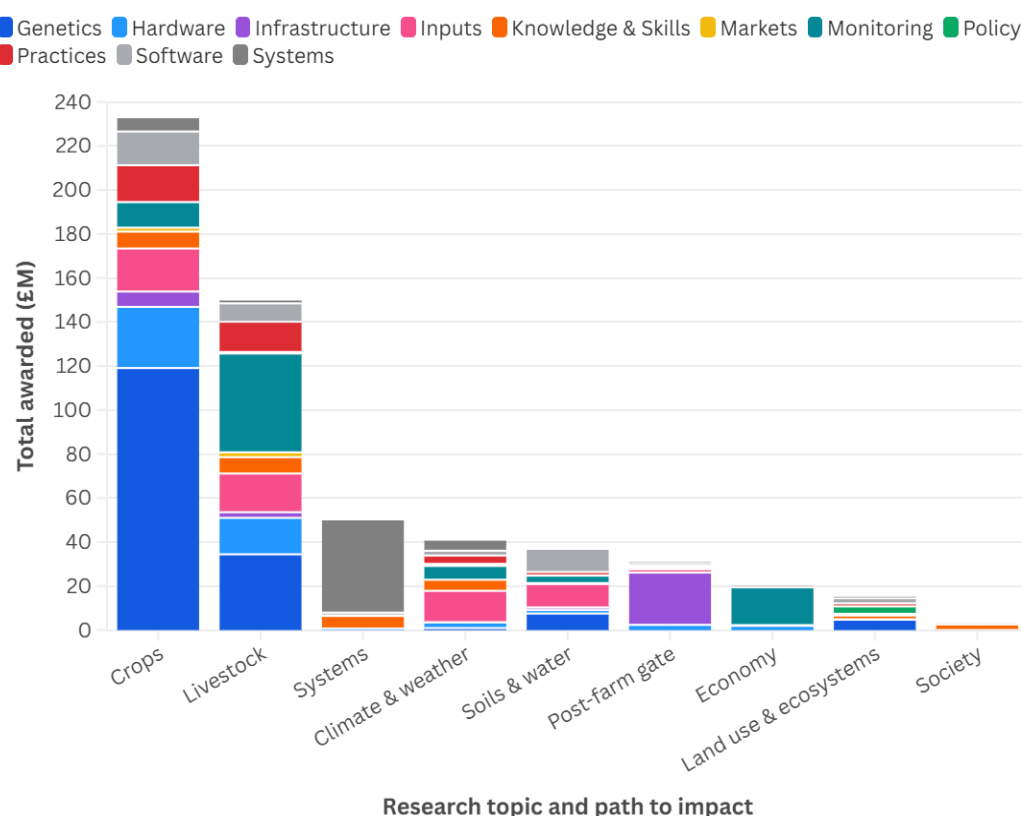


Figure 9: Funding awarded by topic and path to impact, most relevant projects, 2022-26 (£M)

3.5 Type of research

The likely path to impact for a research project is shaped but not determined by the type of research. Commonly, distinctions are drawn between broad categories, such as 'basic', 'discovery' or 'curiosity driven' research, and 'applied' or 'translational' research. An extended set of categories was developed, offering a more granular description of research project types (Table 4). This combined and adapted concepts from a range of existing taxonomies of research types, including the Frascati manual (OECD, 2015), the Australian and New Zealand Standard Research Classification (ANZSRC, 2020), Technology Readiness Levels (TRLs) (European Commission, 2025), CGIAR's Assessment of Agricultural Research (CGIAR Science Council, 2008), Applied Policy Research concepts (Putt and Springer, 1989.) and the FAO's Agricultural Extension Manual for Extension Workers (FAO, 2019).

Table 4: Research project type definitions used in this analysis

Type of R&D	Definition
Basic research	Projects primarily concerned with generating fundamental understanding, theory, mechanisms, biological/environmental processes, scientific discovery, or exploratory knowledge without a clear immediate application, implementation pathway, policy use, or commercial deployment.
Translational research	Primarily applied research that moves knowledge, technology, methods, or innovations toward practical use. This includes feasibility studies, prototypes, field trials, demonstration projects, pilots, knowledge transfer partnerships, adoption programmes, technology integration, vaccine/test/tool development, scale-up, implementation, or applied innovation bridging research and practice.
Commercial research	Research which is primarily commercially commissioned, industry-led, client-facing, or directed toward commercial product/service development, validation, testing, market deployment, business value, or private-sector exploitation.
Pre-competitive research	Industry-led research tailored towards the need of a group of businesses or a sector. Includes extension research for the purpose of transferring knowledge from researchers and science to farmers.
User-centred research	Co-creation and network-based social learning, involving active collaboration between farmers and scientists to enable the co-production of knowledge. Farmers or other practitioners drive the agenda, with scientists supporting, e.g. validating innovations in scientific terms.
Policy research	Research which is primarily intended to inform government policy, regulation, standards, governance, public strategy, public decision-making, evaluation of interventions, or evidence for policy design.
Surveillance research	Research which is primarily about monitoring, screening, detecting, tracking, or reporting the presence, prevalence, spread, or status of a disease, pest, pathogen, environmental condition, contaminant, population, or risk over time or across places.
Infrastructure	Projects that focus on purchasing scientific equipment, developing repositories, increasing access to research facilities, and/or capital grants.
Training	Doctoral or other training research, including training grants.

These broadly map onto UKRI's four 'buckets' of emerging strategy (UKRI, 2025) as follows:

- Bucket 1: curiosity-driven research - 'basic research'
- Bucket 2: strategic government and societal priorities – 'translational', 'pre-competitive', 'user-centred', 'policy' and 'surveillance' (most UKRI bucket 2 funding is 'translational')
- Bucket 3: supporting innovative companies to start and scale - 'commercial research'.
- Bucket 4: enabling and strengthening UK R&D – 'infrastructure' and 'training'

Basic, Translational and Commercial research were awarded the most funding across the years analysed. However, Basic and Translational research made up a smaller proportion of funding in 2024 than in 2022, while Commercial research made up a larger share (Figure 10). They dominate across most topic areas (Figure 11). The exceptions are Systems, reflecting large investments in the Agri-Tech Centre, Post-farm Gate, and Economy, where inclusion of the Farm Business Survey means Surveillance is the largest category.

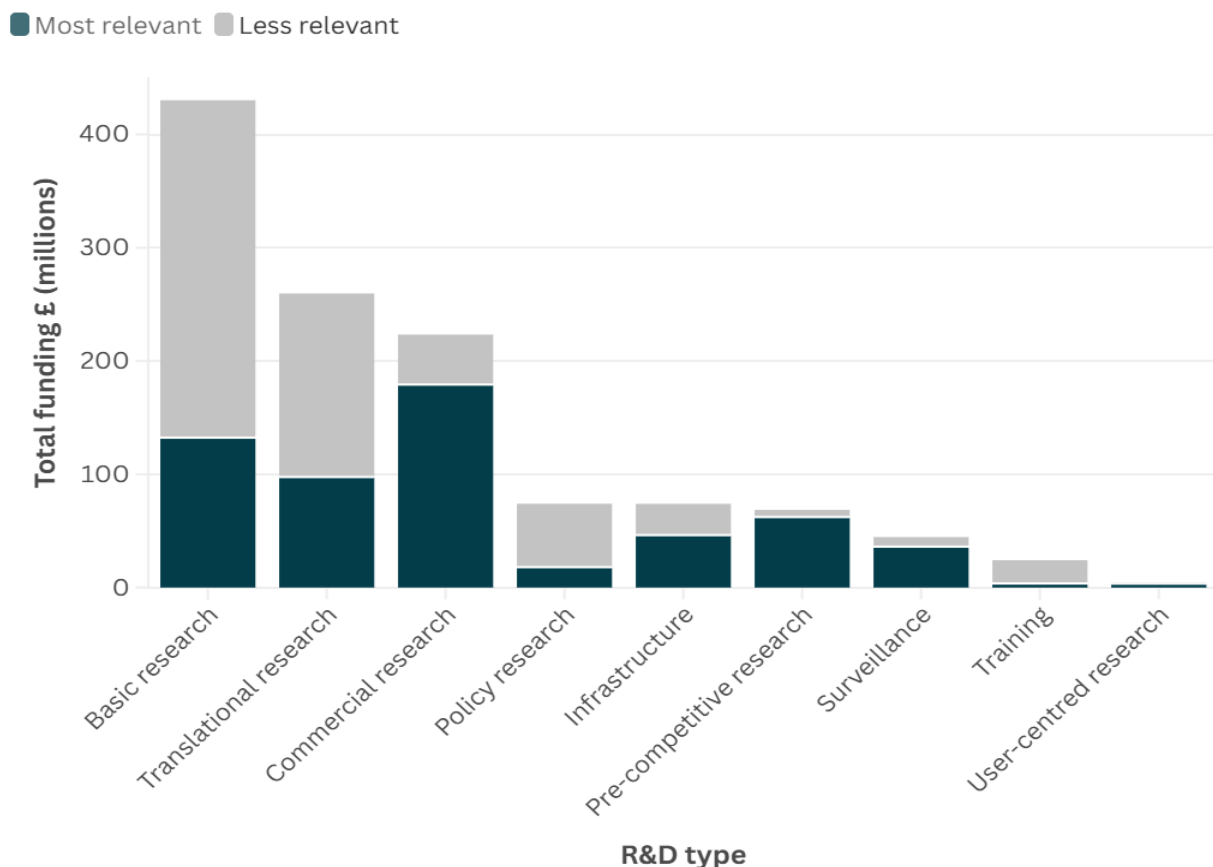


Figure 10: Funding awarded by research type, 2022-26 (£M) (inset: funding by type across sample years, most relevant projects).

