



State of Agricultural Research & Innovation 2026

Centre for Agricultural Research Impact (Ag.Impact)

October 2026

Summary

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Summary

How the UK farms and grows food is crucial to the nation's security, resilience and prosperity. Agriculture needs transforming to meet these needs in the face of new pressures.

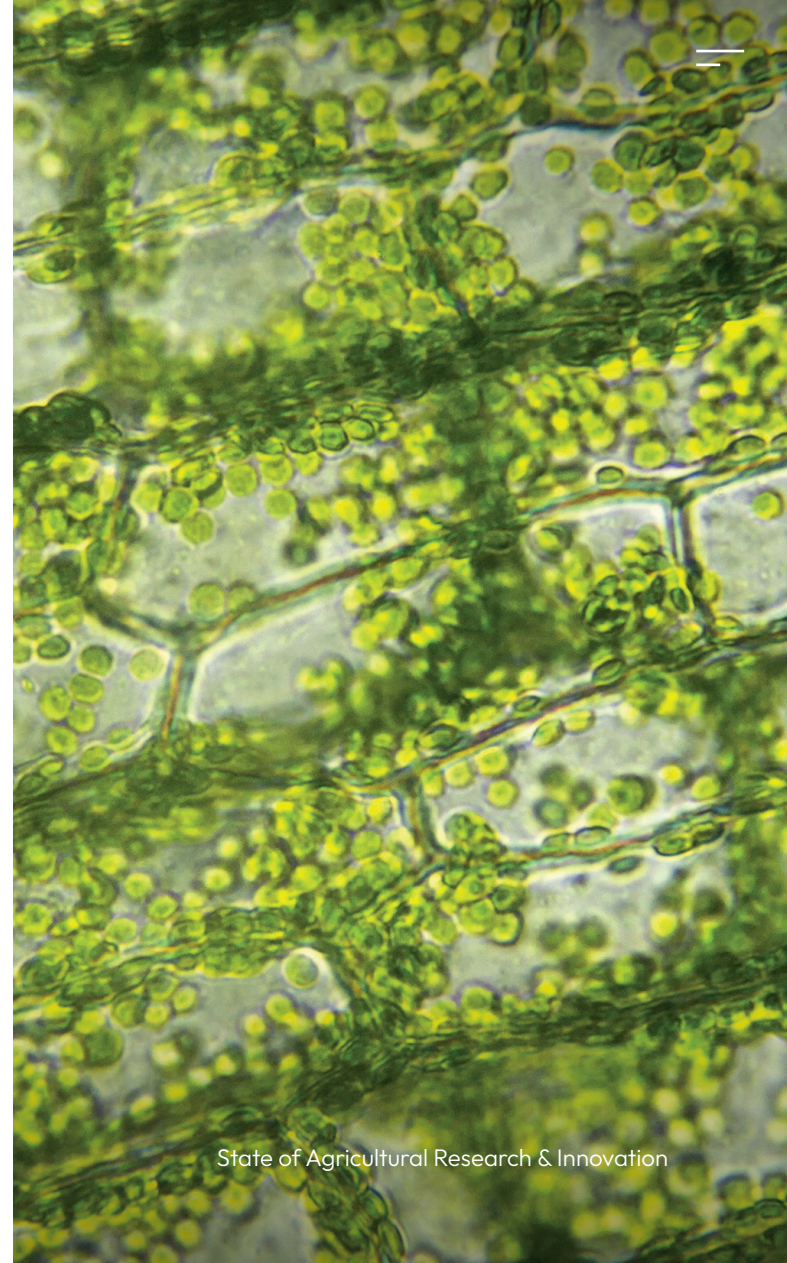
Research is critical to transforming agriculture, as it enables innovation in technology, policy and practice.

Public funding has a major influence on research across industry, universities and research organisations.

The State of Agricultural Research & Innovation (SARI) maps public funding for agricultural research by topic and approach. This report analyses **£1.2 billion of publicly funded research** between 2022 and 2026.

We compare current research funding with what farmers, growers, researchers and others expect, based on a survey of **over 600 stakeholders**, in-depth interviews and workshops.

This report provides a strategic overview of the findings. You can explore the data via the SARI dashboard: www.ag-impact.org/sari.



Expectations and reality

Feature	Stakeholders expect agricultural research to...	The current reality is that...
Relevant	Answer agriculture's real-world questions. For most farmers, the top priority is profitable farming. Researchers and other stakeholders balance profitable farming, food security and resilience.	Public funding has wider objectives, including to grow the UK economy. Stakeholders, including researchers, question whether research is focused on the most important issues.
Joined-up	Be collaborative and interdisciplinary. Researchers say 'systems' research can best meet the challenges and opportunities facing UK agriculture.	Cross-sector collaboration is growing, but systems research remains uncommon: interdisciplinary or cross-cutting projects accounted for 7% of funding.
Useful	Consider application from the outset. They say research can have the greatest impact by improving knowledge and skills. Among technologies, farmers see genetics and inputs as more important than automation.	More research is geared towards having an impact through technological innovation than through improving knowledge and skills, practices, policy or markets. The areas of technology funded broadly match stakeholder priorities.
Grounded	Be grounded in the experience of intended beneficiaries, involving farmers and other practitioners through co-design, and targeting research that is unlikely to attract commercial investment but delivers wider environmental and societal benefits.	The largest investment is in basic research, followed by co-funding for industry-led research to develop commercial products and services. Defra's new ADOPT Fund is rapidly growing user-centred research.
Timely	Provide evidence and solutions when they are needed. This is recognised as difficult. Publicly funded research is often justified with reference to government goals and targets, which can be as near as five years ahead.	The weighting of investment towards basic, translational and commercial research means most research is geared towards having medium or longer-term impact.
Future-proof	Help agriculture anticipate and adapt to emerging needs and possibilities, developing long-term evidence and solutions. The sector is seen as volatile and uncertain, with global prices, UK politics, and climate and weather major drivers.	Sector-wide foresight is sporadic and piecemeal. Researchers identify diverse ways investment could strengthen agricultural research infrastructure, from specialist facilities to farm networks and data-sharing. In practice, they mainly use infrastructure at their own institutions.

Strengths

This review highlights hidden strengths of the UK agricultural research system, beyond its established reputation for excellent foundational science:

- It is **responsive** to government priorities.
- The UK's **specialist institutes** and **agricultural universities** have retained important capabilities for applied research in a challenging funding landscape.
- Defra and the devolved governments are responsible for a growing share of public research funding, so can further increase **alignment** with agricultural policy objectives.
- It is highly **innovative**, with research funders and organisations trying novel approaches to increase the relevance and impact of research.

We identify examples where research funders and organisations are already working in ways that help meet stakeholder expectations. Recent and ongoing developments are set to further strengthen the impact and social value of agricultural research, for example:

- **UK Research & Innovation's (UKRI) new strategy** increases coordination of research and innovation funding.
- The Horticulture and Poultry **Sector Development Plans** include stakeholders in research priority-setting.
- Defra's new **ADOPT Fund** represents a major investment in user-centred research and innovation.

Opportunities

Opportunities to extend and consolidate these strengths include:

- **UK coordination** of public sector research relating to agriculture, convening research organisations and funders from across the four nations and transparently engaging diverse stakeholders.
- **Regular foresight** into emerging challenges and opportunities, recognising that most research will continue to be geared towards longer-term impacts, and enabling those involved to anticipate needs on a relevant timescale.
- **Innovation and experimentation** in the design and delivery of user-centred, systems and long-term research funding programmes.
- **Ambitious strategic investment** to make the UK's agricultural research infrastructure fit for purpose.

The Centre for Agricultural Research Impact (Ag.Impact), which conducted this review, will support research organisations and funders in developing and realising these opportunities.



Introduction

1.1 / Transforming agriculture

How we farm and grow food across the UK is crucial to food security, the health and resilience of our communities and environment throughout the four nations, and the livelihoods of millions of citizens working in agriculture and the food sector it underpins.

Yet agriculture is under pressure. We rely on farmers and growers to feed the nation in an increasingly turbulent world, while also cutting carbon, regenerating soil, cleaning rivers and restoring nature, as well as bearing the brunt of climate change.

Meeting these needs means transforming agriculture. This is recognised by governments across the UK (Box 1). While closely connected to wider transitions in food systems and land use, the scale of change and the complexity of agriculture demand dedicated strategic attention.

Research is critical to this transformation, not only contributing to the development of new technologies, but also generating evidence to underpin changes in practice, policy and regulation.

Box 1: The need for transformation.¹

UK governments expect agriculture to change profoundly.

“English farming is undergoing the most significant transformation since the Second World War.” Farming Roadmap 2050

“(This review) is about a fundamental reset of how we value food and farming.”
Farm Profitability Review

“Large-scale, coordinated changes to our economy, agricultural and land use practices are required.” Scottish Government Strategic Research Overview

“The Vision for the Framework is: A transformed innovative food system that protects and enhances natural resources for future generations, is environmentally sustainable, economically ambitious and provides safe, nutritionally balanced, accessible food for all.” Northern Ireland Food Strategy Framework

1.2 / Strengthening research

The UK is said to excel at agricultural research, but not at applying it (Box 2).

Efforts to strengthen the impact of agricultural research have focused on understanding and coordinating knowledge exchange and commercialisation.²

Yet, the impact of agricultural research also depends on its relevance to intended users, whether in farming, supply chains, communities or government. How research is prioritised, designed and conducted matters as much as how its results are communicated and commercialised.

Therefore, alongside ongoing efforts to improve knowledge exchange, it is important to understand how far research activity and investment align with the priorities perceived by stakeholders.

Box 2: Concerns over the impact of UK agricultural research.³

Previous analysis and commentary has focused on the translation and commercialisation of research, rather than its prioritisation and design.

“By Nobel Prizes awarded, scientific papers published and many other measures, the UK has some of the most creative and productive basic scientists on earth, but it has lagged in application of science to realise agricultural production.”
National Food Strategy

“The UK already produces world class food science and invests a lot in agricultural research... but the UK is less effective than comparable countries at innovation – the successful application of ideas.”
Application of Science Report

“Coordination failures in the innovation pipeline between the critical needs of UK farmers and

growers and fundamental innovation undertaken in the UK.” Agricultural Productivity Working Group

“Although Britain enjoys good growing conditions, a professional, well-equipped farming sector and a world-class agri-science base, the industry’s development is constrained by fragmented support policies, inconsistent regulation, a failure to transfer new scientific knowledge into practice, and declining productivity growth.” APPG on Science & Technology in Agriculture

“Farmers and growers need access to better business relevant advice, goal orientated science for on-farm use, informed by targeted commercial research initiatives so that innovation and best practice can be taken up by individual farmers. Rather than the current approach with no overarching ambition.”
Farming Profitability Review

1.3 / The research landscape

Hundreds of organisations are directly involved in delivering agricultural research, spread across the nations and regions of the UK. These include companies, universities, specialist institutes, public bodies and charities (Box 3).

Companies invest in research to develop new products or services in fields such as plant and animal breeding, agrochemicals, veterinary medicines and automation. They may conduct research themselves or commission it from other companies, research institutes or universities.

At most **institutes and universities**, agricultural research is primarily funded by the public sector, and ranges from basic, foundational science to applied research. While concentrated in the biosciences, research relevant to agriculture spans disciplines from engineering to economics.

Government departments and agencies do some research in-house, but their primary role is incentivising, funding and procuring research through a wide range of mechanisms (Box 4). This includes commissioning research that generates evidence to inform policy, co-funding research with industry to stimulate economic growth or find solutions to strategic challenges, and investing in the foundational science that underpins both.

There is currently no central coordination of agricultural research and funding across the UK. However, a growing number of initiatives aim to enable greater strategic alignment across this system. These include: dedicated **Priority Programme boards** coordinating funding across **UK Research & Innovation (UKRI)**, the national funding agency that incorporates the Research Councils and Innovate UK; **Sector Growth Plans**, initially for horticulture and poultry; the **Agricultural Universities Council (AUC)**, which published a joint research strategy in 2023; and the **National Research Organisation (NRO) Group**, which brings together the UK's publicly funded research institutions.⁴

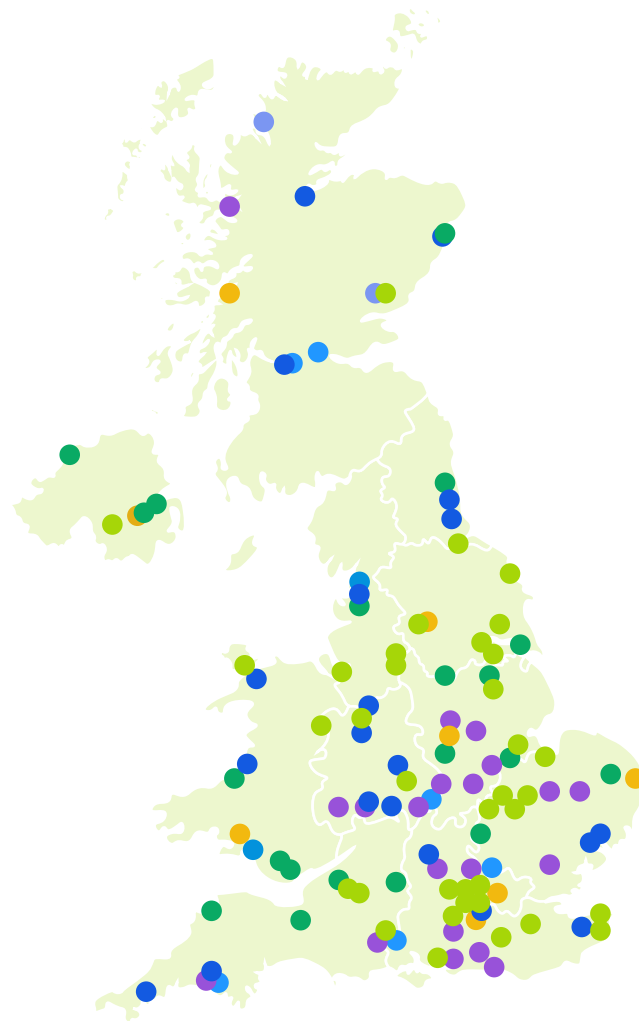
1.3 / The research landscape

Public research funding and incentives have a major influence on research activity across industry, universities and research organisations. The effectiveness of research coordination efforts led by industry bodies or research organisations relies on engaging government.

Box 3: Distribution of organisations involved in research across the UK (research funding recipients 2022–2026, $n=391$ organisations).⁵

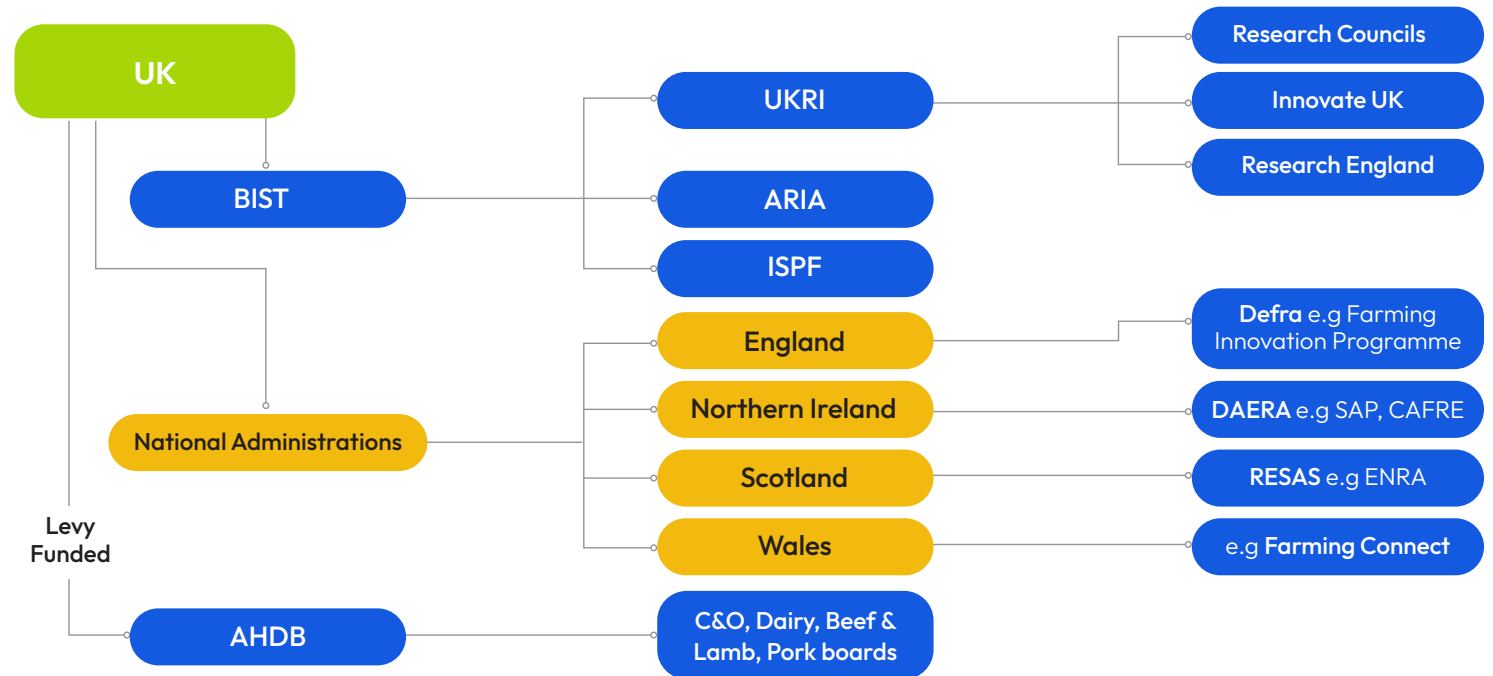
Type of organisation

- University/College, 127
- Industry/Private Business, 90
- NGO, 60
- Other, 46
- Research Institute, 34
- Independent Research Organisation, 34



Box 4: Key organisations funding UK agricultural research.
UK public research funders.