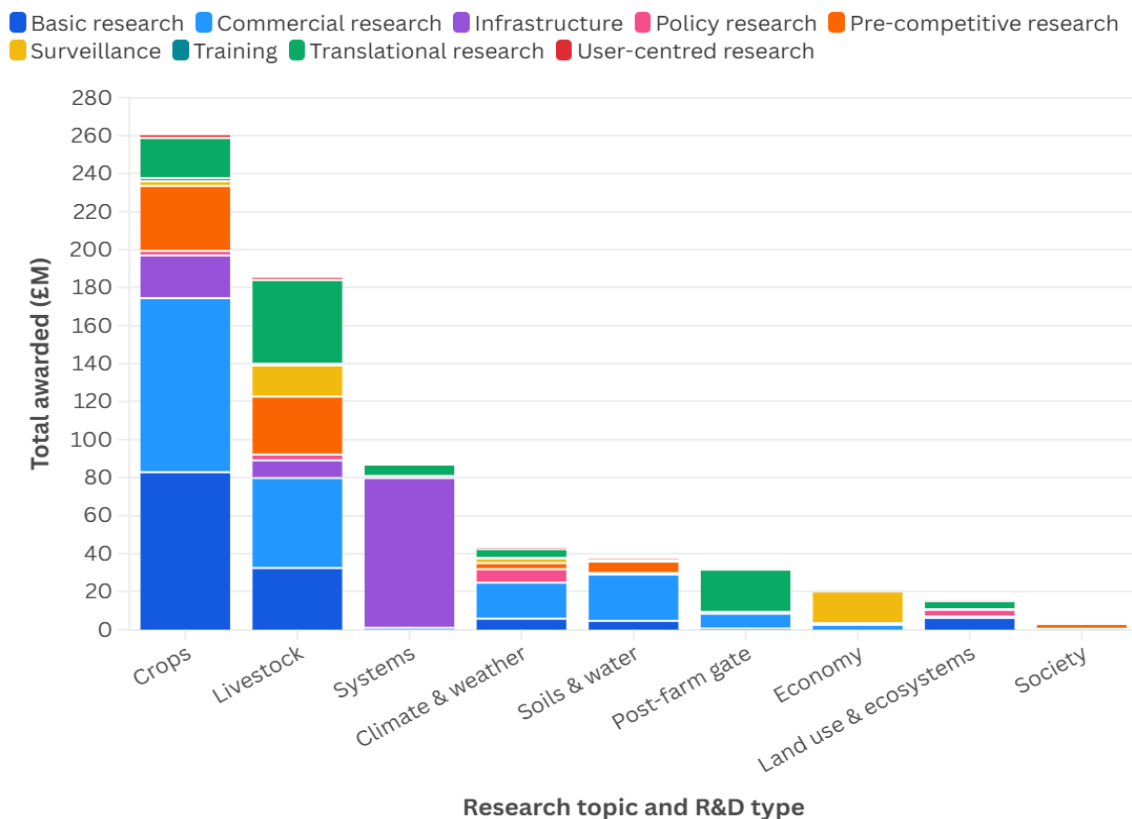


Figure 11: Funding awarded by topic and type, most relevant projects, 2022-26 (£M)

4. RESEARCH INFRASTRUCTURE AVAILABILITY AND USE

The interactive directory of research infrastructure reveals a distinctive pattern of concentration across infrastructure types and formats. Figure 12 shows UK agricultural research infrastructure by type and format. The directory shows concentrations of site-specific facilities (e.g. long-term experiments), distributed networks (e.g. farmer communities), and a mix of physical (e.g. plant collections) and virtual repositories (e.g. databases). Facilities and institutions are mainly single-site, reflecting the prevalence of fixed, location-bound assets such as long-term experiments, laboratories, and applied research institutes. Networks show the opposite pattern, concentrated almost entirely in the distributed format, reflecting farmer communities and other stakeholder groups that by their nature span multiple locations rather than sitting at one site. Repositories are more evenly split between the virtual and single-site formats, spanning physical collections, such as plant or seed archives, and virtual resources, such as databases and digital libraries. Across all four types, the virtual format is comparatively

thin, suggesting that most current UK agricultural research infrastructure remains tied to a physical location rather than existing as a purely digital resource.

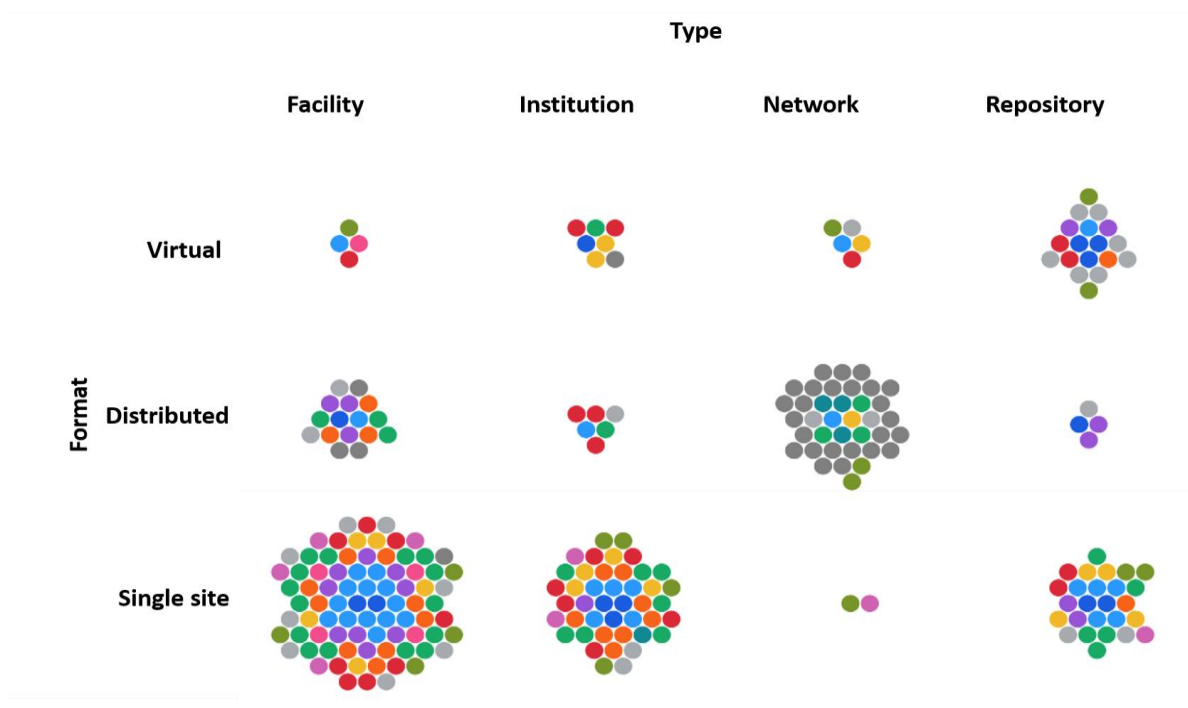


Figure 12: UK agricultural research infrastructure by type and format.

While the directory maps what infrastructure exists, the survey asked researchers how they actually use it, with reference to the directory. Survey respondents reported using a wide range of facilities, repositories, and formal/informal networks, but mostly used infrastructure at their own institution, making comparatively little use of infrastructure elsewhere in their region, nationally, or outside the UK. Figure 13 shows this pattern by plotting reported use across four levels of proximity — own institution, in region, outside region, and outside the UK — separately for virtual and physical resources. Physical resource use falls sharply beyond the respondent's own institution and stays low across all other levels, while virtual resource use also declines after the home institution but recovers and remains comparatively high at both regional and national levels. This institutional effect was strongest for physical facilities and repositories, and weaker for networks, digital libraries, databases and other virtual resources. This suggests that agricultural research infrastructure shared across multiple institutions, and either virtual or decentralised in nature, is best placed to be widely used by researchers nationally.

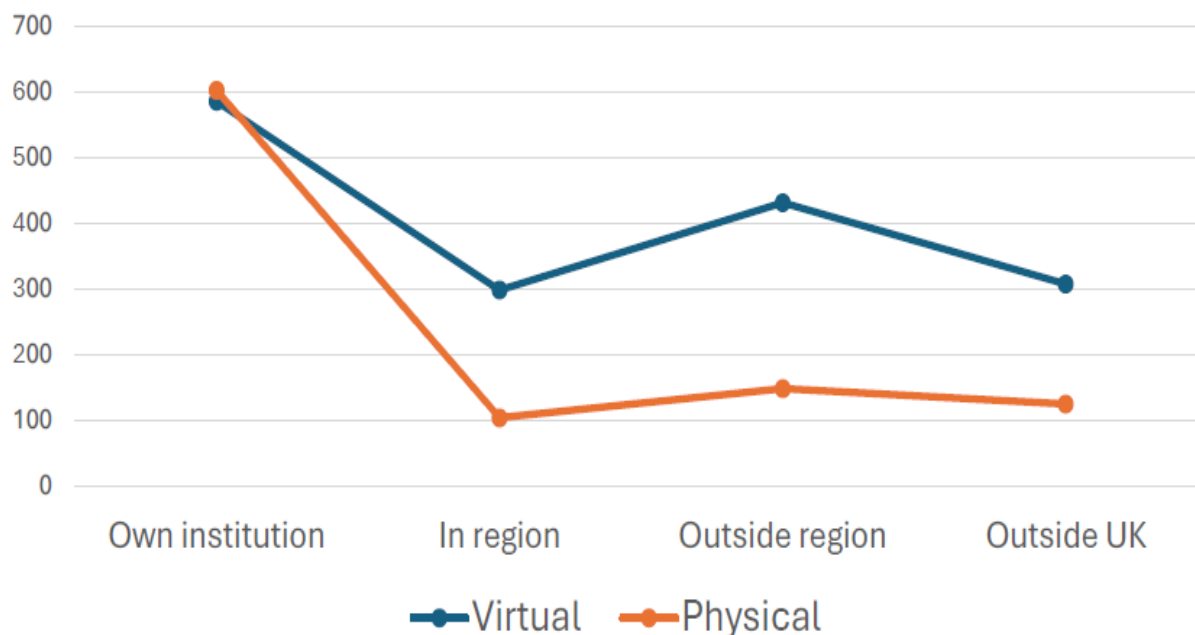


Figure 13: Reported use of virtual and physical resources (all types, frequency)

The survey also asked researchers which types of infrastructure they had used in the last five years, allowing reported use to be compared with the number of comparable resources listed in the UK directory. Figure 14 compares reported use against resource availability for each infrastructure subtype. Networks and repository-type infrastructures (databases, digital libraries and knowledge platforms) combine high reported use with relatively few listed resources, suggesting that a small number of shared resources are widely used, with the exception of community (peer-to-peer) networks, which are also comparatively widely available. In contrast, facility-based infrastructure shows a more mixed pattern, with some subtypes, particularly static equipment, being available in much larger numbers but used by fewer respondents. Living collections and specimen archives combine both low reported use and limited availability, indicating that they remain more specialised parts of the UK research infrastructure landscape.