- UK-wide bodies
- National Administration



1.4 / The State of Agricultural Research & Innovation

The State of Agricultural Research & Innovation (SARI) is intended to enable further strategic co-ordination, increasing the alignment of UK agricultural research and innovation investment with policy goals and stakeholder priorities, thereby strengthening its societal impact and public value.

This is the first report in what will be an annual series, providing regular, rigorous analysis of agricultural research funding, activity and capacity across the UK, and understanding the potential impact of research in the context of stakeholder priorities.

It is supported by a **Steering Group** representing the main public funders of agricultural research, and the larger universities and specialist research organisations that deliver most publicly funded research (Box 5). Though the Steering Group do not necessarily endorse all of SARI's findings, they have supported and helped design the process.

There is no perfect measure of research – projects, budgets, researcher time, outputs and social return on investment all have strengths and weaknesses. SARI analyses public-sector funding because:

- It is a major driver of research activity across research organisations and universities, and has a significant influence on the direction of commercial research and development.
- It is invested with the explicit intent to deliver public benefits in line with national goals.
- The public sector has a stronger mandate and capacity for strategic coordination than industry bodies or research organisations.
- More reliable data are available for public-than private-sector research investment.

We analysed over **£1.2 billion** of publicly funded projects between 2022–26, which fell within our definition of agricultural research (Boxes 6 to 8). This represents the great majority of relevant public research funding over the period.

To understand the perspectives of farmers, researchers and other stakeholders on agricultural research in the UK, we asked their views through a survey, which received over **600 responses**, half from farmers (Box 9).⁶ We explored challenges and opportunities in more depth through interviews with 21 people who have strategic perspectives on agriculture and research.⁷

We discussed the future of agricultural research and investment priorities in a series of three workshops and commissioned a citizen dialogue process to provide independent scrutiny of the emerging ideas and priorities.⁸

Throughout this report, we use quotes from participants to illustrate wider themes identified through our analysis. Interactive versions of key charts are available on our online dashboard: www.ag-impact.org/SARI.

A more detailed account of the study design, data sources and analysis is available at www.ag-impact.org/sari. A companion report on *Strategic Priorities for Agricultural Research Infrastructure in the UK*, based on the same data and analysis, has been published by the Innovation & Research Caucus, which co-funded this work.⁹

Limitations

Limitations of this analysis include:

- **Data gaps and reporting inconsistencies** – for example, limited project funding data was available from Welsh Government and DAERA (Northern Ireland), and funders took varied approaches to annualising multi-year grants. We relied on project title, abstract, funders, funding programme and partners to ascertain research topic and type. Abstracts were not consistently available.

As we address these gaps, working with research funders, we will update charts on the SARI dashboard.

- **Sampling** – all surveys were convenience samples; most farmers responding to the survey were members of a panel of 2,000 farmers recruited by Grounded Research.
- **Thematic analysis** – the analysis relies on attributing complex projects and nuanced stakeholder comments to a limited number of themes. Where we defined themes in advance, this was informed by reviews of relevant existing taxonomies and done with input from the Steering Group and a specialist Design Group. We sought to ensure a consistent approach to applying themes via detailed definitions, AI-assisted coding and human review.

1.4 / The State of Agricultural Research & Innovation (Continued)

Box 5: Organisations represented on the SARI Steering Group. The group includes the main public-sector agricultural research funders across the UK. Membership of the Steering Group does not imply endorsement of this report.



Box 6: The scope of SARI. How we define agricultural research.

We identified agricultural research projects using a large body of keywords relating to crops, livestock, soil, water and environment, pest and disease control, on-farm technology and robotics, rural social sciences, and food supply chains.

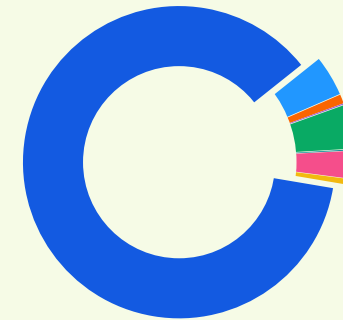
This included projects:

- On topics that would be considered agricultural by some definitions but not others, such as engineering biology and ornamental horticulture. We therefore reviewed projects for 'ambiguity', distinguishing those that were 'definitely agriculture'. Given the focus of SARI on UK agriculture, we also distinguish research that is exclusively focused on non-UK agriculture.
- With a wider scope, for example in landscape ecology, food systems or basic bioscience, within which agriculture is one of several aspects or identified use cases. We reviewed projects for 'breadth', distinguishing those that were 'mainly agriculture'.

Throughout this report, we label projects that were 'definitely' AND 'mainly' agriculture as 'most relevant projects'.

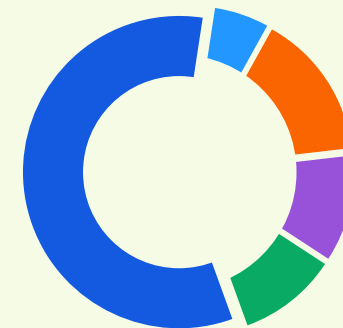
We specifically exclude:

- Marine-based production. We include aquaculture where integrated with terrestrial agriculture.
- Energy production, unless there is an overt relationship to agriculture e.g. biofuel production, solar on farmland.
- Urban environments, unless there is a direct relationship with food production or land use relating to agriculture.
- Human medicine, unless there is a direct relationship to agriculture, e.g. zoonoses.
- Basic bioscience where there is no identifiable connection to agriculture, food or farming in the data we have available (title, summary, organisation or funding programme).



Scope of project funding, 2022-26 (£M).¹⁰

- Engineering biology, **50.21**
- Fish, **11.32**
- Horses / equine, **1.31**
- Non-UK agriculture, **54.69**
- Ornamental horticulture, **1.23**
- Biofuels, **34.76**
- Biomaterials, **7.24**
- Definitely agriculture, **1,041.69**



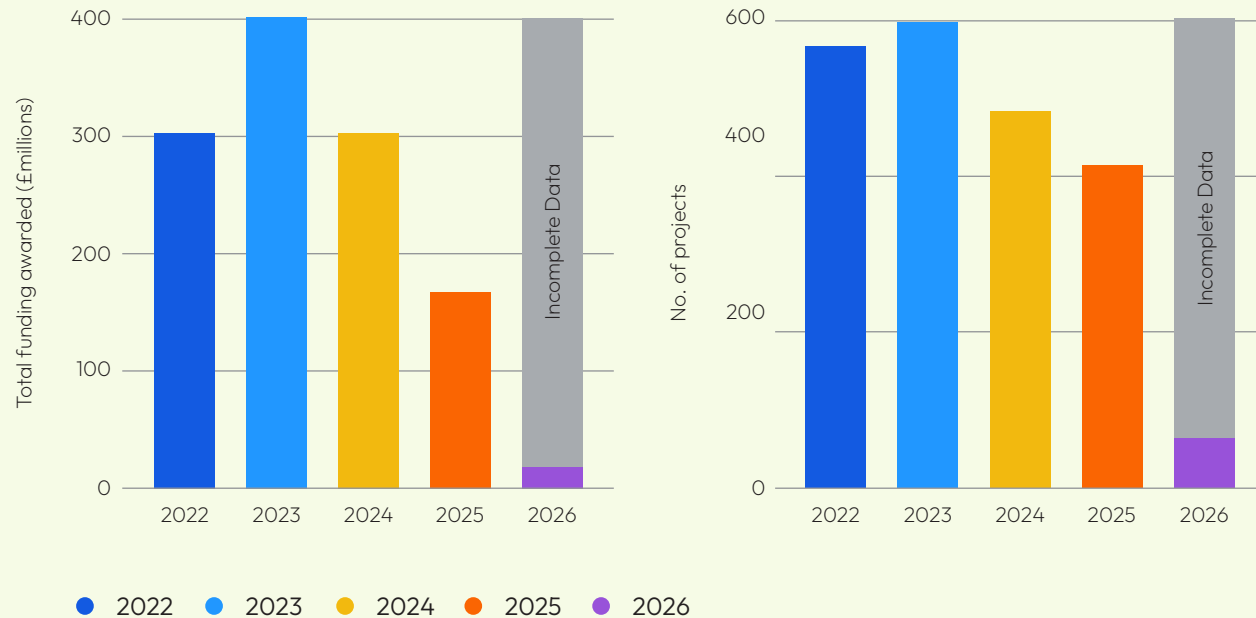
Breadth of project funding, 2022-26 (£M).¹¹

- One Health, **67.83**
- Basic bioscience, **181.69**
- Food systems research, **132.86**
- Landscape & ecosystems, **123.27**
- Mainly agriculture, **696.80**

1.4 / The State of Agricultural Research & Innovation (Continued)

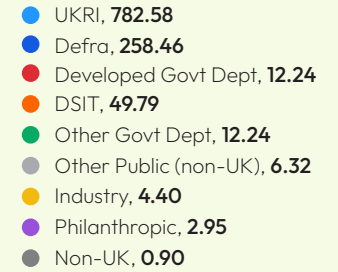
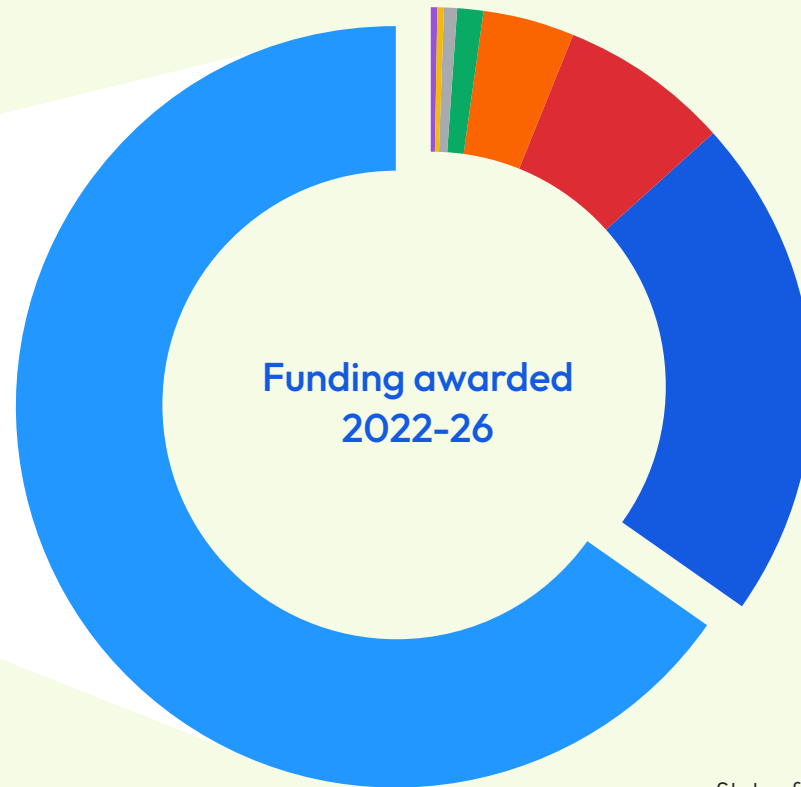
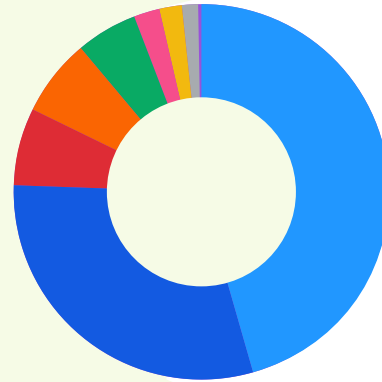
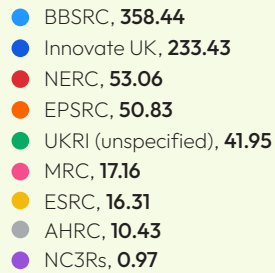
Box 7: Funding and number of projects awarded by start year across UK, 2022–2026, in the SARI dataset (£M).¹²

The pattern does not suggest a declining trend: government has maintained overall investment in research in a challenging fiscal context, and funding cycles, one-off investments and reporting practices make funding look ‘lumpy’ from year-to-year.¹³ Data are included for 2026, although incomplete, to ensure the analysis reflects the latest initiatives and emerging trends.



Box 8: Funding awarded 2022–26 by funder (£M)
(inset: breakdown by UKRI research council/body).¹⁴

SARI primarily analyses public funding, but includes a small amount of philanthropic and industry funding where research organisations included this in data they provided to us.

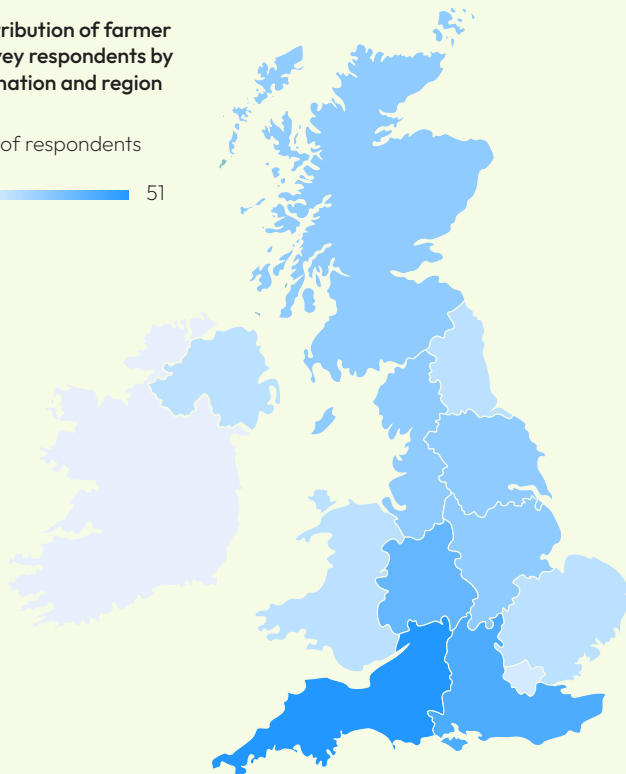


Box 9: Demographic breakdown of survey participants.¹⁵ Farmers were predominantly recruited from Grounded Research's panel.

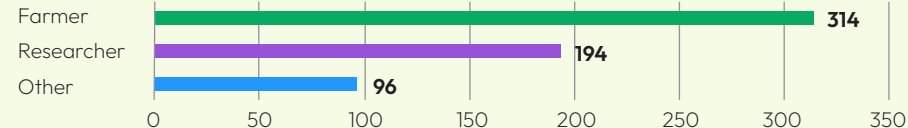
Distribution of farmer survey respondents by UK nation and region

No. of respondents

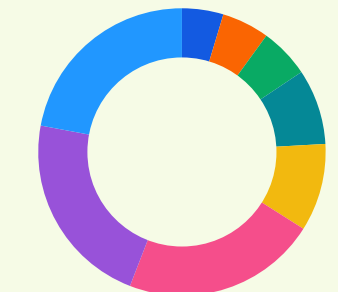
2  51



Primary role of survey respondents

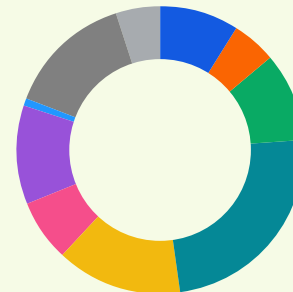


Farmers: Proportion of enterprises/sectors of the farmer survey respondents (n=314, average number of enterprises per farm=2.4)



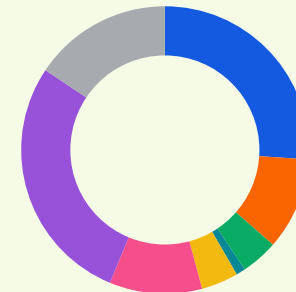
- Combinable crops, **22%**
- Sheep, **22%**
- Cattle (Beef), **22%**
- Other arable crops (e.g. maize/sugar beet/potatoes), **10%**
- Dairy, **8%**
- Poultry, **6%**
- Pigs, **5%**
- Horticulture/Vegetables, **5%**

Researchers: "Which field of agriculture is your research most closely related to?" (researchers, n=194)



- Soils & water, **9%**
- Climate & weather, **5%**
- Landscape use & ecosystems, **10%**
- Crops, **24%**
- Livestock, **14%**
- Food production & supply, **7%**
- Society, **11%**
- Economy, **1%**
- Systems, **14%**
- Other, **5%**

Other stakeholders: "Which of the following best describes your primary role?" (others, n=96)



- Agricultural adviser / consultant, **26%**
- Agri-tech / agricultural input business, **11%**
- Food processing, manufacturing / distribution, **4%**
- Food retail / food service, **1%**
- Estate, land / environmental management, **4%**
- Government / public body, **10%**
- NGO, charity / industry body, **28%**
- Other, **16%**

1.5 / Expectations

Across farming, the supply chain, academia and policy, views vary about what evidence and innovation is needed, and where research can best help.

Yet stakeholders' overall expectations of the research system – how it should work to meet those needs – are remarkably consistent.

Box 10 outlines how farmers, researchers and other stakeholders describe an effective research system in our survey. While they use different language, the same features came up time and again.

We use these features to structure this report of SARI's findings. For each feature, we outline:

- What the stakeholders we surveyed and interviewed say they **expect**.
- The current **reality**, both as they perceive it, and as evidenced by the projects and policies we reviewed.
- An example of **what works**, steps already being taken that help to meet the expectation.

Box 10: Features of an effective agricultural research system described by stakeholders.¹⁷

Thematic analysis of survey responses by stakeholder group, with additional insights from interviews and workshops.

		Stakeholder perspectives		
Feature	Expectation	Farmers	Researchers	Others
Relevant	Survey respondents say research should focus on the priorities set by governments, be informed by what is happening on farms, and be in the public interest. In the interviews and workshops, one of the clearest messages was the need for a strategic approach to agricultural research. Participants called for outcome-focused priorities that are directly linked to the challenges farming is facing and aligned with public interest.	Farmers consulted and involved in shaping research priorities	Collaboration across institutions, government and industry	Research priorities driven by farmer and supply-chain needs
Joined-up	One of the strongest calls from participants is for a research system that is joined-up. At a systems level, this means collaboration across disciplines and devolved nations, and among funders, research organisations and stakeholders. At a project level, people talk about funding systems-based research, building interdisciplinary teams, and designing projects that are linked with farmers and the rest of the supply chain.	Joined-up, cross-sector collaboration rather than siloed research	Whole-system, cross-disciplinary research (not siloed)	Whole-system, joined-up thinking rather than siloed research
Useful	There is a widely held view that research should ultimately have a practical application. While, in interviews, some academics stress that it is crucial to protect blue-sky, curiosity-driven foundational research, the consensus among survey respondents is that real-world application and public benefit should be considered at the earliest stages of project development in agriculture.	Practical and farm-tested	Stronger focus on turning research into real on-farm uptake	Stronger focus on applied research

		Stakeholder perspectives		
Feature	Expectation	Farmers	Researchers	Others
Grounded	Respondents say that agricultural research should be grounded in agricultural experience. Farmers, growers and land managers should be involved in setting research priorities, and projects should be co-designed. There is wide agreement that research should have the end user in mind from the outset, even sometimes in basic science. People say public research should be for public benefit, addressing research needs missed by companies.	Research that reflects the variety of farm types and locations	Farmers and practitioners involved in co-designing research (bottom-up approaches)	Practical, farmer-led demonstration and trial-based research
Timely	Farmers, growers and other stakeholders are looking for research that will help them tackle the challenges they are facing right now. They want research that moves quickly into practice, and works with the realities of farm rotations and policy constraints.	A faster, clearer route from research into practical use	Research needs to move quickly into practice	Research needs to work with the realities of farm rotations
Future-proof	Participants suggest the role of an effective research system is to prepare farming for the future. This means bearing the risk of 'big ideas', focusing on transformative rather than incremental change, and developing the systems and infrastructure now that will support the research needed in 20 years' time. They described a future-proof system as one with long-term strategic goals that can weather changes in government, and long-range funding pipelines.	Long-term, stable and consistently funded research	Long-term, sustained research and funding	Long-term, stable funding and policy certainty



Relevant

2.1 / Expectation: research should answer agriculture's real-world questions

Farmers, researchers and other stakeholders expect research to be relevant to the strategic and practical challenges and opportunities facing agriculture. How stakeholders see these strategic needs varies.

Farmer priorities

For over half of farmers, the top priority is **profitable farming** (Box 11). Farm profitability is seen as the foundation for addressing other challenges and opportunities.

"Without good business performance and profitability there will be no farming and thus no environmental enhancement and no food. No profit = no food"
Farmer 127

"Farm business performance is key, without the business performing to be profitable how can a business look after other needs such as the environmental or social" Farmer 26

One in five farmers say **food security** is the top priority, and one in ten say **animal welfare**. They see these issues as connected.

"The biggest challenge facing UK agriculture is balancing food security with environmental goals while maintaining profitable farms." Farmer 63

"The challenge is to create long term viable and sustainable businesses which can be demonstrated to protect animal welfare and the environment."
Farmer 224

Researcher priorities

Researchers and other stakeholders also stress the importance of profitable farming, though balanced with **food security** and **resilience**. Researchers highlight the human implications of farm profitability as well as the economic.

"Farmer, grower and other practitioners' mental and physical wellbeing in agriculture underpins everything. This is currently a massive challenge due to insufficient landscapes of support."
Researcher 479

We asked stakeholders to rank profitability, food security and resilience alongside challenges and opportunities that government or other organisations have identified as strategically important, including wider **economic growth, net**

zero, nature recovery and healthy diets (Box 13). Few see any of these other issues as the top priority.

Citizen views

We also asked people's views as citizens, in workshops with members of the Citizens Advisory Council who have advised Defra in developing the government's Food Strategy. They were surprised **health** was not a higher priority for farmers or researchers.

"It's quite strange how healthy diet was quite low as a priority... I was surprised with the unhealthy diet, that that's not on." Citizen workshop 1

While recognising the responsibility of government to lead in the public interest, they also highlighted the risk of politicisation.

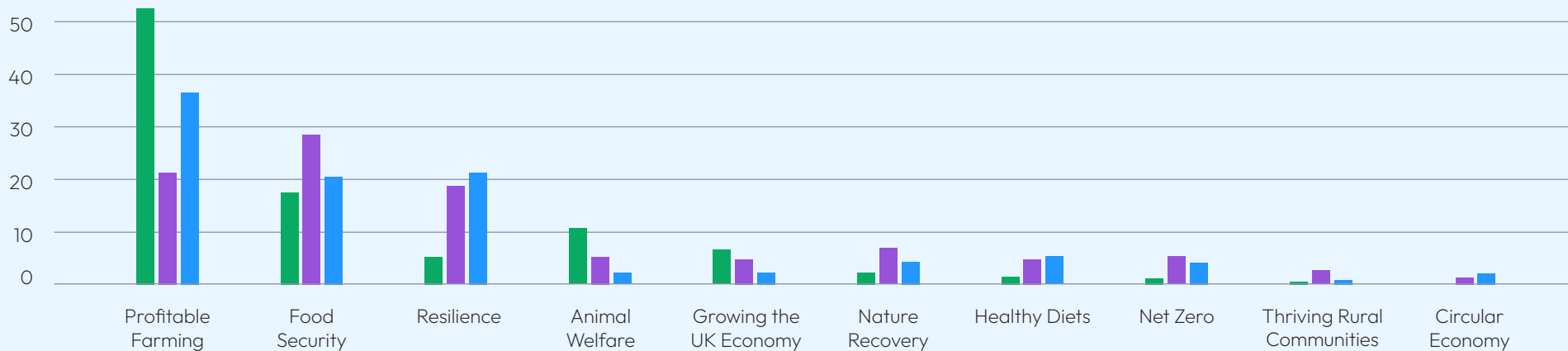
"One of the things that we've seen in the US is research organisations being shut down. When you connect research to government strategy very closely, these things can be dismantled by a new government with a very different agenda."
Citizen workshop 2

2.1 / Expectation: research should answer agriculture's real-world questions (Continued)

Box 11: “Overall, how do you see the priorities for UK agriculture?” (% top ranked by role, n=604).¹⁸

Farmers are more focused on profitable farming than researchers and other stakeholders.

● Farmers ● Researchers ● Others



2.2 Reality: public research funding has wider objectives

Stakeholders' views diverge over whether research is currently focused on the most important priorities, yet governments are working towards closer alignment.

More researchers than farmers or other stakeholders see agricultural research as **good value for money**, but even they are equivocal on whether it is focused on **the most important issues** (Box 12).

The focus of research is substantially shaped by public funding, which is provided through multiple routes and programmes, reflecting the priorities of different government agencies, departments and nations.

Research Council funding prioritises curiosity-driven science and underpinning research capabilities, including thematic programmes, responsive grants and major strategic grants to specialist research institutes (Box 13).

Innovate UK prioritises commercial innovation. Its programmes have included the Agri-Tech Centres (launched 2016), Transforming Food Production (2019–2024, with BBSRC), various Investor Partnerships (since 2021), AgriFood Investment Readiness Programme (since 2017), the Climate-Smart Agriculture Partnership (2024–26) and Agri-Scale (2025–26) (Box 13).

The Research Councils and Innovate UK sit within **UKRI**. Driving economic growth across the UK is the central focus of UKRI's new strategy for 2026–31, which prioritises investment in eight high-growth sectors targeted in the UK's Modern Industrial Strategy.¹⁹ Agri-tech is identified as a 'frontier industry' within Advanced Manufacturing, one of these 'IS-8' sectors.²⁰ The focus is on commercialising agri-tech, particularly automation, for UK and international markets.

Since **Defra's** Farming Innovation Programme (FIP) opened in 2021, the department's share of public investment in agricultural research and innovation has grown. Whereas Defra accounted for only £38.3M capitalised R&D in 2016/17, this had increased to £83M by 2023/4 (increasing 170% in real terms when accounting for inflation).²¹

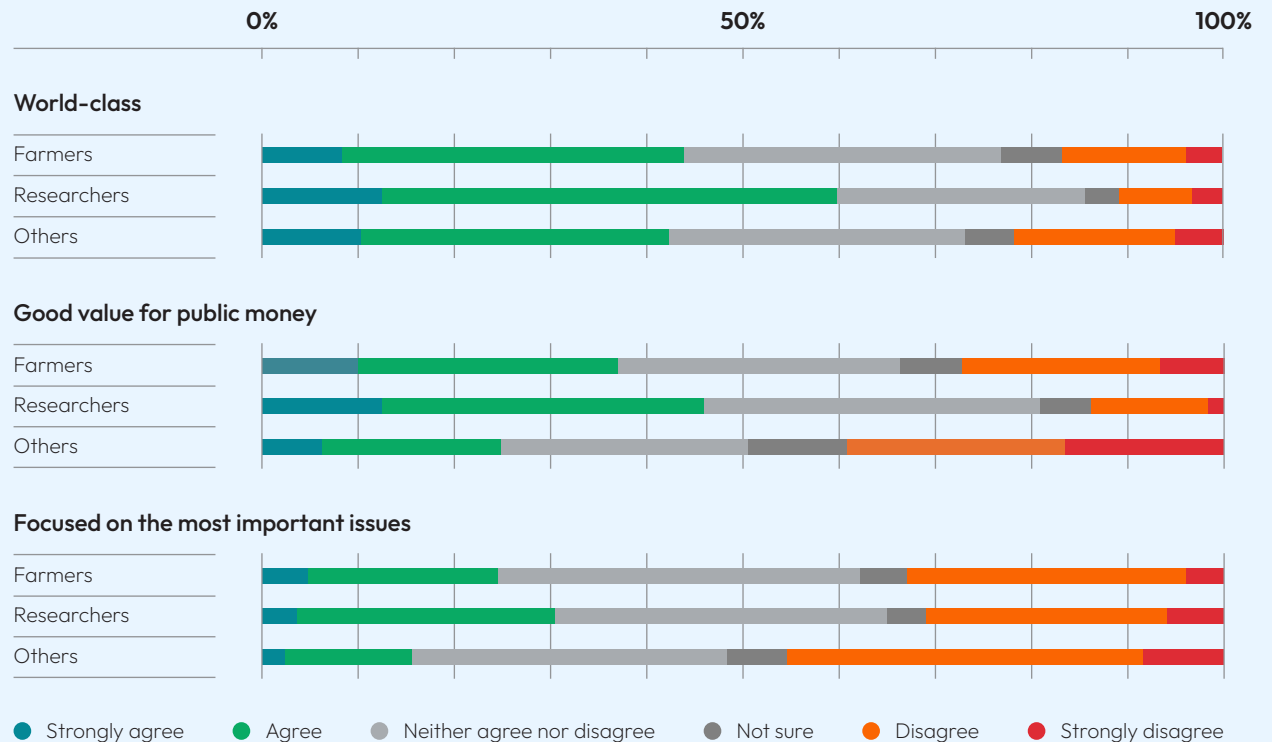
While Innovate UK delivers FIP funds on Defra's behalf, the programme's focus is on the direct public benefit of increasing the productivity, sustainability and resilience of farming, rather than on the contribution of agri-tech to wider economic growth (Box 13).

The **devolved nations**, take diverse approaches to supporting agricultural research and innovation. (Box 14).

2.2 / Reality: public research funding has wider objectives (Continued)

Box 12: “Based on what you know or have experienced, to what extent do you agree or disagree that UK agricultural research is currently...” (by respondent type (%), n=604).²²

While many stakeholders say research is ‘world-class’, fewer say it is focused on the most important issues. Perceptions are divided on whether research represents good value for public money.



2.2 / Reality: public research funding has wider objectives (Continued)

Box 13: Examples of research funding programme objectives.²³ Priorities vary over time and across departments.

Defra Farming Innovation Programme:

- Help farmers, growers and foresters increase productivity, sustainability and resilience
- Reduce the environmental impact of agriculture and horticulture
- Apply agricultural research to provide real benefits for farmers, growers and foresters
- Use science to develop solutions for the practical challenges in agriculture and horticulture

Innovate UK and BBSRC Transforming Food Production:

- Produce resilient and sustainable food more efficiently
- Reduce emissions and pollution
- Minimise waste
- Improve soil

Agri-Tech Centres had a range of programmes including:

- Support commercialisation of research and develop solutions to global challenges in the agri-tech sector
- Take innovations all the way from research to commercial viability
- Domestic and low- and middle-income countries agriculture programmes

2.2 / Reality: public research funding has wider objectives (Continued)

Box 14: Agricultural innovation in the devolved nations.²⁴

Scotland has the most established system for including stakeholder views in agricultural research strategy.

Scotland

Scottish Government's Rural and Environment Science and Analytical Services (RESAS) division committed c. £50 million a year to its Environment, Natural Resources and Agriculture (ENRA) Strategic Research Programme 2022–27. It is delivered principally through the six institutes that form SEFARI (Scottish Environmental Food and Agriculture Research Institutions). Alongside this, a reported c. £7 million is invested in Centres of Expertise that variously co-develop with stakeholders (predominantly policy, agency, enterprise or industry sectoral bodies), highly responsive projects to address emerging need, and £8 million for capacity, supporting nationally significant research capability and expertise within SEFARI e.g. research farms. A successor ENRA Research Strategy for 2027–32 was

published in March 2026, restructuring the portfolio around five “Missions for Scotland”. The Strategic Research Programme sets five-year strategic priorities agreed in consultation with stakeholders. Findings are translated and shared through the SEFARI portal.

Wales

Welsh Government prioritises knowledge exchange and near-market innovation, with £11 million allocated in January 2026 to continue its principal agricultural R&D&I programme, Farming Connect. This underpins delivery of the Sustainable Farming Scheme, in the context of the Innovation Strategy for Wales (2023) and the subsequent Agri-Tech Action Plan. Welsh Government have an ambition to set research priorities.

Northern Ireland

In Northern Ireland, DAERA commissions priority research via the Agri-Food and Biosciences Institute (AFBI), through the DAERA Directed AFBI Research Work Programme. This is supplemented by collaboration under the DAERA–DAFM R&D Partnership, which has committed over £40 million jointly (£8.8 million of which from DAERA). Additionally, on-farm innovation and knowledge exchange is supported through DAERA's Sustainable Agriculture Programme (SAP) and the College of Agriculture, Food and Rural Enterprise's (CAFRE) Technology Demonstration Farm network. Northern Ireland are currently developing areas of research interest.

2.3 / What works: including stakeholders transparently in priority-setting

Research funders and organisations can increase the relevance of their activities by adopting transparent ways to include stakeholders in priority-setting.

Through its **Strategic Research Programme**, the Scottish Government has been investing in agricultural and environmental research since 2005.²⁵ Every five years, research priorities are agreed in consultation with farmers, researchers and a wide range of stakeholders. Scotland's research organisations can then focus their work on national priorities. The work funded tends to be collaborative and applied. While stakeholders told us it could be more joined-up from one five-year term to the next, they said it provides a good framework for keeping research relevant.

"In Scotland they've got a strategic research programme, it's all there. Why don't they do that in England?" Stakeholder interview

"I think Scottish Government work hard to define questions that are relevant, that can be answered scientifically, and that map onto the major concerns and needs of government." Researcher interview





Joined-up

3.1 / Expectation: research should be collaborative and interdisciplinary

Collaboration

Research organisations are expected to **collaborate** to make budgets go further and minimise duplication. This is seen to need support from policymakers and funders, including across the devolved nations.

“If we had one strategy, even with limited resources, if we actually set a common goal and went for it, imagine how much more effective agricultural research could be.” Knowledge exchange interview

“The opportunity is to refocus research and innovation on practical, system-level solutions that improve resilience, reduce risk, and support profitable production alongside environmental outcomes.”
Farmer 113

“I think the institutes have to justify themselves as national capabilities. There needs to be a map of who’s doing what, where. There’s not enough clarity.”
Researcher interview

“If the Scottish Government needs to test for methane emissions, they could use the Northern Ireland facility. And vice versa. But there needs to be really deep, long-term collaborative buy-in, which is not easy to achieve.” Research interview

3.1 / Expectation: research should be collaborative and interdisciplinary (Continued)

Systems research

At a project level, stakeholders stress the value of **interdisciplinary** research. When we asked where research could most help to meet the challenges and opportunities facing UK agriculture, researchers and other stakeholders ranked **'systems'** top (Box 15).

"The most pressing challenge facing UK agriculture is not climate change or dietary shifts in isolation – it's the need to fundamentally redesign the food system using a multi-pronged approach to address all challenges simultaneously." Researcher 437

"Too often innovation is framed as the development of individual tools or technologies. Research that focuses on individual components of the system in isolation can generate solutions that appear beneficial in one area while creating trade-offs elsewhere." Stakeholder 338

"Agriculture is an interdisciplinary domain, and the questions are so complex it needs huge scientific diversity. The shortfall is how you join it all up. We're not going to solve problems in agriculture at the pace we need to if we rely on random chance collisions between people." Researcher interview

While the value of many disciplines was recognised, including the arts, the need to integrate **economics and social sciences** was a strong refrain.