Subtype ● Advisory/training service ● Farm trial facility ● Laboratory ● Long-term research experiment
 ● Mobile equipment ● Static equipment (including digital platforms or software) ● Community (peer-to-peer)
 ● Formal network ● Hub (physical or virtual) ● Database ● Digital library ● Knowledge platform
 ● Living Collection ● Physical Library ● Specimen archive

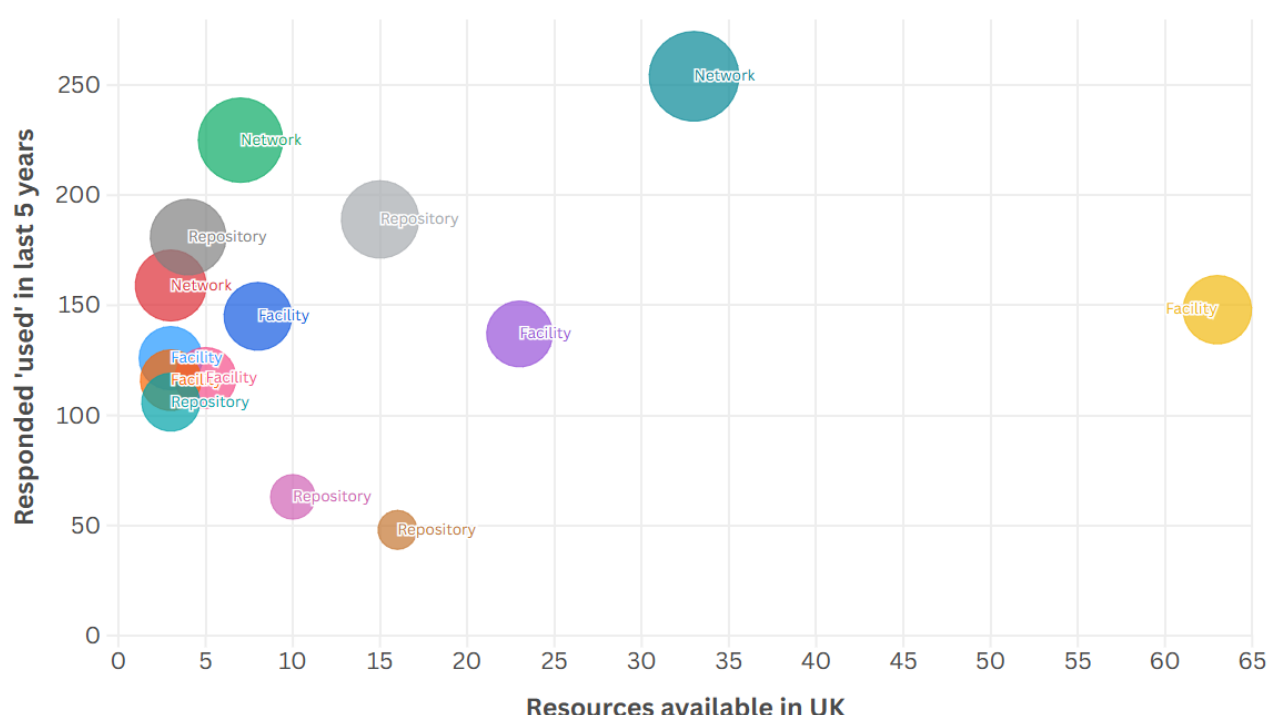


Figure 14: Infrastructure types reported used in the last five years by researchers, compared to resources listed in the directory

Note: Excludes infrastructure used outside the UK, and 'not used'/'prefer not to say' responses. Multiple choice per respondent (e.g. a respondent may have indicated use at their own institution and outside their region, technically two types of resource, so both are kept rather than reduced to one subtype per respondent).

5. STAKEHOLDER PRIORITIES

The SARI survey was designed to capture the research priorities of key stakeholders across the UK agricultural sector. It collected 604 valid responses in total: 314 farmers (52%), 194 researchers (32%) and 96 wider stakeholders (16%) (Figure 15). Across the full survey, including researchers and other stakeholders, the South West (16%) and South East (14%) were most represented. Respondents from Scotland, Wales and Northern Ireland collectively made up 17% of the sample (Figure 16).

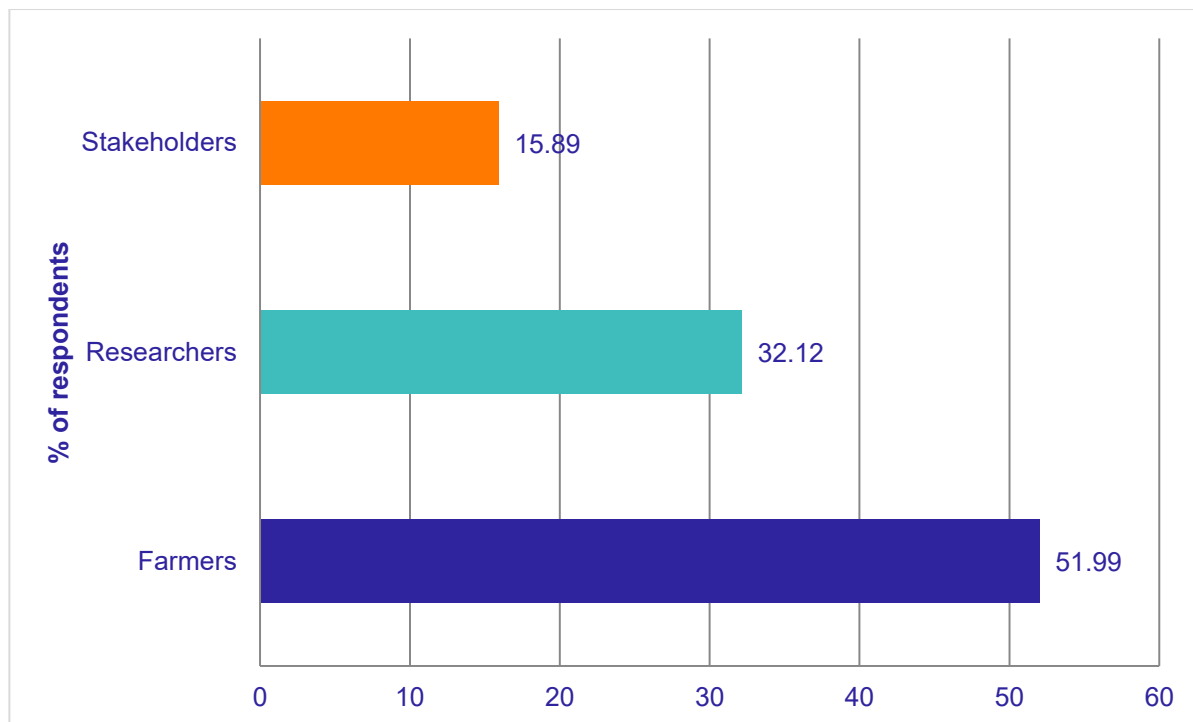


Figure 15: Primary role of respondents (%)

Note: Based on responses to "Q3 Which of the following best describes your primary role?"

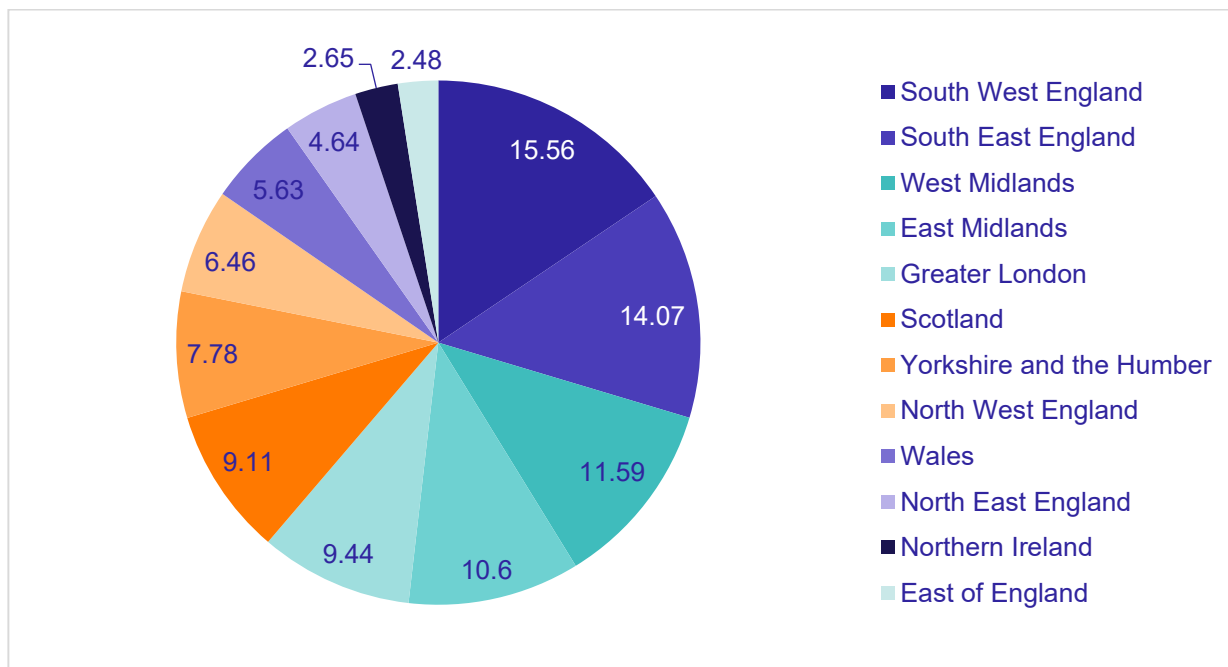


Figure 16: Regional distribution of respondents (%)

Note: Based on responses to "Q6 - In which nation or English region is your main place of work?"