"You're going to need crop scientists, you need soil scientists, you need environmental scientists, you need economics people." Researcher interview

"Cross-disciplinary, systems-based agricultural research is most important because it addresses how real farming systems function as a whole. For example, combining soil science, crop genetics, climate modelling, and farmer behaviour can improve resilience and sustainability in ways single-discipline research cannot. This approach is more likely to produce practical, long-term solutions to challenges like climate change and food security." Researcher 570

"We need to integrate economics much more into science and also social impact so that we make sure that what is being advocated is actually profitable." Crops workshop

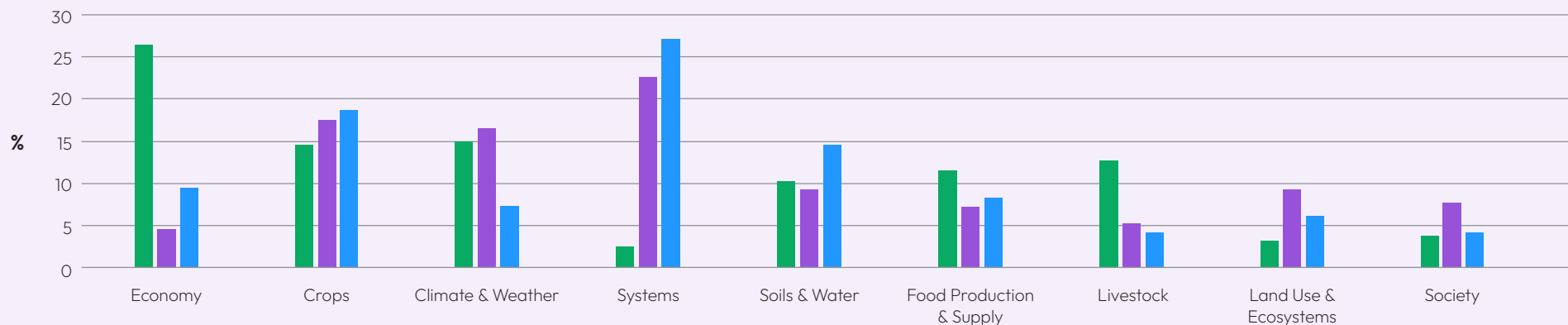
Farmers ranked research into economic issues as their top priority. Yet their comments make clear that this reflects their overriding concern that research across any theme should be relevant to the profitability and viability of their farm business, again expecting an integrated approach that includes an economic perspective.

"Research can help most by focusing on the economic foundations of UK farming. Until the economics are fixed, farmers cannot fully deliver on environmental, welfare or productivity goals." Farmer 165

Box 15: “Where can research most help to meet the challenges and opportunities facing UK agriculture?”

(% top ranked by role, *n*=604). Farmers say economic issues are foundational.

● Farmers ● Researchers ● Others



Topic	Survey description
Economy	e.g. trade, farm business performance, labour market
Crops	e.g. varieties, pests, nutrition, quality: including horticulture, forage
Climate & Weather	e.g. mitigation, sequestration, adaptation
Systems	e.g. cross-cutting issues, complexity, transitions
Soils & Water	e.g. soil health, water quality, flooding

Topic	Survey description
Food Production & Supply	e.g. primary processing, storage, traceability, cellular agriculture
Livestock	e.g. breeds, diseases, nutrition, welfare, quality
Land Use & Ecosystems	e.g. biodiversity, habitat, agroforestry
Society	e.g. behaviour, attitudes, mental health, farmworker housing

3.2 / Reality: cross-sector collaboration is growing, but systems research remains the exception

Strategic collaboration

At a system level, most stakeholders currently consider research to be poorly coordinated (Box 16).

“It’s rare when you get really coherent programmes of work where all the pieces of the system are joined-up. The funding always seems to be funding little pieces of it rather than taking a mission-led approach, which I would strongly advocate.” Researcher interview

While there has been no overall coordination of public-sector agricultural research, initiatives to coordinate key parts of the research system have been gaining momentum.

Recent programmes, including the **Farming Innovation Programme** (Defra funding and Innovate UK delivery), the **UK Dairy Carbon Network** (AFBI-led and Defra-funded) and **Land Use for Net Zero** (funding from Defra, DESNZ, UKRI and devolved governments) are normalising cross-government research funding.²⁶

UKRI’s new strategy emphasises strategic collaboration across Research Councils and Innovate UK around the IS-8 priorities, led by Priority Programme boards, including on agri-tech.

The organisations delivering agricultural research in the public interest are also increasingly coordinated. The **Agricultural Universities Council (AUC)** convenes most universities doing research relevant to agriculture, and the **National Research Organisation**

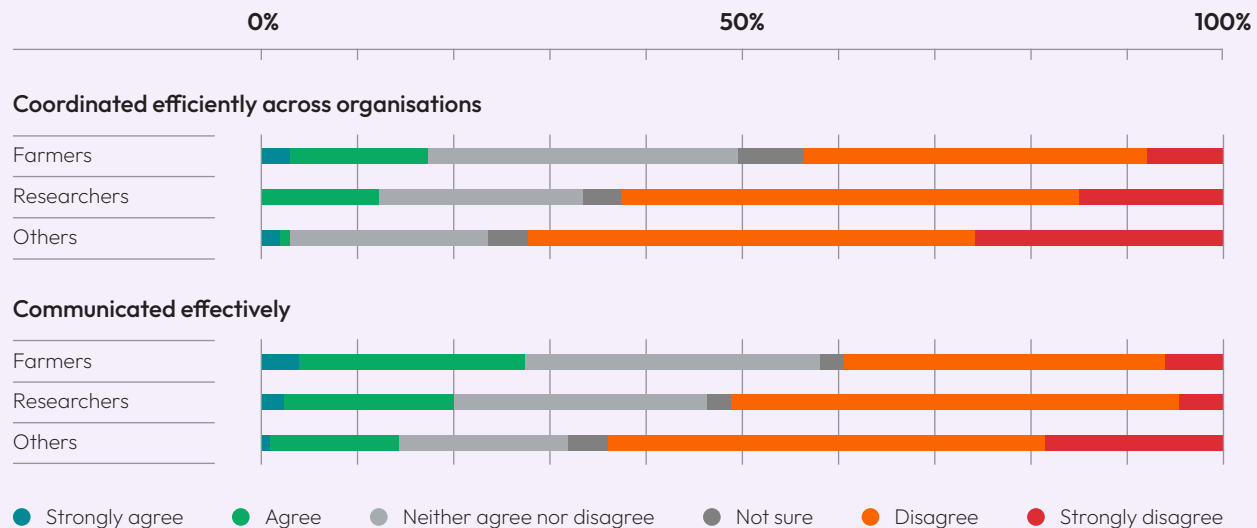
(NRO) Group brings together the UK’s research institutes and national capabilities, including those such as Rothamsted Research, James Hutton Institute and UK Centre of Ecology and Hydrology, which have relevant specialisms.

The **devolved nations** have gone furthest in promoting substantive strategic coordination among research organisations and funders, based on shared analysis of priorities and input from farmers and other stakeholders (Box 14).

The Steering Group for this SARI process convenes agricultural research organisations and funders from across the UK, supported by shared evidence of research activity, investment and priorities, to strengthen strategic coordination in future.

Box 16: “Based on what you know or have experienced, to what extent do you agree or disagree that UK agricultural research is currently...” (% by respondent type, $n=604$).²⁷

Few stakeholders say research is coordinated efficiently.



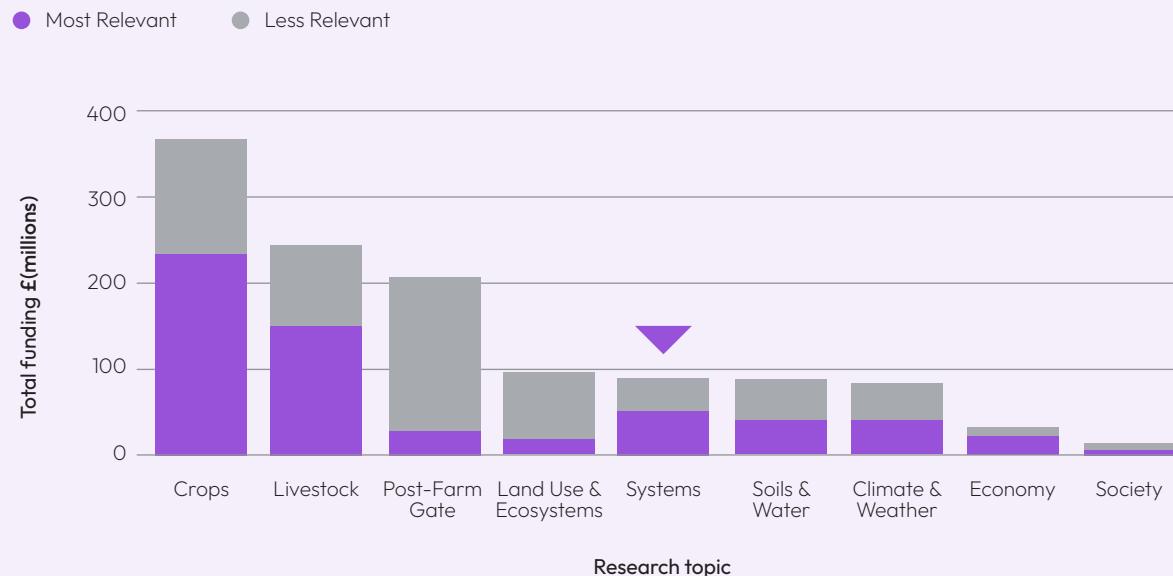
3.2 / Reality: cross-sector collaboration is growing, but systems research remains the exception (Continued)

Research topics

At the project level, most research is focused within particular disciplines or topics.

Box 17 shows how much funding was awarded to projects by topic. Projects that were interdisciplinary or cross-cutting were categorised as ‘systems’ research, whether or not they explicitly referred to systems. By this inclusive definition, **Systems** research accounts for 7.3% of agricultural research funding and 3.1% of projects. Focusing only on the most relevant projects increases the share of funding for systems research to 8.6%; however, 84% of this is accounted for by core delivery programme funding to the now merged UK Agri-Tech Centre which, while transdisciplinary, is more focused on the commercialisation of technology than on primary research.

Box 17: Funding awarded by research topic, 2022–26 (£M).²⁸ Three core grants to the Agri-Tech Centres account for most (63%) of the ‘systems’ research shown here (84% of ‘most relevant’).



3.3 / What works: sector-wide strategic coordination

The Land Use for Net Zero (LUNZ) Hub is an example of action to coordinate agricultural research and funding across the UK. It brings together 34 organisations across research, farming, advice and the arts.

Its aim is to equip policymakers with the evidence they need to drive transformational change in land use. While some stakeholders highlight the challenges involved in mobilising such a large consortium, the LUNZ Hub is often cited as an example of substantive research collaboration across the four nations of the UK. As well as having a joined-up structure, the LUNZ Hub runs joined-up projects. Their approach brings together transdisciplinary teams to tackle complex, interconnected challenges.

“The LUNZ Hub was the four devolved nations coming together to put money in the pot and have shared impact. And that did bring UK researchers together very well.” Devolved government interview





Useful

4.1 / Expectation: research should improve knowledge and skills

Stakeholders call for research to prioritise implementation and consider application from the earliest design stage.

“The best research in the world is useless until it is applied.” Researcher 591

“Research should be designed with farmers, farm businesses, supply chains and regulation in mind, rather than treating knowledge exchange as something that happens only at the end.”
Researcher interview

“Applied R&D is fundamental to the application and development of UK agriculture but is treated as the poor relation. Blue-sky research has value but dominates the available funding – paying for excessive overheads rather than people.”
Researcher 581

“Ever since BBSRC was created out of AFRC, I’ve seen how research investment has changed and moved away from application in agriculture. Things go full circle and we’re now starting to see a realisation that research that has an understanding of the processes of application, of how impact is generated, is really important.” Researcher interview

We asked stakeholders how they expected research to help in practice (Box 18). What are the most effective paths to impact for research?

Farmers, researchers and other stakeholders say **improving knowledge and skills** is the most likely way that research can help meet the challenges and opportunities facing UK agriculture (Boxes 18-19).

“Research that focuses on turning evidence into usable guidance and improving how that knowledge is shared between scientists, advisers and farmers will have the biggest impact on meeting the challenges and opportunities facing UK agriculture.” Farmer 165

When it comes to technology, they see improvements to **genetics and inputs** as the most likely paths to impact, ahead of **infrastructure, software or hardware**. Only 3% of farmers, known for positive attitudes towards precision agriculture, rank hardware (including automation) top.²⁹

4.1 / Expectation: research should improve knowledge and skills (Continued)

Providing evidence to guide **policy** is also seen as an important way for research to contribute to UK agriculture. Whereas new knowledge, technologies, practices and systems were widely seen as positive recent influences on UK agriculture, policy was seen to have had a negative influence over the past decade (Box 20).

“Policy is the one thing that has made the biggest differences in how we farm over the years. You make all the clever discoveries you like about agriculture and markets to improve the way things are done but if government policy changes it’s all for nowt.”
Farmer 272

“Policy (and therefore the voting public) drives everything. If research into what ‘we’ want can establish the country’s needs, agriculture can and will respond.” Stakeholder 368

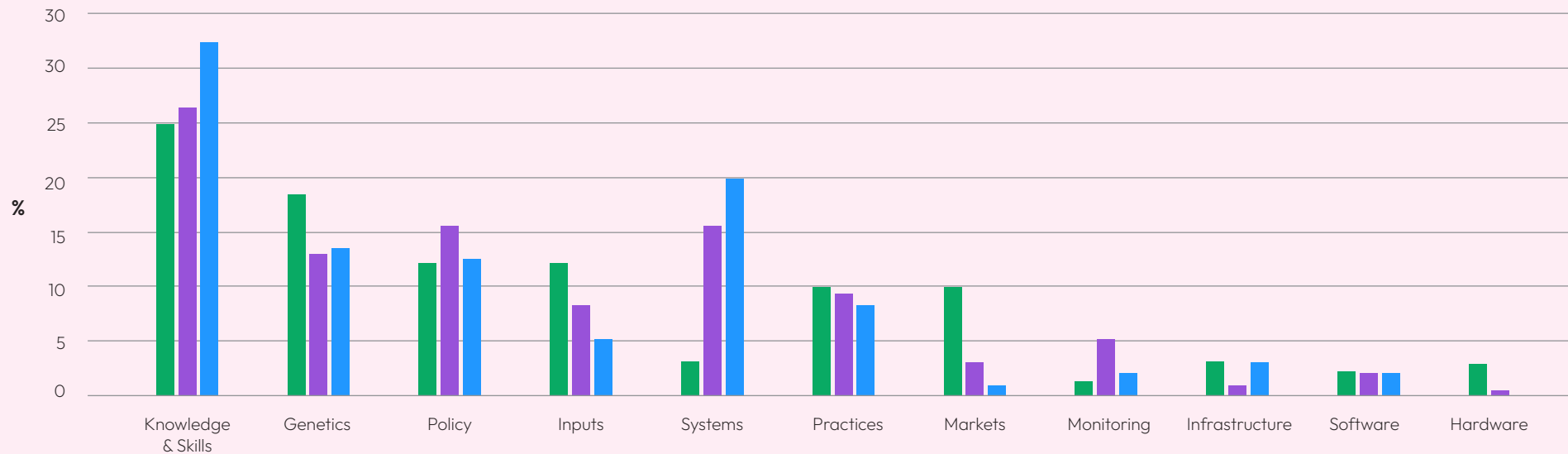
Where farmers differ most from researchers and other stakeholders is in the respective importance placed on systems approaches and **changing markets** as ways research could meet the challenges and opportunities facing UK agriculture (Box 18).

Monitoring and infrastructure are rarely ranked top, but are widely recognised as important secondary priorities.³⁰

Box 18: “How is research most likely to help meet the challenges and opportunities facing UK agriculture?”

(% top ranked by role, $n=603$).³¹ All stakeholder groups prioritise knowledge and skills.

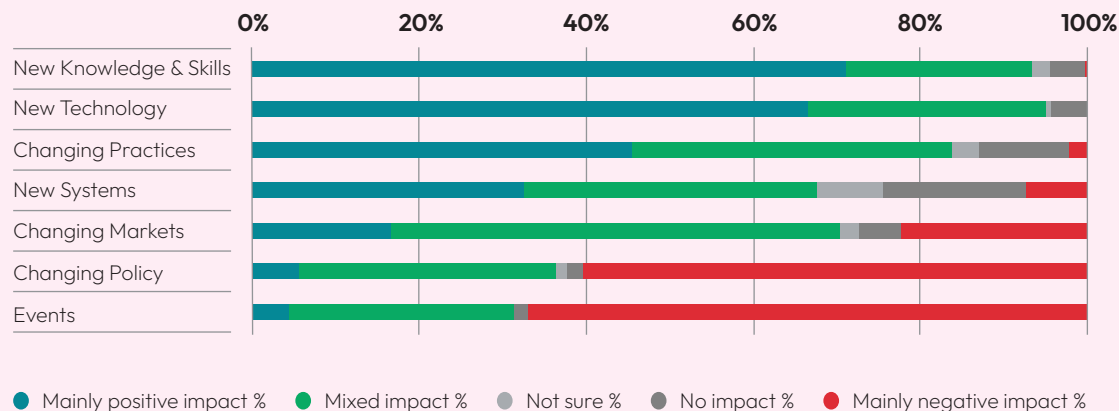
● Farmers ● Researchers ● Others



Box 19: Paths to impact. We use these definitions to describe the varied paths by which research projects could have an impact in agriculture.³²

Infrastructure	Developing and testing animal housing, crop storage, electrification, irrigation
Hardware	Developing robots, drones, large machines, processing equipment
Software	Implementing AI, decision support, digital twin tools
Genetics	Developing varieties, breeds including those more suited to future climates
Knowledge & Skills	Developing and sharing advice, knowledge exchange and education
Inputs	Fertilisers, pesticides, biologicals, including reduction of their use and alternatives
Policy	Providing evidence on payments, regulations, tax or trade
Practices	Testing the effects of practices such as direct drilling or cover cropping
Markets	Guiding standards, supply-chain practices or market development
Monitoring	Remote sensing, baselining, early warning systems
Systems	Measuring outcomes of regen ag, agroecology, vertical farming or cellular agriculture

Box 20: “Thinking about the biggest changes you have seen on your farm over the past decade (since 2016), what influence did the following have?” (Farmers, %, n=314).³³ Farmers say policy and events, such as weather, were a negative influence.



4.2 / Reality: research is geared towards developing technology

Most UK research relating to agriculture is designed to have an impact through improved technologies (Box 22). Less is primarily geared towards improving knowledge and skills, practices, policy or markets.

The pattern is consistent with government's strategic focus on 'agri-tech' since 2013, and the earlier commitment to building the UK's bioscience capability (Box 21).

While research is more focused on technology development than stakeholders say they want, investment in technologies is fairly well-aligned with the types they favour. Research that would have an impact through **genetics**, for example through improved varieties and breeds, receives the most funding, followed by research into agricultural **inputs**, including sustainable alternatives to those farmers currently rely on.