For regression analysis, the 12 regions were collapsed into four groups: Devolved Nations (n = 105), North England (n = 114), Midlands (n = 134), and South and London (n = 251).

The gender balance across the full sample was 59% male and 39% female, with significant variation by role: 71% of farmers were male, compared with 47% among researchers and 52% among stakeholders (Figure 17). The most represented age group was 35-44 (26%), with farmers tending to be older than researchers.

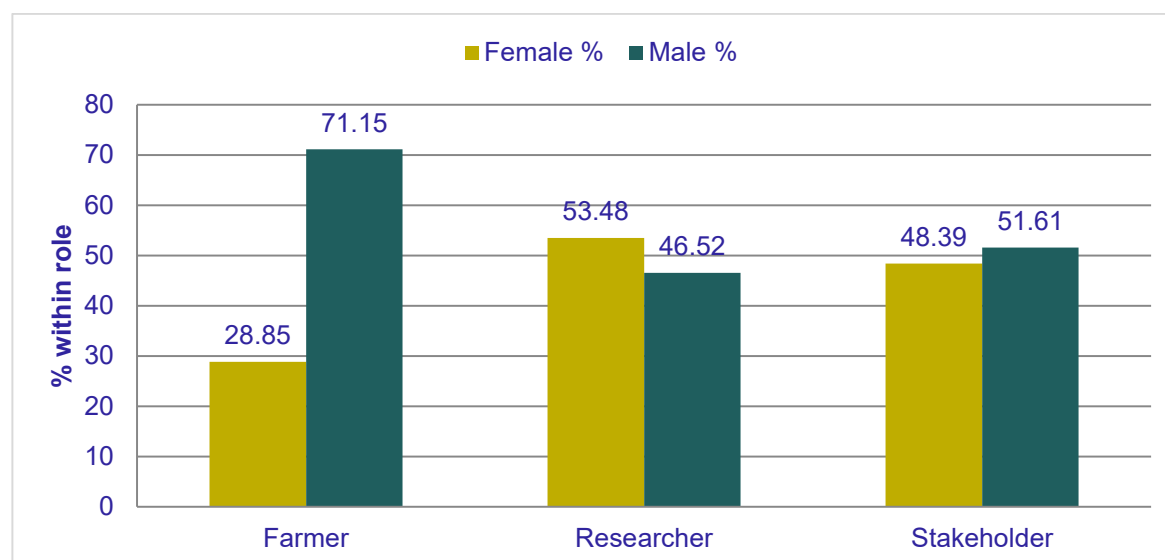


Figure 17: Gender distribution by respondent role (%)

Note: Based on responses to "Q8 - Please tell us the gender you identify as?"

Percentages calculated excluding 12 respondents who preferred not to say (n = 592).

The survey used a Why-What-How framework across three core ranking questions: challenges and opportunities for agriculture (Why (Q19), 10 items), priority research topics (What (Q21), 9 items), and preferred delivery mechanisms (How (Q23), 11 items). A ranking design was used rather than rating scales because it forces explicit trade-offs, producing more discriminating evidence about genuine priorities. Supporting regression models are reported in Appendix 2.

5.2 Main priorities

5.2.1 Why research is needed

Respondents were asked to rank ten challenges and opportunities for UK agriculture representing the context and potential motivations for research and innovation (Q19). Table 5 presents three complementary measures of stakeholder priorities (Top 1, Top 3 and weighted rankings). All three measures produce a highly consistent ordering, with profitable farming, food security and resilience emerging as the three highest priorities. The consistency across

the three measures suggests that these findings are robust to the method used to summarise respondents' rankings.

Table 5 Stakeholder rankings of challenges and opportunities for UK agriculture

Priority	Top 1 (%)	Top 3 (%)	Weighted (%)
Profitable farming	40.6	23.5	15.5
Food security	21.9	20.4	14.5
Resilience	12.6	15.2	12.1
Animal welfare	7.5	9.1	10.2
Nature recovery	4.0	6.8	9.2
Thriving rural communities	1.3	6.0	9.2
Healthy diets	3.1	5.7	8.5
Growing the UK economy	5.1	5.8	8.1
Net zero	3.0	4.8	6.5
Circular economy	1.0	2.8	6.3

Note: Based on responses to “Q19. Challenges and Opportunities, these first questions are about the challenges and opportunities facing UK agriculture. Overall, how do you see the priorities for UK agriculture? Please rank from most important to least”

Although respondents broadly agreed on the overall priorities, significant differences emerged between stakeholder groups ($\chi^2(18)=98.18$, $p<0.05$). As shown in Table 6, farmers placed much greater emphasis on profitable farming (53.5%) than researchers (21.7%), reflecting the immediate importance of farm viability. Researchers, by contrast, distributed their priorities more evenly across food security (28.9%), resilience (19.1%) and profitable farming, indicating a broader systems perspective. Stakeholders occupied an intermediate position, balancing economic performance with longer-term resilience. Environmental priorities, including net zero and nature recovery, rarely appeared as respondents' highest priority, although their stronger performance in the weighted rankings suggests they are viewed as important supporting objectives rather than primary drivers.

Table 6 Top-ranked challenges and opportunities (Q19) by respondent role

Why - Q19	Respondents by role (%)			
	Farmer	Researcher	Stakeholder	Total
Profitable farming	53.50	21.65	36.46	40.56
Food security	17.83	28.87	20.83	21.85
Resilience	5.73	19.07	21.88	12.58
Animal welfare	10.51	5.15	2.08	7.45
Growing the UK economy	6.37	4.64	2.08	5.13
Nature recovery	2.23	6.70	4.17	3.97
Healthy diets	1.59	4.64	5.21	3.15
Net zero	1.27	5.15	4.17	2.98
Thriving rural communities	0.64	2.58	1.04	1.32
Circular economy	0.32	1.55	2.08	0.99
Total	314	194	96	604

Note: Column percentages: $\chi^2(18) = 98.18$, $p < 0.05$.

To examine whether these descriptive patterns held after accounting for other respondent characteristics, a regression model was estimated with respondent role as the key predictor of Q19 priority weights, controlling for age, gender, region and self-assessed understanding. The results confirm the descriptive findings in Table 6. Farmers placed significantly greater weight on profitable farming and animal welfare, and significantly less weight on net zero and resilience, than other respondents, while researchers placed significantly greater weight on food security, net zero and nature recovery. These differences remained significant after controlling for demographic characteristics, confirming that the contrasting priorities reflect stakeholder role rather than sample composition. Full results are presented in Table A1 in Appendix 2.

5.2.2 What research is needed

Respondents were asked to rank nine agricultural research topic areas (Q21). Their priorities for research topics were more evenly distributed than their motivations for research. As shown in Table 7, crops, soils and water, climate and weather, and the economy consistently ranked among the highest priorities across the Top 1, Top 3 and weighted measures, although their relative ordering varied slightly between approaches.

Table 7 Overall research topic priorities Top 1, Top 3 and normalised weighted rankings

What - Q21	Top1 (%)	Top3 (%)	Weighted (%)
Economy	16.7	11.2	11.2
Crops	16.2	13.9	13.3
Climate & weather	14.2	14.7	12.2
Systems	12.9	9.8	9.4
Soils & water	10.6	14.1	13.5
Food production & supply	9.6	9.6	10.8
Livestock	8.9	10.8	10.9
Land use & ecosystems	5.6	8.8	10.1
Society	5.1	6.9	8.4

Note: Based on responses to “Q21. The Topics, now we will ask about the topics research should focus on. Where can research most help to meet the challenges and opportunities facing UK agriculture? Please rank from most help to least”

In Table 8, significant differences were again observed between stakeholder groups ($\chi^2(16)=124.90$, $p<0.05$). Farmers placed greater emphasis on the economy, livestock and food production, reflecting their focus on farm profitability and production challenges. Researchers gave higher priority to systems-based research, crops and climate, indicating greater concern for long-term resilience and cross-disciplinary research. Stakeholders shared the emphasis on systems and crops but not climate, where their priority (7.3%) was in fact the lowest of the three groups. These differences suggest that future research infrastructure investment should support a balanced portfolio of research, addressing both the immediate needs of agricultural production and longer-term, systems-based challenges.

Table 8 Top-ranked research topic priorities (Q21) by respondent role

What - Q21	Respondents by role (%)			
	Farmer	Researcher	Stakeholder	Total
Economy	26.43	4.64	9.38	16.72
Crops	14.65	17.53	18.75	16.23
Climate & weather	14.97	16.49	7.29	14.24
Systems	2.55	22.68	27.08	12.91
Soils & water	10.19	9.28	14.58	10.60
Food production & supply	11.46	7.22	8.33	9.60
Livestock	12.74	5.15	4.17	8.94
Land use & ecosystems	3.18	9.28	6.25	5.63
Society	3.82	7.73	4.17	5.13
Total	314	194	96	604

Note: Column percentages: $\chi^2(16) = 124.90$, $p < 0.05$.

A regression model, controlling for age, gender, region and self-assessed understanding, confirms and sharpens the role-based divide in Table 8. Farmers place significantly greater weight on economy, livestock and food production than other respondents, and significantly less on systems and land use — a production-focused profile that persists once demographic differences are accounted for. Researchers, by contrast, place significantly greater weight on climate and weather and on land use, reinforcing the systems-oriented pattern seen in the descriptive results. The full model is reported in Table A2 in Appendix 2.