Hardware and software development, for example automation and decision-support tools, receive more research funding than stakeholders expect. This is especially pronounced when focusing on the research that is most directly relevant to agriculture.

Crop research is focused on genetics, the bulk of investment in monitoring and surveillance science focuses on livestock, and software solutions are a particularly strong focus for research on soils and water (Box 23).

4.2 / Reality: research is geared towards developing technology (Continued)

Box 21: Timeline of UK strategic commitments on agricultural research.³⁴ Since 2013, the focus has been on agri-tech.

1994

BBSRC established

BBSRC merged the Agricultural and Food Research Council with the bioscience programmes of the Science and Engineering Research Council, becoming the main public funder of bioscience research for agriculture, food and biotechnology.



2002

Curry Commission report

The report recommended that government introduce a 'priorities board' for strategic research, involving government, academic, consumer, environmental and industry representatives to set the agenda for public research on farming and food matters.



2008

Global Food Security Programme

This cross-council programme brought UK research funders together and highlighted the importance of research to achieve food security.



2011

Foresight: Future of Food and Farming

This study involving Defra and DFID called for radical changes to the food system to feed a growing population.



2013

Agri-Tech Strategy

The strategy aimed to rebuild the connection between basic research and applied science, so farmers were able to access new knowledge more promptly. Government committed £160 million to translate agricultural science into commercial products.



Department
for Environment
Food & Rural Affairs

2018

UKRI formed

BBSRC and Innovate UK became part of UKRI, bringing together the research councils under a single body. This was to align strategic funding across disciplines and foster coordination between basic science and innovation.



UK Research
and Innovation

2020

Transforming Food Production

This programme aimed to accelerate precision agriculture and drive sustainable, technology-driven food production and enhanced R&D capabilities.



2025

UK Modern Industrial Strategy

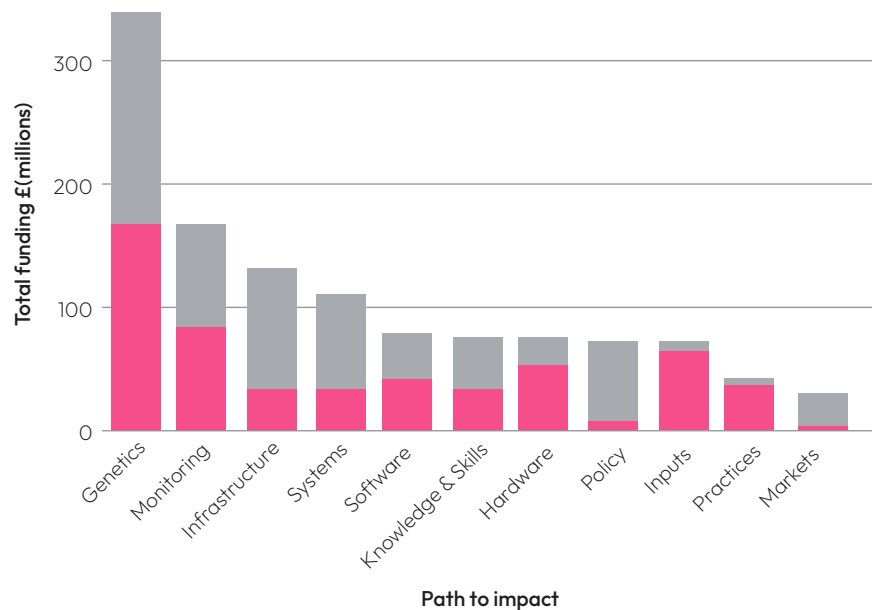
The Industrial Strategy includes agri-tech as a 'frontier industry' within Advanced Manufacturing. The objectives are to make the UK a world leader in agri-tech, boost productivity and drive sustainable food production.



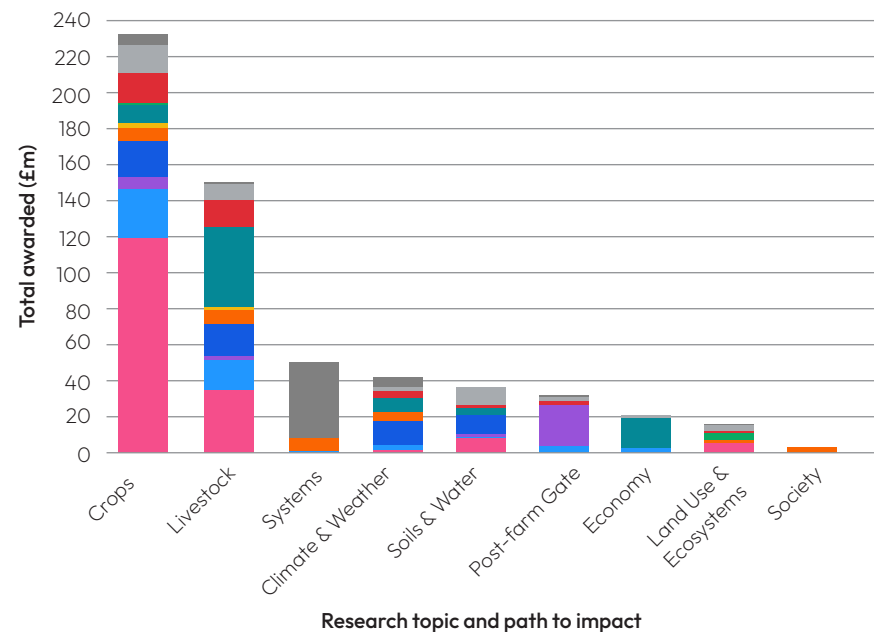
Box 22: Funding awarded by path to impact, 2022–26 (£M).³⁵

The substantial investment in ‘systems’ pathways largely comprises £41.9M of cross-cutting agri-tech investment in the form of core grants to the UK Agri-Tech Centres (for 2024–27).

● Most relevant ● Less relevant

**Box 23: Funding awarded by topic and path to impact, most relevant projects, 2022–26 (£M).**³⁶ Topic areas have distinct profiles.

● Genetics ● Hardware ● Infrastructure ● Inputs ● Knowledge & Skills
● Markets ● Monitoring ● Policy ● Practices ● Software ● Systems



4.3 / What works: research focused on developing innovative practices

Agricultural research would align more closely with the expectations of farmers, researchers and other stakeholders, if more projects were geared towards supporting the development of knowledge and skills, such as innovative practices.

One example is a project jointly funded by the Waitrose Farming Partnership and UKRI, led by the University of Reading, to map the impact of **regenerative farming** practices. The team brought together findings from academics across twelve UK universities and produced a simple scorecard. Farmers can now use the scorecard to weigh up the impact of changing their practice; for example, how planting herbal leys might build soil health and biodiversity. They can then prioritise the most impactful changes for their business.

“The partnership is really about bridging the gap between cutting-edge agricultural research and very practical outcomes.” Farmer interview





Grounded

5.1 / Expectation: research should be grounded in the experience of intended beneficiaries

Agricultural experience

Stakeholders expect the intended end users of agricultural research, typically farmers and growers, but potentially including other industry and community stakeholders, to be involved in setting research priorities and **co-design**.

This is to help ensure research is practical and commercially realistic.

“We need research from the real world, not from a desk. Weather doesn’t always conform to what’s written in a paper policy.” Farmer 3

“Co-production is of utmost importance to achieve the other priorities.” Researcher 569

“Using participatory research to get farmers to test new practices will create the fastest change – but farmers need research to underpin and validate their new approaches.” Research 465

This focus on grounding research in practical experience is expected of research that claims potential practical benefits, irrespective of its level of ‘readiness’. It is distinct from commitments to ‘industry engagement’ or ‘commercialisation’, which are staples of government research and innovation strategies, instead emphasising:³⁷

- The experience and engagement of **end users**, such as farmers, land managers or local communities, rather than companies seeking to develop products or services for them.
- **Collaboration**, consistent with stakeholders’ focus on the potential impact of research through improved knowledge and skills, rather than the commercialisation of agri-tech solutions.
- Meaningful **compensation** for end users involved in research, not only reflecting their contribution fairly and mitigating their risks, but also to ensure scientific quality.

“If you are trying to create a new form of technology that’s reducing emissions, but your farmer wants increased profitability, you need to have buy-in. Because otherwise, farmers are extremely time poor, and if there’s no belief that it’s going to benefit them, then it’s not going to be top of the priority list and the data that you’re going to get is going to be potentially compromised from the start.” Livestock workshop

5.1 / Expectation: research should be grounded in the experience of intended beneficiaries (Continued)

Public benefit

Stakeholders expect publicly funded research to be targeted at research that is unlikely to attract commercial investment but that delivers wider environmental and societal benefits. In particular, stakeholders expect funding for **low-input and whole-system** approaches to be supported by the public purse.

“The biggest benefit of research is always where there is the least incentive for private actors.”
Researcher 541

“It is really easy for the big food companies to go off and do some research on something that is going to generate IP for their businesses. That is going to happen without publicly funded science adding to the pot. It's much, much harder for landscape scale research to be funded by any individual actor in the food system. Government and the research councils need to lead the charge on ecology-based research.”
Industry interview

“Investing in knowledge always feels like the challenge because there's no commercial imperative for anybody to invest in it.” Farmer interview

“The private sector is going to invest in stuff that they get a return on their investment for. They're a business, right? It has therefore neglected stuff that you cannot sell, like natural resource management technologies. The whole question then of who does research on agroecological practices and the ‘public good’ nature of the agricultural system, that falls to the wayside in terms of research. And that's theoretically where the public sector needs to play a role.” Researcher interview

5.2 / Reality: the largest investment is in basic research, but the ADOPT Fund is growing user-centred research

Researchers and farmers, more often than not, say agricultural research is being applied in practice (Box 24). More farmers are sceptical that research is in touch with their needs.

What are the opportunities for farmers and others to engage with research and bring their needs to bear? How funding is distributed across different types of research is an important factor (Boxes 25 to 27).

The largest investment is in **basic research**, where stakeholder engagement is limited.³⁸ This is followed by **translational research**, defined here as applied projects led by academics or research organisations. These involve stakeholders as partners, sometimes unfunded, in a supporting role.

The next largest category is public funding to support **commercial research**, led by industry, with a focus on developing products and services to sell to farmers or other end users; here, the focus and quality of any end-user engagement is decided by the industry lead.

Among the 'most relevant' projects, commercial research is the largest category, accounting for almost half of all applied (i.e. not basic) research. While the rationale for using public funding to support commercial research is to advance the public interest, by delivering solutions or growing the economy this is in tension with stakeholders' expectation that public funders 'fill the gaps' that have little commercial interest.

Pre-competitive research, which is industry-led but with a focus on collaboration or direct public benefit, for example through the Agriculture and Horticulture Development Board (AHDB), accounts for 10.8% of the most relevant research.

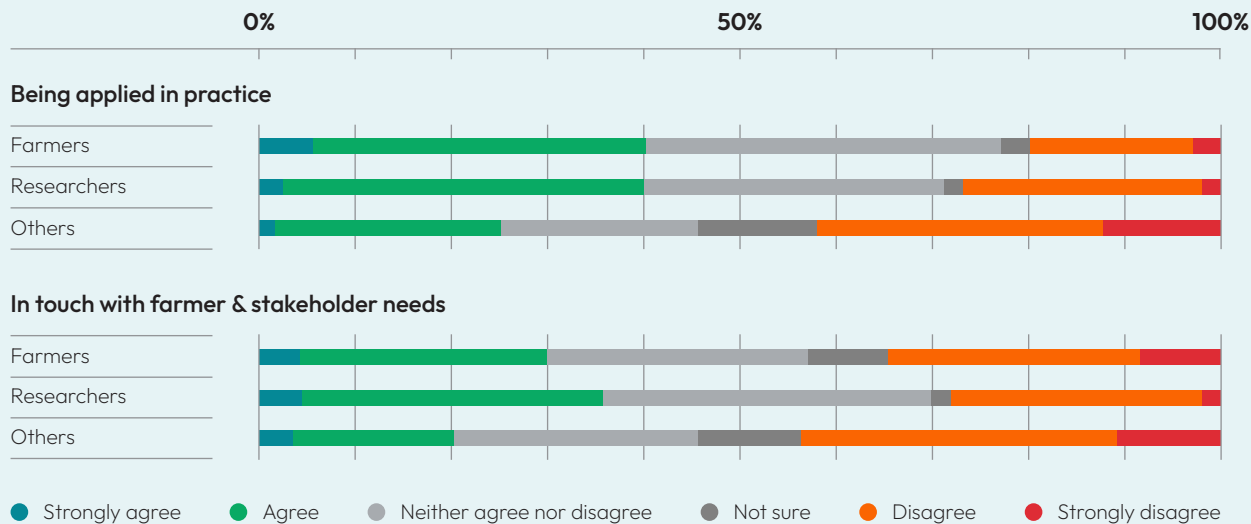
User-centred research, where the primary focus is on co-design by end users, currently accounts for only 0.3% (0.6% 'most relevant' projects) of public investment in UK agricultural research. However, it is growing, with dedicated programmes across the four nations specifically designed to promote farmer and grower-led research and innovation. The latest and largest of these is ADOPT, part of Defra's Farming Innovation Programme. ADOPT represents most of the user-centred research in the dataset. Its low share of funding in our dataset reflects the programme's recent launch in 2025 and the lag between grants being awarded and reported.

5.2 / Reality: the largest investment is in basic research, but the ADOPT Fund is growing user-centred research (Continued)

The current budget for ADOPT is up to £53M.³⁹ This would see it account for around 9% of the ‘most relevant’ research, assuming overall spending stayed the same.⁴⁰

Looking ahead, UKRI’s new strategy emphasises curiosity-driven science, and research to advance the ‘IS-8’ high-growth sectors, both to “support innovative companies to start and scale”, and to meet “strategic government and societal priorities”.⁴¹ Neither directly focuses on end-user engagement. However, since Innovate UK’s Transforming Food Production programme ended in 2024 and the Farming Innovation Programme began, the lead responsibility for most industry-engaged research in agriculture has switched from UKRI to Defra, suggesting the growing focus on end-user engagement is set to continue.

Box 24: “Based on what you know or have experienced, to what extent do you agree or disagree that UK agricultural research is currently...” (by respondent type %, n=603). More farmers say research is applied in practice but out of touch with what is needed.



Box 25: Research types and typical opportunities for stakeholder engagement.⁴² Distinctions are commonly drawn between broad categories, such as ‘basic’, ‘discovery’ or ‘curiosity driven’ research, and ‘applied’ or ‘translational’ research. We developed a more granular set of categories to use in SARI, defined here, so that relevant distinctions (e.g. between commercial, pre-competitive and user-centred research) can be visible. We applied these at the project level, recognising that funding programmes may support multiple types of research.

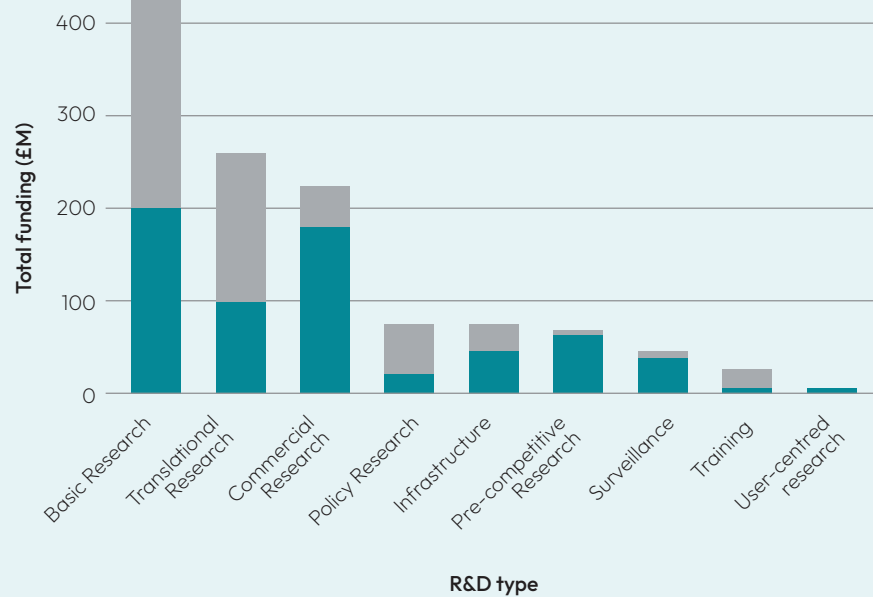
Type	Definition	Stakeholder engagement
Basic research	Projects primarily concerned with generating fundamental understanding, theory, mechanisms, biological/environmental processes, scientific discovery or exploratory knowledge without a clear immediate application, implementation pathway, policy use or commercial deployment.	Advise
Translational research	Researcher-led applied research that moves knowledge, technology, methods, or innovations towards practical use. This includes feasibility studies, prototypes, field trials, demonstration projects, pilots, adoption programmes, technology integration, vaccine/test/tool development, scale-up, implementation, or applied innovation bridging research and practice.	Support
Commercial research	Research which is primarily commercially commissioned, industry-led, client-facing, or directed towards commercial product/service development, validation, testing, market deployment, business value or private-sector exploitation. Indicators include commercial funders, company-led projects, contract research, product testing, process optimisation for a company, marketable technologies or research mainly serving a private commercial partner.	Lead (companies)

Type	Definition	Stakeholder engagement
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.	Commission (industry bodies)
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.	Lead (farmer groups)
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. Indicators include Defra or public-sector policy programmes, regulatory questions, policy evaluation, standards, guidance, scenario analysis for government or explicit decision-support for policymakers.	Commission (policy)
Surveillance research	Research primarily on 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 place. Indicators include surveillance, monitoring, screening, diagnostics for population-level detection, national reference laboratory activity, prevalence studies, horizon scanning, outbreak tracking or routine sampling programmes.	Commission (policy)
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.	

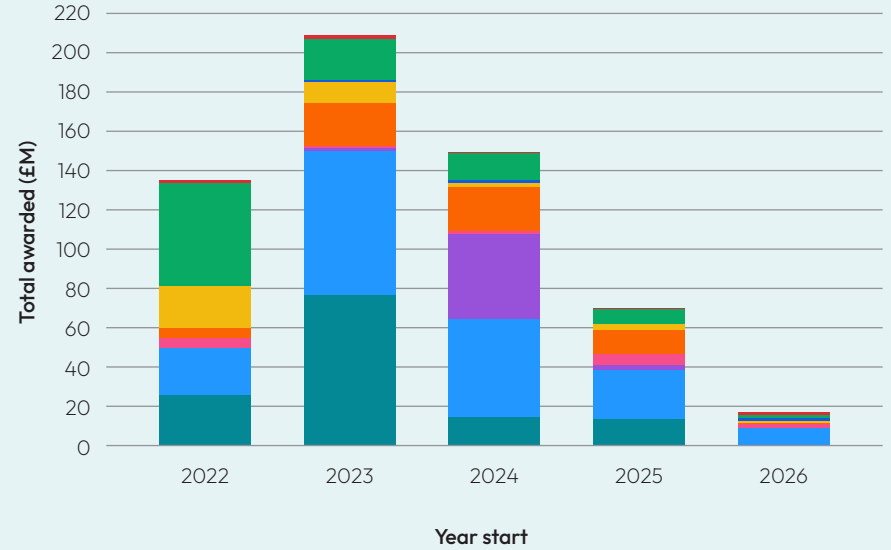
5.2 / Reality: the largest investment is in basic research, but the ADOPT Fund is growing user-centred research (Continued)

Box 26: Funding awarded by research type, showing most relevant projects, 2022–26 (£M) (left); Funding by type across sample years, most relevant projects, 2022–2026 (right).⁴³ Funding cycles and one-off investments make funding ‘lumpy’ from year-to-year.

● Most relevant ● Less relevant



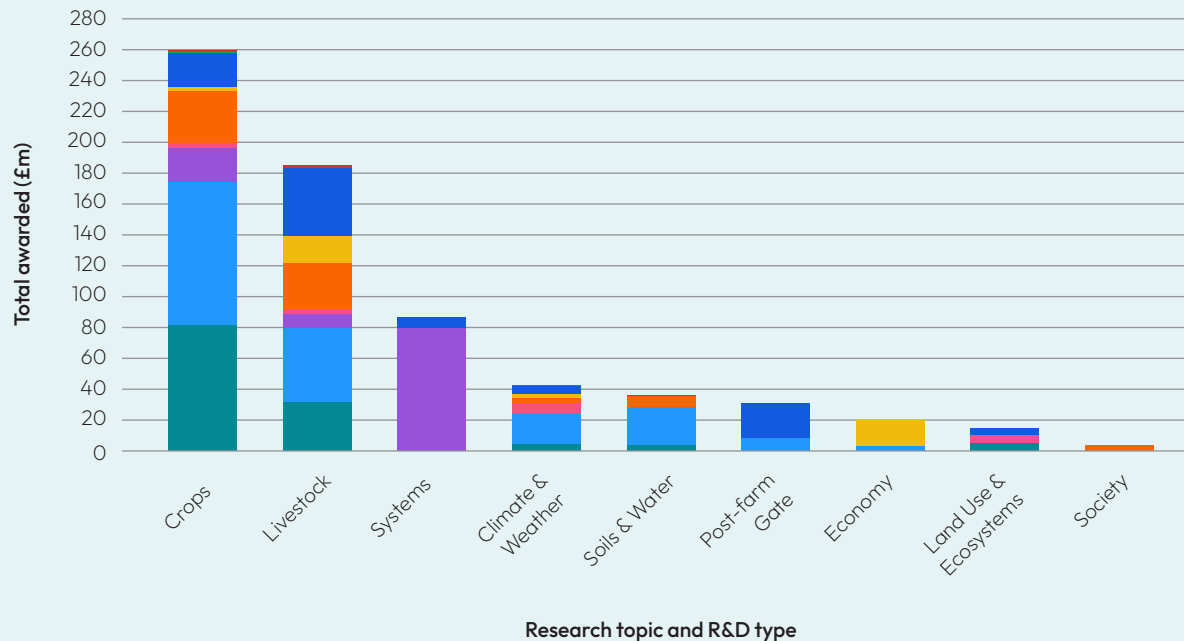
● Basic Research ● Commercial Research ● Infrastructure ● Policy Research
● Pre-competitive Research ● Surveillance ● Training ● Translational Research
● User-centred Research



5.2 / Reality: the largest investment is in basic research, but the ADOPT Fund is growing user-centred research (Continued)

Box 27: Funding awarded by topic and type, most relevant projects, 2022–26 (£M).⁴⁴ Infrastructure investment in the Agri-Tech Centres accounts for a substantial share of Systems funding.

- Basic Research
- Commercial Research
- Infrastructure
- Policy Research
- Pre-competitive Research
- Surveillance
- Training
- Translational Research
- User-centered Research



5.3 / What works: user-centred research programmes

Growing and strengthening user-centred research addresses the expectation that agricultural research should be grounded in the experience of farmers and other practitioners.

The **ADOPT Fund**, outlined above, is a major step in this direction. Through ADOPT, groups of farmers can apply for projects with costs of £50k to £200k to test their own ideas, on-farm, on the challenges that matter most to them. They get support and scientific rigour from a researcher, and the results are shared to maximise impact.⁴⁵

“We’re finally trying some of the stuff we should have been doing forty years ago. ADOPT is taking to a different level the amount of resource we can throw at trials.” Farmer interview



Credit - Dan Iles, Soil Association



Timely

6.1 / Expectation: research should provide evidence and solutions when they are needed

This is recognised as difficult due to tensions between tight timescales for research budgets and government spending reviews, long timeframes for farming businesses, built around growing seasons and rotations, and unstable needs driven by policy changes, market volatility and other factors.

These tensions create a **twin risk to timeliness**: that research struggles to anticipate needs, even when co-designed with end users; and that the findings or products of research are outdated as soon as they are available.

“Better breeding and research needs to be fast tracked to the field to then create the opportunity to reduce inputs and maximise profits.” Farmer 10

“Most research has relatively long time scales attached to it. That model has to change. It’s got to be more pacy, because otherwise you can do this amazing work, but actually the world’s moved on.”
Supply chain interview

“Most crop rotations might be designed three, four, five years in advance. Turning that ship to try and catch up with central government policies that seem to change on the wind can be really tricky.”
Crops workshop

“I want to farm with zero emissions, certainly zero carbon. It’s an easy vision to realise with the right research and infrastructure on the journey, but it’s really hard to navigate when so many things are going to change in the meanwhile. You know, I can put a bull in the field with some cows in May, but I won’t be selling those cattle for three years. And in that time, I suspect we’ll have three different agricultural policy shifts and the price of beef will be very different to what it is today.” Livestock workshop

“We must have stability. Managing land, crops and livestock are long term businesses which have to plan for at least three years ahead. So, they must be accompanied by long term financial certainty and a fair return for the investment and labour required.”
Stakeholder 339

6.1 / Expectation: research should provide evidence and solutions when they are needed (Continued)

Time to impact

Different types of research typically have an impact on different timescales, so the balance of activities, and the relationships between them, are factors in the timeliness of research at a system level. Box 28 outlines expected **times to impact** for the main types of research included in this analysis, drawing on empirical studies of research impact in agriculture and other fields.

Research is expected to contribute to government and societal priorities. These include official goals relating to agriculture. Where these include timelines, many specify targets for 2030 (Box 29).

Box 28: Typical pathway and time to first impact by research type (excluding research infrastructure and training).⁴⁶ We use these timeframes to model impact horizons for each topic area.

Research type	Expected time to impact	Typical impact pathway	Example
Basic	12–30 years	Generates new knowledge to underpin for further investigation and development	BBSRC Responsive Mode
Translational	3–15 years	Generates solutions which need real-world testing	Strategic Priorities Fund
Commercial	3–10 years	Develops new or modified products or processes	Innovate UK
Pre-competitive	0–8 years	Directly impacts practicalities and decision-making	AHDB
User-centred	0–5 years	Directly impacts real-world practices	Defra ADOPT
Policy	2–7 years	Primarily influences policy and interventions	Defra, devolved governments
Surveillance	Ongoing, short-feedback loops	Helps to predict, manage, and mitigate risks	APHA

Box 29: Examples of government targets relating to agriculture and environment.⁴⁷

Some vary between nations. Targets are often set as little as five years ahead.

Topic	Target	Set	By
Soils & water 	50% of the UK's fresh food to be sourced from areas with sustainable water by 2030. ⁴⁸	2025	2030
	Reduce total nitrogen, phosphorus and sediment pollution from agriculture to the water environment by 12% compared to 2018 by 2030 (England). ⁴⁹	2025	2030
Climate & weather 	Reach net zero greenhouse gas emissions by 2050 in the UK. ⁵⁰	2008	2050
	Achieve 95% low-carbon electricity generation by 2030; fully decarbonised power systems by 2035 in the UK. ⁵¹	2024	2035
	Eliminate avoidable plastic waste by 2042. Ambition of zero avoidable waste by 2050 in the UK. ⁵²	2023	2050

Topic	Target	Set	By
Land use & ecosystems 	At least 30% of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration by 2030 in the UK. ⁵³	Wales 2022 Scotland 2024 England 2024	2030
	Conserve 30% of land, waters and seas in the UK by 2030. ⁵⁴	2022	2030
	Restore or create a total of 250,000 hectares in England of a range of wildlife-rich habitats outside of protected sites by 2030. ⁵⁵	2026	2030
Crops 	Halt the decline in species abundance by 2030 (England). ⁵⁶	2025	2030
	Reduce each of the 20 Pesticide Load Indicator (PLI) metrics by at least 10% by 2030 (England). ⁵⁷	2025	2030

6.1 / Expectation: research should provide evidence and solutions when they are needed (Continued)

Box 29: Examples of government targets relating to agriculture and environment.⁴⁷ (Continued)

Some vary between nations. Targets are often set as little as five years ahead.

Topic	Target	Set	By
Livestock 	Improve UK biosecurity and manage endemic disease risk. Support goal to eradicate bovine tuberculosis (TB) by 2038 (England). ⁵⁸	2025	2038
	20% reduction in UK antibiotic use in the pig sector by 2029. ⁵⁹	2025	2029
Food production & supply 	Grow the food and drink sector to £30 billion in turnover by 2030 in Scotland. ⁶⁰	2024	2030
	Maintain England's domestic food production at least at current levels. ⁶¹	2026	2050
Society 	Lower barriers for new entrants, and growth of early-stage businesses by addressing challenges like tenancy constraints and succession (UK). ⁶²	2026	No date

Topic	Target	Set	By
Economy 	£200 million investment to drive UK agri-tech innovation, supporting robotics and automation, sensor systems, precision breeding and low-emission farming by 2030 (England). ⁶³	2025	2030
	Drive growth across the UK economy via doubling annual business investment in advanced manufacturing (including agri-tech) from £21 billion to £39 billion by 2035. ⁶⁴	2025	2035
	Develop resilient domestic production for a secure supply of healthier and sustainable food (England). ⁶⁵	2025	No date

6.2 / Reality: most research is expected to have medium or longer-term impact

The weighting of investment towards basic, translational and commercial research means most research is geared towards having medium or longer-term impact.

Less is devoted to types of research expected to have shorter timescales to impact, such as pre-competitive, user-centred or policy research.

The mix of research types varies by thematic area. For example, there is proportionately more pre-competitive research on livestock than on crops. Box 30 visualises expected **impact horizons** across different research themes. It shows that the mix of research types funded across different themes has the effect of gearing investment towards nearer or longer-term impact.

Research project proposals of all types are commonly justified with reference to government goals and targets. However, as targets are set as little as **five years** ahead (Box 29) most of the research then funded is unlikely to contribute directly to their realisation.

In practice, in a mature research system, the effectiveness of near-term applied research is underpinned by long-term foundational science. Rather than questioning the value of such long-term investment, visualising current research impact horizons encourages critical reflection about whether it is complemented by sufficient near-term research to meet stakeholder expectations of timeliness.

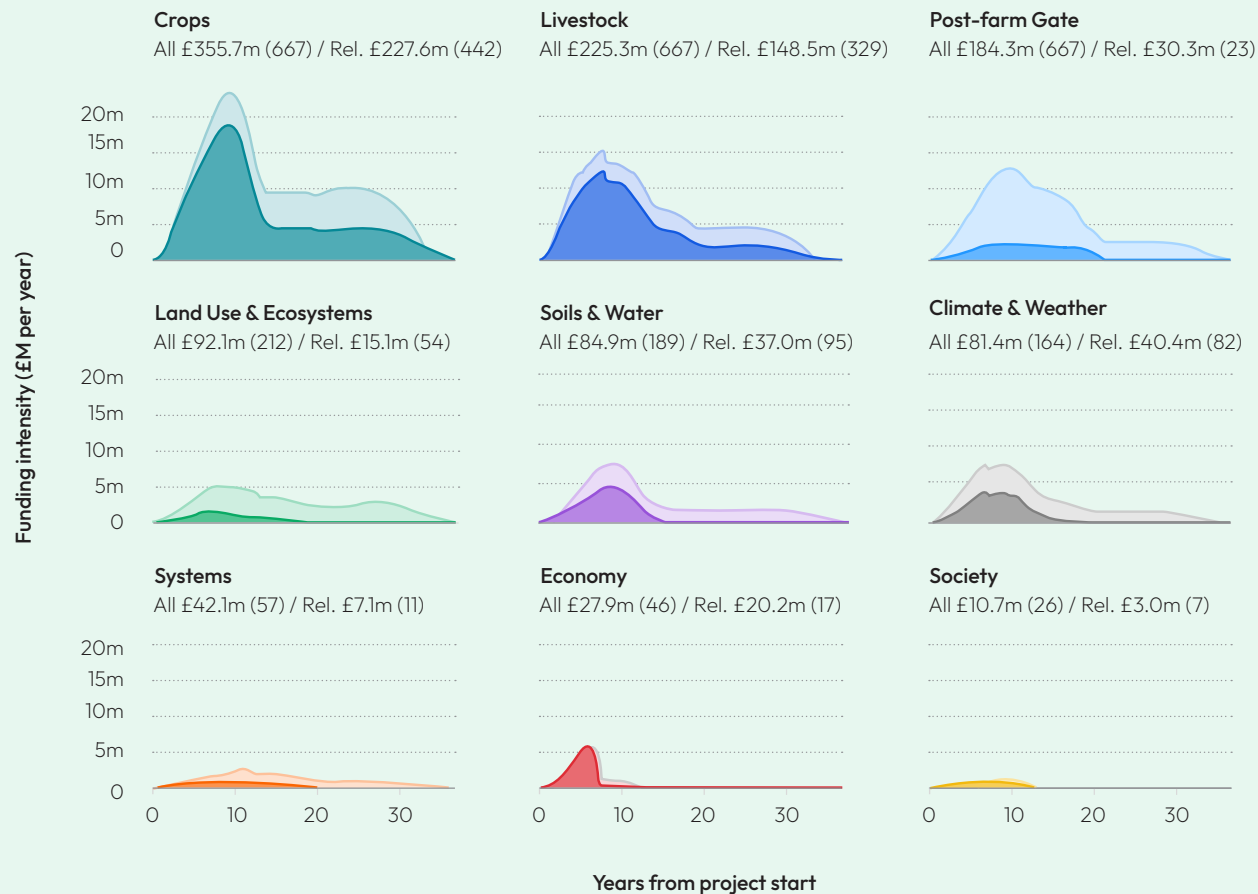
6.2 / Reality: most research is expected to have medium or longer-term impact (Continued)

Box 30: Impact horizons by research topic for projects starting 2022-26.⁶⁶

Relatively little impact is expected within five years of projects starting.

All panels share the same axes.
Area under each curve = total funding awarded. Panels ordered by total funding (largest first). The number of projects is in parentheses.

- Lighter = all projects
- Darker = most relevant (Definitely + Mainly Agriculture)



6.3 / What works: designing long-term projects to be highly responsive

Surveillance science is often excluded from definitions and reporting of research, on the grounds that is funded through revenue rather than capital, and is not regarded as generating new knowledge.

We have included and identified it in SARI because it is a large-scale activity performed by researchers in agriculture, it can generate new knowledge even where that is not its primary purpose, and the risk mitigation and planning it supports are significant drivers of innovation. It illustrates how research can be planned and sustained long-term, yet deliver impact at pace.

The **Animal and Plant Health Agency (APHA)** is an executive agency of Defra, created in 2014, employing over 3,000 staff.⁶⁷ APHA protects animal and plant health across Great Britain, preventing, detecting and responding to disease and pest threats through surveillance, scientific evidence and operational response. This case study focuses specifically on its animal disease surveillance and response capability, drawing on integrated field, laboratory, veterinary, epidemiological and operational expertise.

This is mission-oriented science where the impact is immediate, but the capability is long term. Rapid responses to emerging disease threats are only possible because specialist skills, surveillance networks, diagnostic capability and operational readiness have been developed and maintained over many years.

Its value is not measured primarily in publications or new technologies, but in the ability to detect risk early, interpret uncertain evidence, advise government, support farmers and contain threats before they escalate. Maintaining this capability protects animal health and welfare, farm businesses, trade, food security and the wider economy.

“The work being done within APHA is fundamental to the economic success and viability of British agriculture. That stuff is critical and completely overlooked.” Farmer interview



Future-proof

7.1 / Expectation: research should help agriculture anticipate and adapt

Alongside the concern with timeliness is an expectation that research should be future-proofed, anticipating emerging needs and possibilities, and supported by mechanisms that can develop evidence and solutions over a decade or longer.

Stakeholders and citizens expect coordinated efforts to identify potential future challenges and opportunities, informing a strategic research agenda. They expect bold research that takes risks and supports farmers now and in the future. This is recognised as difficult, not only because the perspectives and priorities of farmers, researchers and other stakeholders are heavily shaped by the here and now, but also due to volatility and uncertainty in agriculture.

Box 31 summarises established and growing **drivers of change** in agriculture, which could affect how the sector develops and what research will be relevant. Stakeholders perceive 'global prices', 'UK politics' and 'climate & weather' as most likely to have a major impact on UK agriculture within five years.