5.2.3 How research can help

Respondents were asked to rank eleven pathways to impact through which agricultural research should be translated into practice (Q23) (Table 9). Across all ranking measures, knowledge and skills emerged as the highest priority delivery mechanism, followed by genetics and systems-based approaches. Monitoring and infrastructure received relatively few first-place selections but substantially higher weighted rankings, indicating that respondents viewed them as essential enabling capabilities.

Table 9 Overall delivery priorities Top 1, Top 3 and normalised weighted rankings

How - Q23	Top1 (%)	Top3 (%)	Weighted (%)
Knowledge & skills	26.5	18.6	14.1
Genetics	15.9	12.5	10.9
Policy	13.3	10.2	9.3
Inputs	9.8	9.9	9.1
Systems	9.8	11.7	11.1
Practices	9.5	12.6	10.8
Markets	6.3	7.2	8.1
Monitoring	2.7	5.7	8.1
Infrastructure	2.5	4.4	6.9
Software	2.2	3.6	6.0
Hardware	1.7	3.5	5.6

Note: Based on responses to “Q23 In Practice, for the final questions in this section, we will ask you about how research can make a difference in practice. How is research most likely to help meet the challenges and opportunities facing UK agriculture? Please rank the following”

Table 10 shows significant differences in research delivery priorities across respondent groups ($p < 0.05$). Knowledge and skills ranked first across farmers, researchers and stakeholders,

demonstrating broad consensus regarding the importance of knowledge exchange and capacity building. However, farmers placed greater emphasis on markets and practical inputs, whereas researchers placed somewhat higher priority on systems approaches and, to a lesser extent, policy mechanisms; stakeholders shared the emphasis on systems but were closer to farmers on policy.

Table 10 Top-ranked delivery priorities by respondent role

How - Q23	Respondents by role (%)			
	Farmer	Researcher	Stakeholder	Total
Knowledge & skills	24.84	26.42	32.29	26.53
Genetics	18.47	12.95	13.54	15.92
Policy	12.10	15.54	12.50	13.27
Inputs	12.10	8.29	5.21	9.78
Systems	3.18	15.54	19.79	9.78
Practices	9.87	9.33	8.33	9.45
Markets	9.87	3.11	1.04	6.30
Monitoring	1.27	5.18	2.08	2.65
Infrastructure	3.18	1.04	3.12	2.49
Software	2.23	2.07	2.08	2.16
Hardware	2.87	0.52	0.00	1.66
Total	314	193	96	603

Note: Column percentages: $\chi^2(20) = 69.10$, $p < 0.05$.

A parallel regression model was estimated for How (Q23) priority weights. Farmers placed significantly greater weight on markets and genetics, and significantly less on systems and monitoring, than other respondents, while researchers placed significantly greater weight on genetics. Notably, respondent role was not a significant predictor of weight on knowledge and skills, confirming that this is a genuinely shared priority across farmers, researchers and stakeholders rather than an artefact of sample composition. Full results are presented in Table A3 in Appendix 2.

6. STRATEGIC INVESTMENT PROPOSITIONS

This section sets out strategic investment propositions for UK agricultural research infrastructure. It draws on two open-ended questions in the national survey, asking researchers what infrastructure they expect to need over the next five years and where they think investment is most needed overall (Section 6.1), and on in-depth interviews and expert workshops which explored these questions further (Section 6.2). The interview and workshop evidence was synthesised by the project team into four high-level investment themes, Preserve, Predict, Ground and Connect, which were then put to a separate citizen dialogue process for independent scrutiny (Section 6.2).²

6.1 Infrastructure needs and investment priorities identified by researchers

While the needs researchers identified tended to be specific facilities, networks or repositories, the investment priorities they suggested highlighted wider enablers of effective research. Table 11 summarises the main themes emerging from responses to “Please describe the repository, network or facility you expect to need most in your research in the next five years”, and Figure 20 illustrates these needs according to their scope (from specialised to broad or flexible) and access (from single site to distributed or virtual).

Table 11: Research infrastructure needs (thematic analysis of responses to “Please describe the repository, network or facility you expect to need most in your research in the next five years”).

Need	n	Examples
Commercial-scale, multi-site on-farm long-term R&D platforms	17	“long term field trials... need to move from carefully manicured plot trials... into on-farm real world commercial trials... innovation farms research multiple outcomes with a holistic approach” (51967738) “farm trial platform — livestock, crop and integrated (with agroforestry as a module)” (52874524) “integrated, multi-site research and demonstration platforms... across commercial farms and experimental sites to allow robust validation and scalability” (54940736)

² ‘Preserve’ was originally labelled ‘Protect’, and has been updated for clearer reporting.

Need	n	Examples
Future-climate / scenario-simulation testbeds	5	“ones with the ability to simulate future climates” (52177315) “national field trial platforms for testing precision breed organisms... that can provide different climate change scenarios” (53945523) “facilities with the capability of simulating future conditions and which allow replicated design long-term trials with large livestock species” (55023400)
National MRV repository — soil carbon, GHGs and biodiversity outcomes	6	“unified digital repository... trusted, national repository that standardises how soil carbon and ecological recovery are measured across different soil types” (50895868) “new national digital infrastructure for MRV, modelling of interventions and outcomes, and knowledge exchange” (54281055) “centralised repository of land management advice/practice/evidence for bracken control/management/use in upland farms” (50965237)
Curated biological collections with linked OMICS / phenotype / environmental metadata	6	“well-curated plant–microbiome repository... diverse, well-characterised microbial strains and associated plant genotype data... linked genomic, phenotypic, and environmental metadata” (51507766) “OMICS technologies + computational modelling and artificial intelligence... genomics, transcriptomics, proteomics, metabolomics, microbiome profiling” (52771081) “Advanced Plant Growth Centre PhenomUK” (56167067) / “UK Vegetable Genebank” (52171343)
AI test beds and dual-use autonomous on-farm monitoring	5	“robotics and AI test beds” (50762077) “developing dual use autonomous monitoring facilities & systems on farm” (56161948)

Need	n	Examples
		“AI technology for rapid qualitative analysis” (54774311)
Multi-stakeholder farmer–researcher networks (peer-to-peer, co-research, problem-led)	12	“peer-peer learning networks bringing all stakeholders interested in a key problem/issue together for a focussed time / piece of work” (53241243) “network platform focusing on British agriculture should involve not only academics, but also farmers, technology providers, policymakers, local communities and other stakeholders” (54746306) “existing and still to be formed networks of scientists, agri-rural practitioners and other stakeholders creating and sustaining communities of learning around transition challenges” (53203208)



Figure 18: Summary of research infrastructure needs. (“Please describe the repository, network or facility you expect to need most in your research in the next five years”).

The two most frequently raised needs were commercial-scale, multi-site on-farm platforms (n=17) and multi-stakeholder farmer-researcher networks (n=12). Both point in the same direction as the demand findings in Section 5, where farmers ranked profitable farming as their overwhelming top priority for UK agriculture: researchers want infrastructure that tests innovations under real commercial and farm-level conditions more than in controlled plot trials, and that brings farmers into the research process directly rather than treating them as end-users of findings. This also speaks to the landscape mapping (Section 3), which found infrastructure concentrated in single-site facilities: the demand for multi-site, distributed platforms appears a direct response to that structural gap.

Investment priorities followed a different pattern, focused less on individual assets and more on the conditions needed for research to be effective across the system. Table 12 summarises responses to “Thinking about UK agricultural research overall, where do you think investment is most needed in research infrastructure?”, and Figure 19 maps these propositions by scope and access in the same way as Figure 18.

Table 12: Research infrastructure investment propositions (thematic analysis of responses to “Thinking about UK agricultural research overall, where do you think investment is most needed in research infrastructure?”).

Proposition	n	Examples
Sustain and upgrade existing long-term experimental farms and platforms	14	“research farms... little investment in decades... basic infrastructure at most is failing” (50805392) “upgrading facilities such as controlled environment, greenhouses, labs at existing centres which are ageing and inefficient” (53691373) “upgrade existing experimental farms and research platforms... into more integrated 'smart' research and demonstration environments” (54940736)
High-TRL validation, SME scale-up and commercialisation facilities	12	“applied and translational research... BBSRC funding does not meet this need and there are no other suitable options since LINK funding was removed” (52126251) “pilot-scale food processing facilities and food physical properties laboratories... mechanical fractionation... non-thermal processing technologies” (54167599)

Proposition	n	Examples
		“infrastructure to help small companies (SMEs) scale up and commercialise their products... to trial new technologies and regenerative practices on working farms” (55025961)
High-resolution on-farm sensing, MRV and precision instrumentation	10	“mobile, low-cost sensors for key emissions in air, water, and soils that can enable high resolution / frequency scalable data... inform systems-wide modelling of sustainability” (51381664) “high precision measurement instrumentation especially for ammonia and greenhouse gases” (51667215) “AI-based tools for early detection of pests, diseases, and nutrient deficiencies... modern sensors for monitoring soil health, plant stress, and environmental conditions” (51507766)
Co-research and farmer-engagement infrastructure (compensated, early-stage)	14	“platform that enables co-research with farmers... involvement in research from an early stage, including in funding bids, research design and research participation... financial compensation for their time, as well as some sort of online network and/or digital hub” (53889199) “stakeholder engagement networks — supporting and normalising stakeholder engagement, ensuring that research that funding is dedicated to is actually relevant research” (54774311) “events such as Groundswell are excellent because there is a community of researchers and practitioners coming together physically” (51803831)
National coordination & data-integration backbone (joining-up, interoperability, shared analytics)	16	“secure and trusted sharing of data — so lots already exists within supply chains/private companies but not willingly or openly shared... more connectivity and collaboration needed between institutes, so infrastructure that connects” (54161082)