"We have no time left to tweak around the edges of a system that is defunct and working against our societal and environmental ambitions. We have tried socio-technical tweaks and they don't work and alienate people from the change we need. We need to put everything back on the table." Researcher 584

"We seem to have been investing hundreds of millions of pounds a year for a number of years. Our food and farming system is in crisis. [This approach] needs to be thrown in the bin, and we need to start again with a blank piece of paper." Citizen workshop

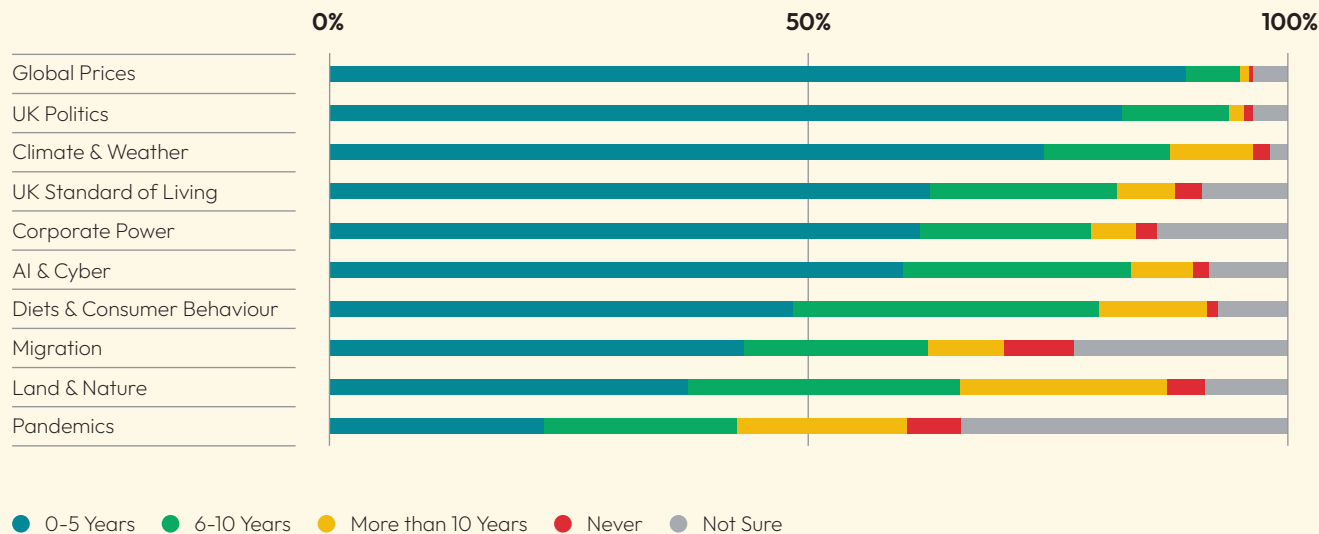
"We need a step change to farming systems to meet the shocks hitting our food system. On-farm practice is changing, but not in a research-led way so the evidence underpinning effectiveness (or otherwise) is missing." Researcher 514

7.1 / Expectation: research should help agriculture anticipate and adapt (Continued)

“Agriculture is all these global problems in one sector. We need to take more risks to solve them. We need to be more innovative. People are really bad at not evaluating the risk of keeping doing what they’re doing. But the status quo is not an option; business as usual should be taken off the table.” Researcher interview

“I’m really not sure people are thinking sufficiently about the scale of impact of climate change. It seems to be just tinkering around the edges.” Researcher interview

Box 31: “Now looking to the future, how soon do you expect changes in the following areas to have a major influence on UK agriculture?” (all respondents, $n=604$).⁶⁸ Most see external factors ranging from global prices to AI have near-term effects.



Future-proof funding and infrastructure

Researchers and industry expect that funding should enable strong ideas to progress through different stages of development towards practical application. Researchers and other stakeholders highlight **discontinuities in funding** as a key barrier to developing research-based solutions. Rather than prioritising one type of research over another, they expect a clear pathway between them so ideas can move more effectively into practice.

“It would be so useful to know that if your project has reached the KPIs set by the funders, there is another stage of funding you can go through to. We should be doing funding in blocks of maybe two, three years so you can develop something with the knowledge that there is a pathway to follow, if you are successful.” Supply chain interview

“It’s not just a matter of you get one grant and then all of a sudden that translates automatically into real-world impact. You’ll need a series of grants ... and at any point along that chain of funding, it could be terminated. Not through any fault of the researcher, but just purely because there’s not enough funding to go around.” Horticulture workshop

“The key thing is really how do you sort out a mechanism for allocating the funds across the different type of potential research funders and the strategy of what to invest in, in a coordinated manner between public, private and philanthropy? I think they all have their role to play, but right now it’s a bit hit and miss.” Researcher interview

They also expect to have access to **world-leading research infrastructure** – such as facilities, repositories and networks – to pursue their work. Boxes 32 and 33 summarise potential drivers of change in agriculture and research, which could lead to methodological step changes, and open opportunities to address questions that are currently too complex or time-consuming.

“We need universities and research institutes to provide world-class infrastructure for controlled experimentation and development of solutions, while commercial farms provide the environments for validation, scalability, and adoption under real-world conditions.” Researcher 599

“Providing universities with access to modern sensors for monitoring soil health, plant stress, and environmental conditions would strengthen research capacity, support innovation in sustainable farming, and accelerate the development of climate-resilient agricultural systems.” Researcher 462

7.1 / Expectation: research should help agriculture anticipate and adapt (Continued)

Box 32: Drivers of change in agriculture.⁶⁹ Many are already strongly established.

Theme	Established	Growing
Soils & Water	→ Soil erosion and degradation → Adoption of agri-tech and precision farming	→ Rising public concern for waterway pollution → Water scarcity
Climate & Weather	→ Food security and food prices → Net zero regulations	→ Extreme weather events → Climate change
Land Use & Ecosystems	→ Ecological footprint and degradation of biodiversity → Global deforestation and UK woodland creation targets	→ Plant pests and diseases in forestry → Decreasing land availability
Crops	→ Declining agrobiodiversity → Pesticide withdrawals	→ Adoption of gene editing technologies → Plant pest and disease outbreaks
Livestock	→ Impact of livestock farming on climate change → Public concern for animal welfare	→ Rising frequency and risk of zoonotic infections → Genetic improvement targets for livestock
Food Production & Supply	→ Post-harvest food loss and food safety challenges → New food sources and production systems	→ Population growth and increased demand on food supply
Society	→ Farmer mental health pressures	→ Global pandemics
Economy	→ Food price volatility → Concentration in the food value chain	→ Global economic growth
Systems	→ Calorie demand → Consumption of processed foods	→ Plant-based diets

7.1 / Expectation: research should help agriculture anticipate and adapt (Continued)

Box 33: Drivers of change in research.⁷⁰ These may drive major shifts that are relevant to research infrastructure needs.

Theme

Speed of analysis

Complexity of modelling

Granularity of field data

Data interoperability

Scale of experimentation

Automation of research

Driver

- AI
- Robotics

- Quantum computing pushing boundaries of what is currently 'computable'
- Digital twins
- Coupled multi-sector models (e.g. climate-food systems modelling)

- Quantum sensors with atomic-level sensitivity

- Standardised digital measurement, reporting and verification (MRV)
- Data governance

- Internet of Things increasing real-time data availability
- Peer-to-peer channels enabling networked trials
- Large-scale controlled environment agriculture (CEA) as experimental platform

- Self-driving laboratories (SDLs) automating experimental tasks

7.2 / Reality: sporadic foresight

Currently, there is no regular, UK-wide analysis of anticipated agricultural research priorities. While research funders typically investigate prospective fields and themes while developing programmes, sector-wide foresight is sporadic and piecemeal (Box 34).

Future-proofing research is not only about what and how projects are funded, but also how the UK's research capability is developed and maintained. The National Audit Office and MPs have highlighted **structural underinvestment** in maintaining and upgrading research infrastructure as a major risk to the quality and impact of UK research.⁷¹ It is a concern echoed by agricultural researchers, institutes and universities.⁷²

This first edition of SARI investigates the availability and use of agricultural research infrastructure, and potential priorities for investment (Section 8).

Box 34: Examples of UK foresight reports relating to agriculture.⁷³

There is no regular and systematic UK-wide agricultural foresight analysis.

2011

'Future of Food and Farming' –
Government Office for Science

2013

'Feeding the Future' report; Innovation
Requirements for Primary Food Production
in the UK to 2030 – NFU and partners

2021

**Agrifood Innovation Development and
Realisation Foresight Study** – Defra

2025

**'Roadmap for Resilience: A UK Food Plan for
2050'** – Agri-Food for Net Zero Network+

7.3 / What works: regular foresight and long-term funding pathways

Regular foresight and long-term funding pathways are crucial to future-proofing research.

Through **IBERS (Institute of Biological, Environmental and Rural Sciences)** and Aberystwyth University's forage breeding programme, researchers and industry partners have been working on grasses and legumes for decades. New grass varieties can take 15–20 years to reach farms. Working with this timeframe has meant the research needs stable partnerships, staged funding and clear routes from early science through to commercial use.

IBERS and its industrial partners meet regularly to discuss the research needs of farmers and how they fit into public funding opportunities. They have forged a partnership combining research excellence and industry knowledge, and this has been shown to accelerate farmer uptake of new technology. The collaboration is fundamental to both IBERS and the industrial partner and is an exemplar of public money and industry access working together over the long term.

"We are thinking what the world will be like in 40 years, because it takes 20 years to develop and another 20-year commercial life. On current predictions the world will be very different. Most research is tinkering along the edges. We should be making fundamental plans for a different agriculture." Industry interview





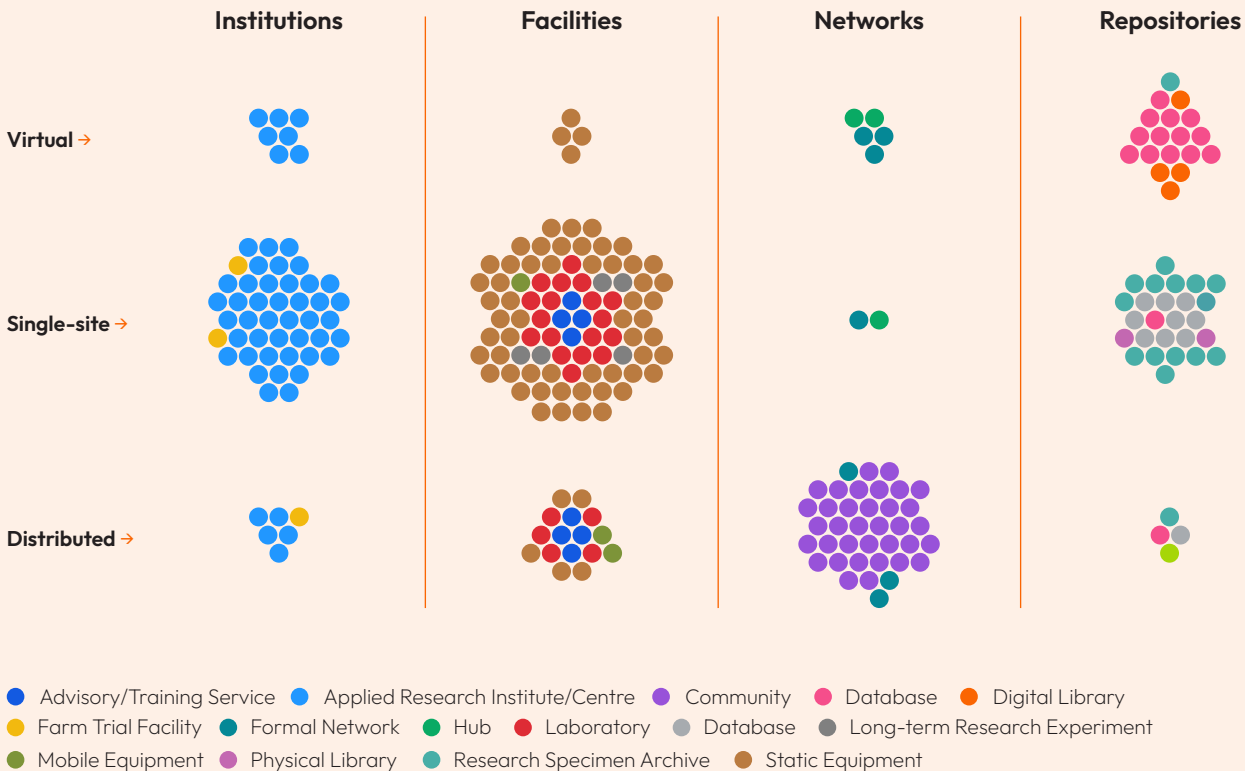
Research infrastructure

8.1 / Availability

The UK's agricultural research infrastructure comprises a wide diversity of site-specific facilities such as long-term experiments, distributed networks such as farmer communities, and physical (e.g. plant collections) and virtual (e.g. databases) repositories.

These are managed by organisations ranging from specialist institutes, Public Sector Research Establishments and universities, to charities and farmer organisations (Box 35).

Box 35: UK agricultural research infrastructure by type and format.⁷⁴ These examples were identified from InfraPortal, supplemented with information on networks from the Sustainable Farm Networks project.



8.2 / Use

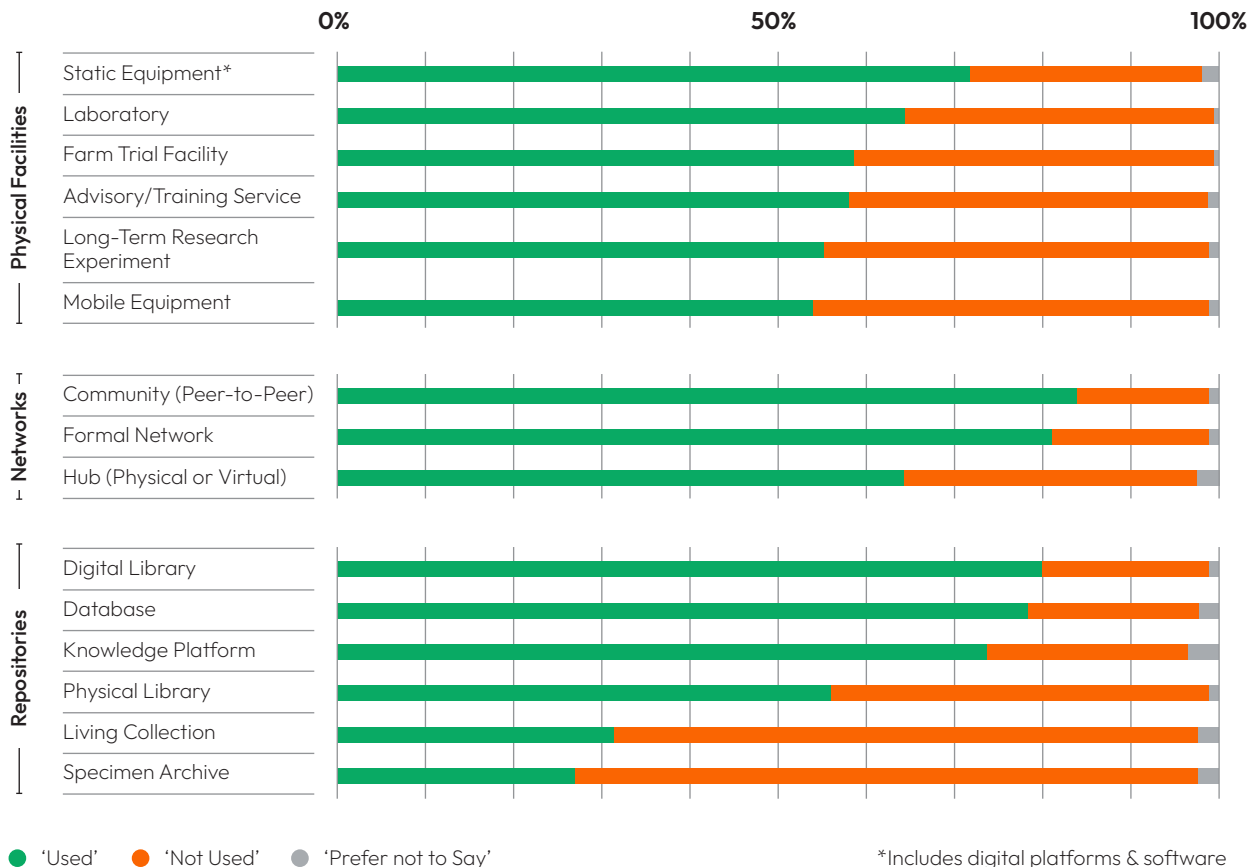
Researchers report using this full range of infrastructure (Box 36). They mostly use what is available at their own institutions (Box37).

They make much less use of infrastructure elsewhere, whether within their region, available nationally or outside the UK.

This institutional effect is strong across all types of infrastructure, but more pronounced for physical facilities and repositories, than for networks, digital libraries, databases and other virtual resources (Box 37). Networks are the most widely used research infrastructures, and static equipment is the most available (Box 38).

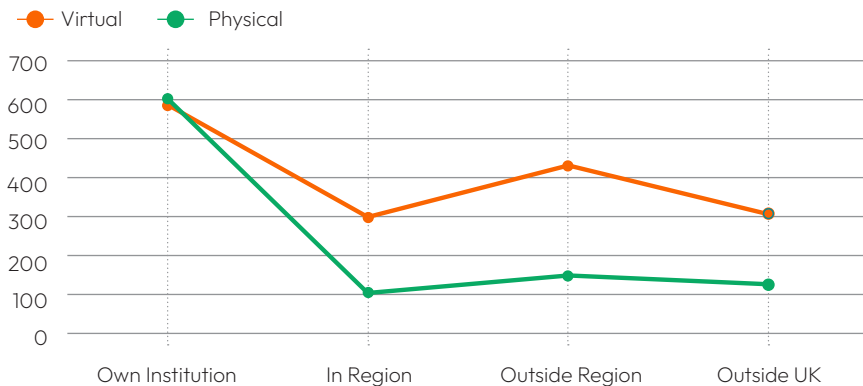
Box 36: Reported use of virtual and physical resources (all type, frequency; researchers only, average n=169).⁷⁵

Specialist infrastructure such as specimen archives may be essential to some fields, even though they are not widely used.