Proposition	n	Examples
		“connected national infrastructure rather than isolated facilities: long-term field platforms, phenotyping capability, soil and environmental monitoring, trusted data-sharing systems, and farmer-facing demonstration infrastructure” (56198243) “a collegiate, cohesive, impartial hub for horizon scanning and co-developing strategic plans for investment in underpinning infrastructures” (51410781)
Technical workforce and researcher capacity (people as infrastructure)	11	“a permanent technical workforce — data engineers, field technologists, and systems modellers — able to operate and sustain these assets” (50767443) “resourcing people to allow for continuous development of teams/skills, corporate memory, succession, talent development, capacity to respond rapidly to urgent/new opportunities” (54936191) “I think people are needed to run the infrastructure we have” (51419287)

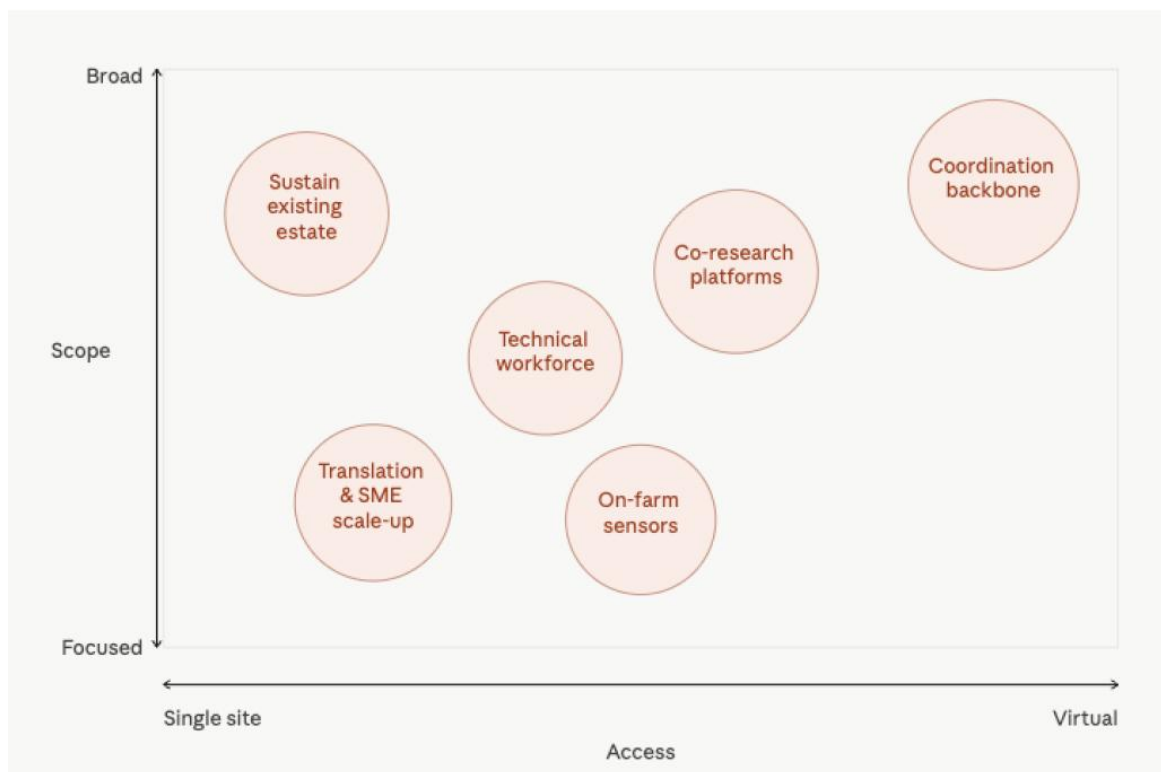


Figure 19: Summary of research infrastructure investment propositions. (Thematic analysis of responses to “ Thinking about UK agricultural research overall, where do you think investment is most needed in research infrastructure? ”)

National coordination and data-integration (n=16) was the single most cited investment proposition, closely followed by sustaining and upgrading existing experimental farms (n=14) and co-research and farmer-engagement infrastructure (n=14). Unlike the needs identified in Table 11, which centred on specific assets, these propositions are about making better use of what already exists.

6.2 Four strategic investment propositions

Drawing together the evidence presented in the previous sections and the insights generated through the researcher and stakeholder workshops, four complementary investment propositions were developed to address the principal strategic challenges facing UK agricultural research infrastructure (Figure 20). These challenges include maintaining valuable research assets, responding to future environmental and technological change, strengthening engagement between research and practice, and improving coordination across the research system.

The following subsections report comments from the workshops and interviews relating to each of these themes.

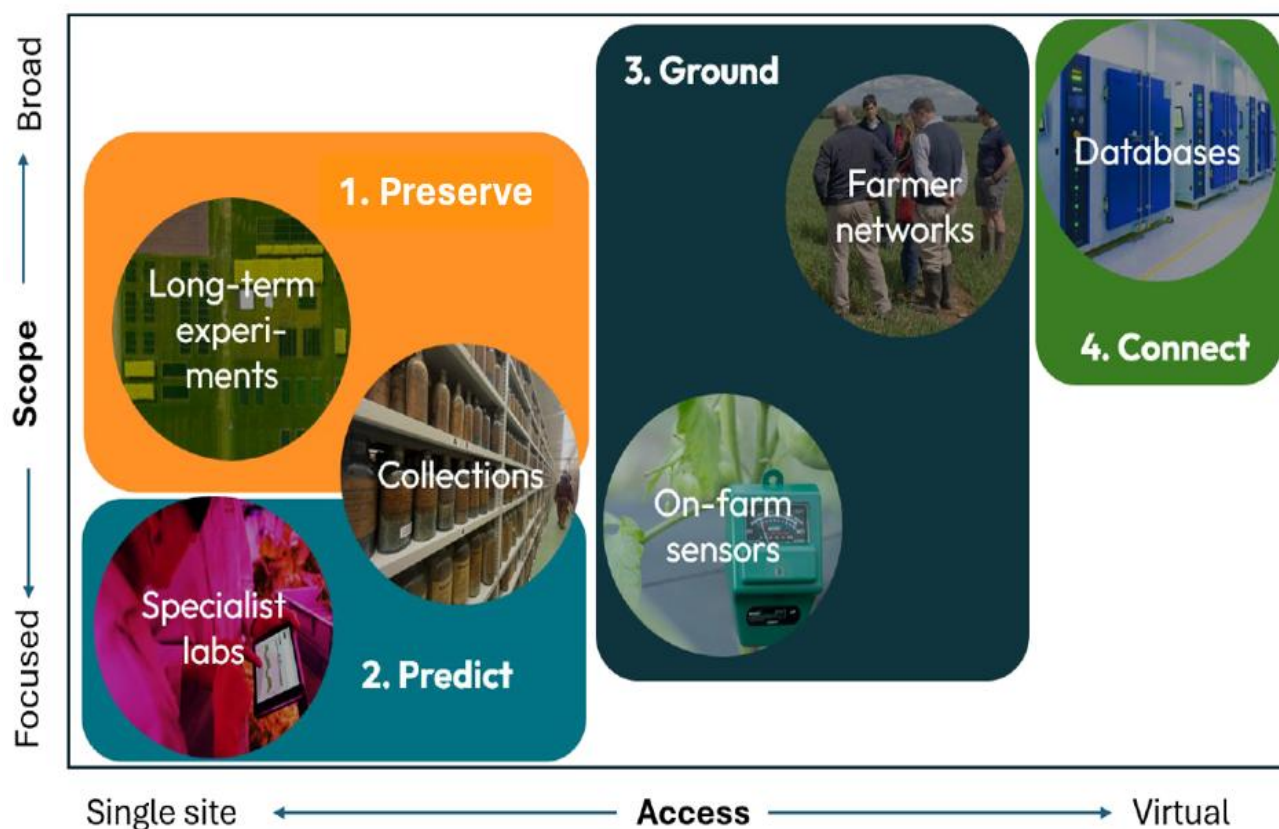


Figure 20: high-level investment propositions / themes

6.2.1 Preserve

Workshop participants consistently expressed concerns about the long-term viability of existing research infrastructure. Many highlighted the cumulative effects of underinvestment in well-established facilities, together with increasing financial pressures on the universities and research institutes responsible for maintaining them. Participants argued that maintaining and strengthening these assets should take precedence over investment in new capital projects:

“If there's resource for infrastructure, there should be some sort of focus on refurbishing existing facilities that are really well used, on which a lot of R&D relies, but which are limping along because they're so aged.” (Horticulture workshop)

“We have really good infrastructure already but it's not being invested in properly. So, if you look at any of the big institutes, they're not getting the funding they used to have. They're all diminishing and they don't have the capacity to do what they used to do. And that should really be UKRI's biggest priority, to make sure that these institutions remain viable and strong.” (Crops workshop)

“The existing infrastructures that we have are under serious threat with financial pressures on universities and other institutes. So how can we make sure we don't lose more of them? How we make them really resilient and sustainable so they're not put under threat because of the volatility of external economic markets on universities.” (Livestock workshop)

6.2.2 Predict

Workshop participants and interviewees raised concerns that current environmental conditions are becoming an unreliable guide to the future, with trials designed around today's more stable conditions unlikely to reflect conditions likely to be considerably more extreme. However, echoing some survey respondents (Table 11), others argued that greater value could be gained from investing in infrastructure capable of modelling future climatic conditions, including soil temperature, drought and flooding:

“I don't think we can really use current environment as a proxy for future environment anymore. It used to work, where an environment was perhaps more stable, but now we're moving towards such a novel environmental space. Trials in a different space does not actually give you an idea of what the future is going to be like, because it's going to be so much more extreme than anything we've currently got.” (Livestock workshop)

6.2.3 Ground

Workshop and interview participants identified research and demonstration farms as valuable but underutilised resources for testing and promoting innovation. Most argued that existing facilities would benefit more from improved funding, coordination and resource sharing than from the creation of additional sites, although views differed on whether research farms should become more specialised or whether farmers should be supported to undertake experimentation on their own farms:

“I believe farmers learn best from seeing stuff. And so, I favour investment going into more demonstration farms, very practical stuff on the ground where there's a bit more structure and a bit more network. Because every farm is different, but actually, if you're in a certain geography, you'll have similarities. So, I think the more of a network of farms you've got across the UK, which are ostensibly productive farms, but actually working for a greater good, I think will be really valuable.” (Interview – supply chain)

“I think rather than necessarily setting somewhere up as a research farm, we should actually enable farmers to continue to experiment, and share those findings. My instinct is that's a better bet than a whole bunch of fully fledged research farms that just get their own overhead and they kind of sit there rather than actually, again, putting it back in the hands of farmers.”
(Interview – farmer)

6.2.4 Connect

Workshop and interview participants pointed to the volume of data now being collected, including on farms, as an under-used opportunity. Interviewees observed that many farmers are already gathering far more data than they can interpret, which has tended to benefit technology providers more than land managers, and several felt AI-assisted interpretation of this data could be transformative:

“Everyone has an abundance of data that they're not entirely sure what the ‘so what’ of it is. More compatible digitisation of data across multiple farms has huge potential for changing that systems-based research.” (Livestock workshop)

“I think the question of data ownership and control and who is sort of pulling the strings, as it were, is going to be really important in terms of farmers being able to trust what they see and what they're being told.” (Crops workshop)

“There are so many places to go to look for research and there's no one authority on what the state of play is currently. So I think there's a massive opportunity in trying to link up all of these things that we know exist in these various different places. With the emergence of AI and what it can possibly do, I think there's a huge opportunity there in mapping out where we are currently.” (Crops workshop)

7. CONCLUSION AND RECOMMENDATIONS

This report sets out to identify the investments in UK agricultural research infrastructure most likely to generate the greatest societal impact. Drawing together evidence from analysis of research funding, a national directory of research infrastructure, a survey of researchers, farmers and stakeholders, and qualitative evidence from interviews and expert workshops, the findings suggest that the principal challenge facing UK agricultural research is not the overall level of investment, but how that investment is distributed, coordinated and aligned with the needs of researchers, farmers and society.

The UK maintains a substantial agricultural research portfolio, with approximately £1.202 billion invested across 2,131 projects between 2022 and 2026. However, investment is concentrated within a relatively small number of research topics, institutions and infrastructure types. Crops, livestock and post-farm gate research account for the majority of funding, while economy and society receive comparatively limited investment despite their increasing importance for addressing contemporary agricultural challenges. Likewise, research infrastructure remains heavily centred on single-site physical facilities, with comparatively limited use beyond host institutions.

This study highlights where research investment differs from stakeholder priorities. While current funding is concentrated in biological and production-oriented research, farmers, researchers and other stakeholders identify profitable farming, food security and resilience as principal priorities. Although these priorities require continued advances in crop and livestock science, they also depend on stronger evidence relating to farm economics, business resilience, labour, markets and policy. Economic and social research therefore appear comparatively underrepresented within the current funding landscape.

The organisation of research infrastructure limits its wider accessibility and potential impact. The infrastructure mapping demonstrates that facilities remain predominantly organised around individual institutions and physical locations, while survey and interview evidence highlights growing demand for shared data resources, coordinated research platforms and stronger collaboration across organisations. The comparatively greater use of virtual resources beyond institutional boundaries suggests that investments in shared digital infrastructure, interoperable data systems and coordinated farm research networks may generate wider benefits than further expansion of isolated physical facilities alone.

The four propositions co-developed through this project are not intended to represent competing investment strategies. Rather, they address different dimensions of agricultural research infrastructure investment and should be viewed as complementary approaches that are appropriate under different investment contexts. For example, where investment in existing infrastructure is an option, it is hard to argue with the logic of maintaining nationally important facilities that are heavily used and at risk (Preserve). Where the capital to invest is tied to a particular site or ring-fenced to develop a research farm, then equipping it to anticipate long-term climate conditions adds value (Predict). Where the investment has to be in new infrastructure and all options are on the table, distributed farm research networks and enhanced data sharing offer the greatest potential (Ground, Connect).

Ultimately, the findings suggest that future investment in UK agricultural research infrastructure should move beyond expanding individual facilities towards developing a more balanced and connected infrastructure landscape. This includes sustaining nationally important research assets, investing in infrastructure capable of addressing future environmental and technological challenges, strengthening research infrastructure embedded within farming systems, and improving shared digital infrastructure and data resources. Overall, the four propositions provide a practical framework for prioritising infrastructure investment according to strategic need while enhancing the long-term capability, accessibility and impact of the UK's agricultural research system.

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APPENDIX

Appendix 1 Detailed Survey Analysis Methods

For the analysis, a ranking design was adopted rather than a conventional rating scale because it requires respondents to make explicit trade-offs between competing priorities (Smyth et al., 2018). A rating scale allows respondents to assign high scores to all items simultaneously, which reduces discriminating power when the goal is to identify genuine priorities across a constrained research agenda (Shortall et al., 2017). Because decisions about agricultural research investment require choices between competing priorities, understanding respondents' relative priorities is more informative than measuring the independent importance of each item.

Because respondents assigned ranks rather than scores, three complementary analytical approaches were applied to each question to capture different aspects of the priority ordering. First, the Top 1 rank measure records the item ranked first by each respondent and captures the strongest individual preference. Second, the Top 3 rank measure identifies whether an item appears among a respondent's three highest-ranked positions, capturing priorities that are consistently valued even when they are not ranked first. Third, a normalised weighted ranking assigns a position weight to each ranked item and normalises these weights at the respondent level. Raw weights were calculated as $(N + 1 - r)$ for an item ranked in position r out of N items, so that the top-ranked item receives the highest weight and lower-ranked items receive progressively smaller weights. Since respondents ranked different numbers of items, whether due to partial completion or the differing lengths of the three questions, raw scores are not directly comparable across respondents or questions (Böckenholt, 1992). Normalisation can address this issue by dividing each respondent's raw weights by their own total, producing scores that sum to one per respondent and are comparable both within and across questions (Böckenholt, 1992; Kim et al., 2022). The resulting continuous measure of relative priority for each item at the respondent level is used as the variables in all regression models. The three approaches are presented in parallel throughout the results. Where all three techniques yield a consistent ranking, the findings are treated as robust; where discrepancies arise, these are noted and discussed.

To test whether priorities differed significantly by respondent role, chi-square tests of independence were applied to each dimension's top-ranked item by role (farmer, researcher, stakeholder); a significant result indicates that priorities are not independently distributed across roles. To check whether these differences held after accounting for other characteristics, three parallel regression models — one each for Why (Q19), What (Q21)

and How (Q23) dimension — were estimated with role as the key predictor of normalised weighted priority scores, controlling for age, gender, region and self-assessed understanding, using OLS with robust standard errors to account for potential heteroskedasticity arising from the bounded and compositional nature of the normalised weight outcomes (Greene, 2003). As this analysis serves primarily as a robustness check on the descriptive patterns reported in Section 5.2, rather than adding new policy insight, the full results tables are in Appendix 2. Further analysis of the relationships between motivations, research topics and delivery mechanisms, including whether Why priorities predict What priorities, and whether these in turn predict How preferences, will be presented in a separate paper on stakeholder perspectives on research priorities.

Appendix 2 The Results of Regression Analysis

Table A1 Predictors of Q19 (Why) normalised weights using multiple regression analysis

	(1) Welfare	(2) Health	(3) Food sec.	(4) Rural	(5) Profit	(6) Economy	(7) Resilience	(8) Circular	(9) Net zero	(10) Nature
Farmer	0.026*** (0.007)	-0.017*** (0.006)	0.009 (0.007)	0.014** (0.006)	0.019** (0.007)	0.019** (0.008)	-0.018** (0.007)	-0.007 (0.006)	-0.034*** (0.008)	-0.015** (0.007)
Researcher	-0.003 (0.007)	-0.005 (0.007)	0.016** (0.008)	0.008 (0.007)	-0.010 (0.010)	-0.007 (0.009)	0.009 (0.008)	0.015** (0.007)	0.027*** (0.008)	0.013* (0.007)
Male	-0.006 (0.005)	0.008* (0.005)	-0.004 (0.005)	0.000 (0.005)	0.006 (0.006)	0.013** (0.006)	-0.010* (0.005)	0.004 (0.005)	-0.002 (0.006)	-0.005 (0.005)
25-34	-0.019 (0.015)	0.007 (0.012)	0.001 (0.011)	-0.014 (0.013)	0.021 (0.015)	0.011 (0.015)	0.002 (0.019)	0.017* (0.009)	0.021* (0.012)	-0.014 (0.015)
35-44	-0.030** (0.014)	0.009 (0.010)	-0.001 (0.010)	-0.014 (0.011)	0.018 (0.015)	0.012 (0.013)	0.009 (0.018)	0.027*** (0.008)	0.027** (0.012)	-0.017 (0.014)
45-54	-0.033** (0.014)	0.004 (0.010)	-0.006 (0.010)	-0.018 (0.012)	0.025* (0.014)	0.012 (0.014)	0.012 (0.018)	0.017** (0.008)	0.029** (0.012)	-0.021 (0.014)
55-64	-0.033** (0.014)	0.017 (0.011)	-0.006 (0.011)	-0.002 (0.012)	0.036** (0.014)	0.011 (0.013)	0.021 (0.018)	0.016* (0.009)	0.022* (0.011)	-0.009 (0.015)
65 or over	-0.040*** (0.015)	0.018 (0.011)	0.008 (0.015)	-0.001 (0.013)	0.038*** (0.015)	0.005 (0.014)	0.006 (0.019)	0.012 (0.009)	0.028** (0.014)	-0.011 (0.015)
Devolved nations	0.009 (0.006)	-0.011* (0.006)	0.020* (0.011)	0.014** (0.006)	0.004 (0.007)	0.004 (0.008)	-0.015** (0.007)	0.004 (0.006)	-0.003 (0.007)	-0.008 (0.007)
North England	0.011* (0.007)	-0.010* (0.005)	-0.003 (0.006)	0.012* (0.007)	0.005 (0.011)	0.001 (0.007)	-0.019*** (0.006)	-0.005 (0.006)	-0.008 (0.006)	0.000 (0.006)
Midlands	0.008 (0.006)	-0.003 (0.006)	0.012* (0.007)	0.003 (0.006)	0.009 (0.007)	0.010 (0.008)	-0.012* (0.007)	-0.001 (0.006)	-0.004 (0.007)	-0.009 (0.006)
Very good	-0.025*** (0.006)	0.001 (0.006)	-0.021** (0.010)	-0.011 (0.007)	-0.007 (0.011)	0.004 (0.008)	0.003 (0.007)	-0.009 (0.006)	-0.007 (0.008)	-0.002 (0.007)
Fairly good	-0.014** (0.006)	-0.005 (0.005)	-0.018** (0.009)	-0.008 (0.006)	-0.002 (0.009)	-0.004 (0.007)	0.003 (0.006)	-0.004 (0.006)	-0.005 (0.006)	-0.004 (0.005)
_cons	0.141*** (0.015)	0.100*** (0.012)	0.155*** (0.012)	0.102*** (0.013)	0.123*** (0.016)	0.065*** (0.015)	0.141*** (0.019)	0.060*** (0.009)	0.070*** (0.012)	0.131*** (0.015)
N	534	506	561	531	562	498	534	474	486	519

Notes: Standard errors in parentheses. Robust standard errors in parentheses. Baseline: Stakeholder, Female, Some or limited understanding, and South and London.* p<0.10 ** p<0.05 *** p<0.01

Table A2 Predictors of Q21 (What) normalised weights using multiple regression analysis

	(1) Soil	(2) Climate	(3) Land use	(4) Crops	(5) Livestock	(6) Food prod	(7) Society	(8) Economy	(9) System
Farmer	-0.005 (0.007)	-0.003 (0.008)	-0.031*** (0.008)	0.008 (0.008)	0.033*** (0.009)	0.021** (0.009)	0.010 (0.008)	0.042*** (0.009)	-0.054*** (0.009)
Researcher	-0.003 (0.008)	0.021** (0.008)	0.028*** (0.010)	0.008 (0.009)	-0.006 (0.009)	0.010 (0.010)	0.013 (0.009)	-0.007 (0.009)	0.001 (0.009)
Male	0.005 (0.005)	-0.001 (0.007)	-0.005 (0.006)	0.009 (0.007)	-0.010* (0.006)	0.014** (0.007)	-0.021*** (0.006)	0.017** (0.007)	0.003 (0.006)
25-34	0.020 (0.016)	0.018 (0.022)	0.006 (0.019)	0.015 (0.019)	0.002 (0.019)	-0.004 (0.018)	-0.008 (0.021)	0.003 (0.018)	-0.039* (0.022)
35-44	0.013 (0.015)	0.019 (0.021)	0.003 (0.020)	0.001 (0.018)	-0.020 (0.017)	0.002 (0.017)	0.003 (0.021)	0.017 (0.016)	-0.031 (0.021)
45-54	0.021 (0.016)	0.005 (0.021)	-0.003 (0.018)	-0.002 (0.018)	-0.023 (0.018)	-0.001 (0.017)	0.000 (0.021)	0.014 (0.018)	-0.031 (0.021)
55-64	0.019 (0.016)	0.006 (0.020)	0.013 (0.019)	0.005 (0.018)	-0.020 (0.018)	0.002 (0.017)	0.004 (0.021)	0.028* (0.016)	-0.024 (0.022)
65 or over	0.030* (0.017)	0.007 (0.023)	0.018 (0.021)	0.031 (0.020)	-0.002 (0.020)	0.012 (0.019)	-0.002 (0.022)	0.018 (0.022)	-0.032 (0.022)
Devolved nations	-0.017** (0.006)	-0.003 (0.008)	-0.004 (0.007)	-0.022*** (0.008)	0.024*** (0.008)	-0.005 (0.008)	0.016* (0.008)	0.008 (0.013)	-0.008 (0.009)
North England	-0.015** (0.007)	-0.006 (0.008)	0.005 (0.012)	-0.016** (0.008)	0.016** (0.008)	0.001 (0.008)	0.021** (0.008)	-0.004 (0.009)	-0.005 (0.009)
Midlands	0.001 (0.006)	-0.002 (0.008)	-0.014* (0.007)	0.012 (0.008)	0.011 (0.007)	-0.003 (0.008)	0.005 (0.008)	0.010 (0.009)	-0.018** (0.008)
Very good	-0.018** (0.007)	0.010 (0.009)	-0.023* (0.012)	0.011 (0.009)	-0.017** (0.009)	-0.013 (0.009)	-0.013 (0.008)	-0.007 (0.012)	0.006 (0.009)
Fairly good	-0.005 (0.006)	0.002 (0.007)	-0.015 (0.010)	0.002 (0.007)	-0.014* (0.007)	-0.009 (0.007)	-0.005 (0.007)	0.006 (0.011)	0.003 (0.008)
_cons	0.139*** (0.016)	0.119*** (0.022)	0.136*** (0.019)	0.122*** (0.019)	0.126*** (0.019)	0.107*** (0.018)	0.099*** (0.021)	0.076*** (0.019)	0.169*** (0.022)
N	553	525	514	554	533	523	503	525	492

Notes: Standard errors in parentheses. Robust standard errors in parentheses. Baseline: Stakeholder, Female, Some or limited understanding, and South and London. * p<0.10 ** p<0.05 *** p<0.01

Table A3 Predictors of Q23 (How) normalised weights using multiple regression analysis

	(1) Infra	(2) Hardware	(3) Software	(4) Genetic	(5) Inputs	(6) Practices	(7) Systems	(8) Knowledge	(9) Market	(10) Policy	(11) Monitor
Farmer	0.012* (0.007)	0.002 (0.009)	-0.014* (0.009)	0.025** (0.010)	0.009 (0.009)	-0.010 (0.008)	-0.042*** (0.010)	0.004 (0.013)	0.038*** (0.009)	-0.001 (0.008)	-0.017** (0.008)
Researcher	0.003 (0.008)	0.005 (0.010)	0.003 (0.009)	0.031*** (0.011)	0.003 (0.009)	0.006 (0.009)	-0.006 (0.010)	0.001 (0.014)	0.002 (0.008)	0.018* (0.009)	0.016 (0.010)
Male	-0.004 (0.006)	0.025*** (0.007)	0.014** (0.006)	0.008 (0.007)	0.013** (0.006)	-0.002 (0.006)	-0.005 (0.006)	-0.023** (0.010)	0.000 (0.007)	0.002 (0.006)	-0.010* (0.006)
25-34	0.009 (0.015)	0.043*** (0.012)	0.008 (0.014)	0.025 (0.017)	0.001 (0.018)	0.006 (0.018)	-0.007 (0.013)	-0.015 (0.015)	0.017 (0.015)	0.003 (0.017)	-0.014 (0.018)
35-44	0.002 (0.014)	0.033*** (0.010)	-0.002 (0.013)	0.016 (0.015)	0.000 (0.016)	0.010 (0.017)	-0.012 (0.012)	-0.001 (0.016)	0.017 (0.014)	0.006 (0.016)	0.010 (0.018)
45-54	-0.003 (0.014)	0.029*** (0.009)	-0.005 (0.014)	0.023 (0.016)	0.008 (0.017)	0.002 (0.017)	-0.011 (0.012)	0.011 (0.017)	0.014 (0.014)	0.003 (0.016)	-0.006 (0.017)
55-64	0.006 (0.015)	0.053*** (0.014)	0.003 (0.014)	0.050*** (0.019)	0.017 (0.017)	0.012 (0.017)	-0.006 (0.012)	0.003 (0.014)	0.025* (0.015)	0.003 (0.016)	0.000 (0.017)
65 or over	0.002 (0.016)	0.038*** (0.012)	0.023 (0.026)	0.046** (0.018)	0.012 (0.019)	0.013 (0.018)	-0.022 (0.016)	0.045** (0.022)	0.021 (0.025)	0.011 (0.019)	0.004 (0.018)
Devolved nations	0.008 (0.007)	-0.004 (0.007)	0.005 (0.008)	0.003 (0.010)	0.001 (0.009)	-0.009 (0.009)	-0.009 (0.008)	0.001 (0.015)	0.004 (0.010)	0.004 (0.009)	-0.002 (0.008)
North England	0.011 (0.007)	0.012 (0.016)	0.016 (0.012)	0.011 (0.013)	0.000 (0.007)	-0.015** (0.007)	-0.010 (0.008)	-0.010 (0.015)	-0.007 (0.011)	0.011 (0.008)	0.002 (0.013)
Midlands	-0.004 (0.007)	0.001 (0.007)	0.008 (0.007)	0.013 (0.009)	0.003 (0.008)	-0.021*** (0.007)	-0.020*** (0.007)	-0.026** (0.010)	0.004 (0.010)	0.000 (0.008)	0.005 (0.008)
Very good	-0.014* (0.007)	0.001 (0.008)	-0.005 (0.015)	-0.015 (0.009)	-0.003 (0.009)	-0.005 (0.009)	-0.004 (0.008)	0.007 (0.014)	-0.025* (0.013)	-0.030*** (0.008)	-0.015 (0.013)
Fairly good	-0.007 (0.006)	0.007 (0.007)	-0.005 (0.013)	0.004 (0.009)	-0.003 (0.007)	-0.009 (0.007)	0.001 (0.007)	0.001 (0.012)	-0.022* (0.012)	-0.019*** (0.007)	-0.003 (0.010)
_cons	0.087*** (0.015)	0.016 (0.013)	0.077*** (0.016)	0.065*** (0.019)	0.106*** (0.018)	0.136*** (0.019)	0.157*** (0.014)	0.163*** (0.018)	0.079*** (0.016)	0.117*** (0.017)	0.116*** (0.019)
N	456	432	427	512	514	501	474	531	465	471	471

Notes: Standard errors in parentheses. Robust standard errors in parentheses. Baseline: Stakeholder, Female, Some or limited understanding, and South and London.* p<0.10 ** p<0.05 *** p<0.01

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