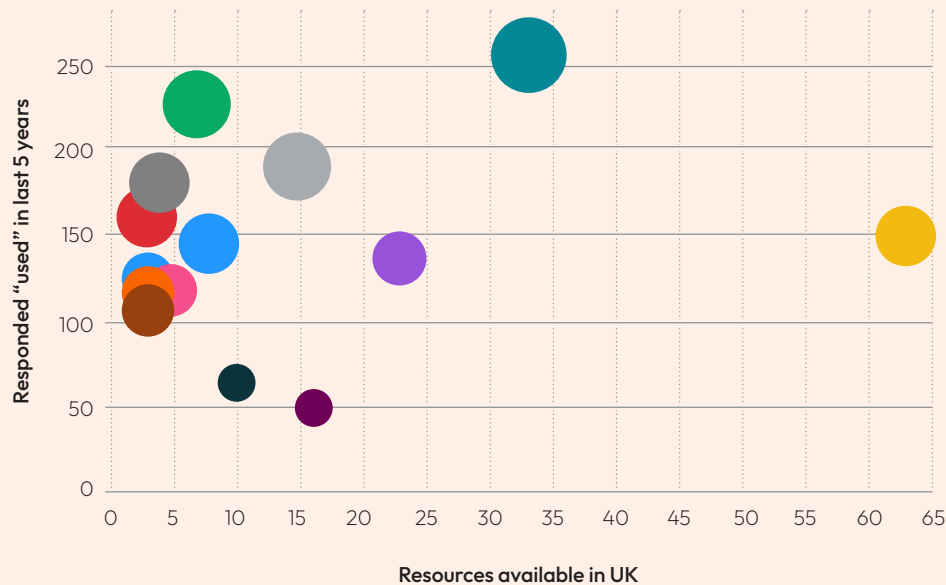
8.2 / Use (Continued)

Box 37: Reported use of virtual and physical resources (all types, frequency).⁷⁶ Most researchers use infrastructure at their own institution.



Box 38: Reported UK infrastructure use in the last five years by researchers compared to resources listed in database (researchers, average $n=189$ respondents).⁷⁷ Researchers widely use community and formal networks.

- Advisory/Training Service
- Farm Trial Facility
- Laboratory
- Mobile Equipment
- Long-term Research Experiment
- Static Equipment*
- Community (Peer-to-Peer)
- Formal Network
- Hub (Physical or Virtual)
- Database
- Digital Library
- Knowledge Platform
- Living Collection
- Physical Library
- Specimen Archive



8.3 / Longevity

Research infrastructures represent a substantial share of overall research investment.⁷⁸ Individual infrastructure projects can be large, take years to develop and be planned to have a useful life lasting over a decade.

Some research infrastructures far **outlive initial plans** or funding arrangements. Yet, as research methods and priorities change, there is also a risk that infrastructures become **prematurely redundant**.

Box 39 offers a framework to describe how research infrastructures perform relative to expectations and initial plans. How far do they meet, outlast or fall short of their initial plans and funding arrangements?

Box 40 identifies common features of research infrastructures that meet or outperform their expected lifespan and utility. While most features are independent of the type of research infrastructure, determined by the context and design, the type of infrastructure is potentially a factor in achieving four of these features: flexibility, breadth, active user engagement and open data.

8.3 / Longevity (Continued)

Box 39: Research infrastructure performance framework, with examples.⁷⁹

This illustrates the wide variation between expectations and realities of research infrastructure investment.

↑
Longer
Expected
Shorter
↓
Useful life

Evergreen	→ Far outliving initial plans
Adaptive	→ Successfully adapting to changing context
Performing	→ Meeting expected performance and lifespan
Impaired	→ Falling short of expected useful life or performance
Stranded	→ Prematurely unviable

		Example	Context	Outcome
Evergreen	UK	Broadbalk Winter Wheat Long-Term Experiment, Rothamsted	Rothamsted's Broadbalk Experiment, set up to study the effects of mineral fertilisers and organic manures on crop yield, has been running for approximately 180 years.	The experiment generated unanticipated discoveries – including on the effect of climate change on wheat yields – and underpins the RothC soil carbon model. It now generates ~24 scientific publications annually and attracts data requests from 30 countries via the electronic Rothamsted Archive (e-RA).
	UK	UK Vegetable Genebank (UKVGB), National seed collection	UKVGB was established in 1980 following an OXFAM special appeal to conserve genetic diversity of vegetable crops at risk of commercial extinction.	The UKVGB remained intact in scientific value (despite loss of block grant funding) and has grown. It holds world-leading collections, is foundational to the UK's gene editing and precision breeding programmes, and serves international food security research.
Adaptive	International	USDA Beltsville Agricultural Research Centre (BARC)	BARC is the largest and most diverse agricultural research complex in the USA. It adapted during the Covid-19 pandemic from labour-intensive, on-site field inspections to remote sensing and digital data analysis.	The adaptability of the research centre has enabled 115 years of agricultural research outputs, and research continuity more recently during the Covid-19 pandemic.
	UK	Rothamsted North Wyke Farm Platform (NWFP)	The NWFP was established and deliberately designed to be a flexible platform with three self-contained 21 ha farms managed under different philosophies.	A 2019 arable expansion to the grassland system means it can function as both a long-term monitoring platform and a reconfigurable sensor testbed. Research questions are modified without dismantling core infrastructure.

		Example	Context	Outcome
Performing	International	CGIAR genebank network (11 centres)	CGIAR genebanks collectively hold over 768,000 accessions of crop genetic diversity across 11 centres.	CGIAR centres operate largely as intended since the 1970's and function as the primary system for ex-situ conservation of food crop diversity. CGIAR research and innovation spanned 62 countries with 471 innovations reaching 20 million farmers, informed \$3.3 billion worth of third-party investments and 315 policy changes. The UK contributes to the CGIAR, including through the FCDO-BBSRC-funded UK-CGIAR Centre.
	UK	NIAB Cambridge – crop transformation and varietal testing	NIAB has operated its official seed testing, variety listing and crop transformation functions without interruption for almost a century.	NIAB's wheat transformation pipeline produces 3,000 independent wheat transformants annually. They operate the Official Seed Testing Station and LabTest for seed quality.
Impaired	UK	UK university research lab estates	Universities had continued to build new facilities without decommissioning obsolete ones, leading to a growing stock of labs that are no longer fit for purpose. Financial pressures have accelerated deterioration.	An estimated of £5.6 billion would be needed to return all university-owned infrastructure to full operational condition. Universities spend approximately £1.8 billion annually on research infrastructure, of which £758 million is maintenance.
	UK	UK Agri-Tech Centres	In 2016 the UK government established four separate Agri-Tech Centres (CHAP, Agri-EPI, CIEL and Agrimetrics) with over £90 million in capital investment. Three of the centres merged in 2025 to form the UK Agri-Tech Centre.	The four Agri-Tech Centres were more reliant on public funding than initially envisaged. Agrimetrics ceased trading in 2025. When the other three centres merged, their remit was consolidated and some assets were redistributed.
Stranded	International	Loss of research data repositories	191 data repositories were closed globally over a period of 25 years.	Loss of data access after closure, with repositories having a reported median lifespan of 12 years.
	UK	AHDB Horticulture and Potato Research	Following legal challenges and subsequent ballots, growers voted to abolish statutory levies for AHDB Horticulture and AHDB Potatoes.	Termination of research contracts, decommissioning infrastructure and £18 million cost to fund operational liabilities to wind down assets, people and research sites. Specific trial sites and specialised lab activities became redundant or required privatisation.

8.3 / Longevity (Continued)

Box 40: Distinctive features of research infrastructures that meet or exceed their expected performance.⁸⁰

The highlighted rows indicate that the type of research infrastructure is a factor in achieving them; others are fully independent of infrastructure type.⁸¹

	Feature/factor	Details
Governance	Multi-stakeholder	Governance structures that give users, funders and the broader community formal roles create accountability that insulates the infrastructure from unilateral closure decisions.
	Transparency	Infrastructures that can demonstrate scientific excellence through documented output have historically withstood funding reform cycles.
Financing	Secure	Independence from short-term government grants and budget rounds, for example through endowment funds.
	Diversified	Infrastructures with diversified income streams (e.g. combining national, international, industry and charitable) consistently outlive those with single source funding.
	Whole-lifecycle	Sufficient funding is required across the whole lifecycle. Financing crises are a primary driver of premature RI closure.
Design & scope	Irreplaceable	Long-term experiments cannot be easily replaced in a specific sense (e.g. historical data cannot be reconstructed after closure and the effects of such closure cannot be reversed), often ensuring that they remain open and utilised.
	Flexible	Modular and flexible experimental design where questions can change without dismantling core infrastructure e.g. existing plots in long-term experiments can be split to add new research questions.
	Broad	Infrastructures with multiple user communities are relatively protected from closure because more constituencies would be affected.

81

8.3 / Longevity (Continued)

Box 40: Distinctive features of research infrastructures that meet or exceed their expected performance.⁸⁰ (Continued)

The highlighted rows indicate that the type of research infrastructure is a factor in achieving them; others are fully independent of infrastructure type.⁸¹

	Feature/factor	Details
Excellence	Sustained	Infrastructures that cannot demonstrate continued scientific output (measured through publications, user numbers and knowledge transfer) lose their principal justification.
	Retained	Specialist knowledge lost through staff departure cannot be quickly rebuilt. This is particularly important in agricultural research where the tacit knowledge embedded in long-term experiments (e.g. historical management of plots) cannot readily be replaced.
Engagement	Valued	Infrastructures that can demonstrate their contribution to addressing societal challenges are better placed to secure long-term funding and support. Periodic monitoring of societal impact enables this.
	Active	Infrastructures with large, active and vocal user communities demonstrate resilience.
	Integrated	Infrastructures that are formally listed on national research roadmaps are protected because removal requires a formal revision of published plans.
Data & open-ness	Open	FAIR data principles (Findable, Accessible, Interoperable, Reusable) increase the value and impact of long-term experiment data by expanding the user community and the political case for RI continuation.
	Archival	Latent value of accumulated archives is a key argument for continued operation and maintenance funding, to ensure infrastructures such as collections and archives continue to be available.

8.4 / Propositions

Our survey and workshops reveal deep concern among researchers and stakeholders over whether the UK's research infrastructure is fit for purpose.

While researchers identify concrete examples of infrastructure needed to support their future work, the overall priorities they suggest for investment in UK agricultural research infrastructure emphasise wider enablers of effective research (Box 41).

These infrastructure needs and investment priorities can be summarised into four distinct high-level propositions⁸² (Boxes 42 to 44).

1**Preserve**

Increase the viability of research infrastructure that is of proven value.

3**Ground**

Experimentation on working farms is an undervalued research resource that supports the adoption of innovation.

2**Predict**

Specialist facilities are needed to address emerging challenges, including climate change.

4**Connect**

Much could be achieved by better harnessing and integrating data that is already collected, including on farms.

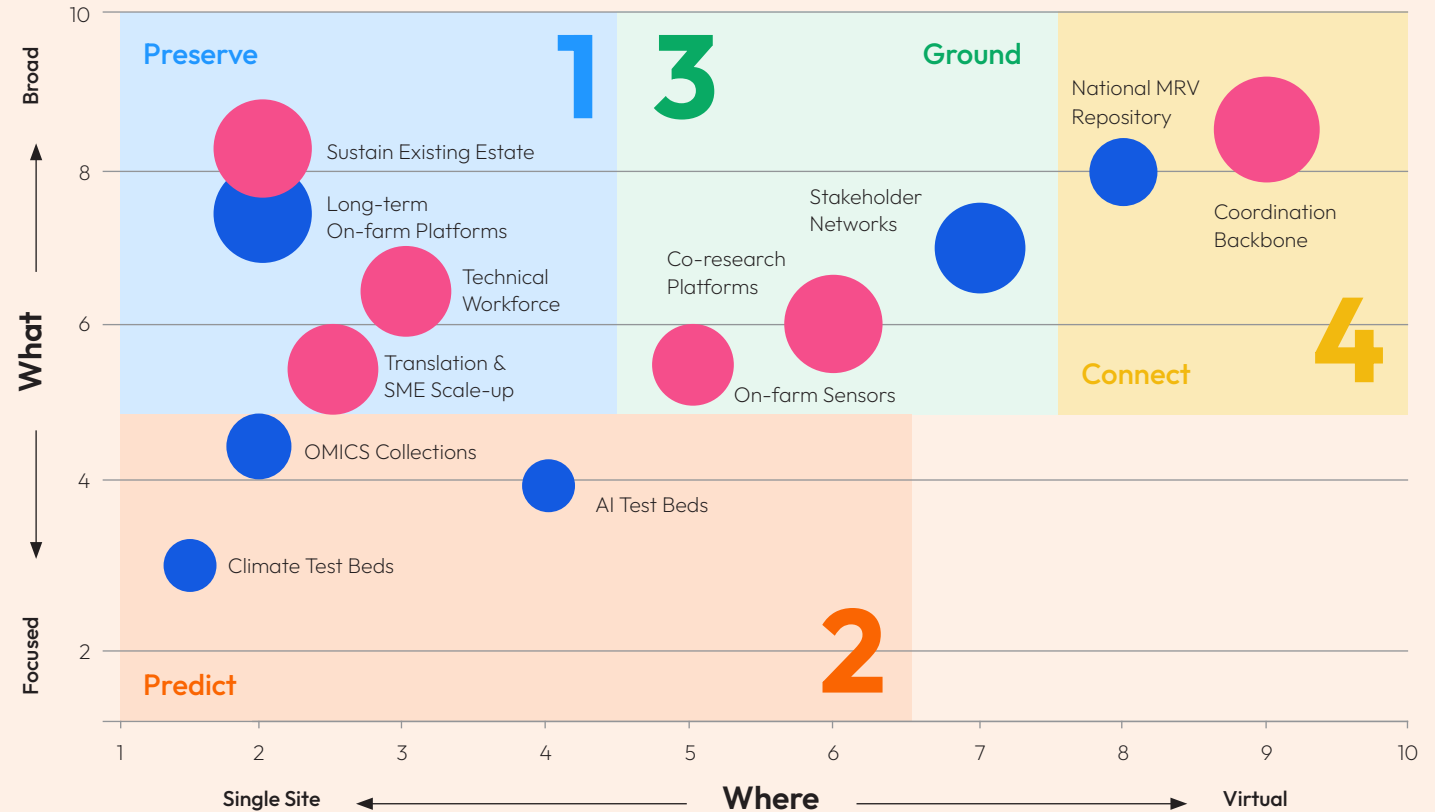
Box 41: Thematic analysis of research infrastructure needs
("Please describe the repository, network or facility you expect to need most in your research in the next five years") and investment priorities ("Thinking about UK agricultural research overall, where do you think investment is most needed in research infrastructure?").⁸³

The needs and priorities are grouped into four main propositions.

● Infrastructure need

● Investment priority

Size indicates respondent count



8.4 / Propositions (Continued)

Box 42: Research infrastructure investment propositions. Stakeholders described four broad directions.

1 Preserve

Increase the viability of research infrastructure that is of proven value.

“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

2 Predict

Emerging challenges, including climate change, present new research needs and require specialist facilities.

“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

“Facilities with the capability of simulating future conditions and which allow replicated design long-term trials with large livestock species”
Researcher 606

“Shared digital and modelling infrastructure that embeds AI, advanced analytics, and interoperable data systems into mainstream research.” Researcher 437

8.4 / Propositions (Continued)

Box 42: Research infrastructure investment propositions (Continued). Stakeholders described four broad directions.

3

Ground

Experimentation on working farms is an undervalued research resources and supports the adoption of innovation.

"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 we need more of a network of farms across the UK, which are ostensibly productive farms, but are actually working for a greater good." Supply chain interview

"I think rather than setting more places up as research farms, we should enable farmers to experiment and share their 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 kind of sit there rather than putting it back in the hands of farmers." Farmer interview

"I think there is a need to invest properly in farm platforms, into having a proper big conversation, rather than just with the people they always talk to. Because I think for dealing with some of these issues like climate change, you need network sites across the whole of the UK." Researcher interview

4

Connect

Harness and integrate data that is already collected, including on farms.

"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

8.4 / Propositions (Continued)

Box 43: 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” – see Box 41).⁸⁴

Infrastructure need	Description	Examples	
Long-term on-farm platforms <i>n</i> =17	Commercial-scale, multi-site on-farm long-term R&D platforms	<i>“Farm trial platform – livestock, crop and integrated – with agroforestry as a module.”</i> Researcher 513 <i>“Integrated, multi-site research and demonstration platforms that enable the study of livestock systems under real farm conditions... These platforms should operate across commercial farms and experimental sites to allow robust validation and scalability of results.”</i> Researcher 598	<i>“We need long term field trials to test innovations over multiple years and crop rotations. Not 1–2-year experiments. These trials need to move from carefully manicured plot trials run by scientists into on-farm real world commercial trials. Probably innovation farms that research multiple outcomes with a holistic approach – environment to economics.”</i> Researcher 481
Stakeholder networks <i>n</i> =12	Multi-stakeholder farmer–researcher networks (peer-to-peer, co-research, problem-led)	<i>“Peer-peer learning networks bringing all stakeholders interested in a key problem or issue together for a focussed time or piece of work.”</i> Researcher 552 <i>“A network platform focusing on British agriculture should involve not only academics, but also farmers, technology providers, policymakers, local communities and other stakeholders.”</i> Researcher 585	<i>“Existing and still to be formed networks of scientists, agri-rural practitioners and other stakeholders creating and sustaining communities of learning around transition challenges (climate, biodiversity, food and health/wellbeing, etc.), at national, European and International levels.”</i> Researcher 521
National MRV repository <i>n</i> =6	National MRV repository – soil carbon, GHGs and biodiversity outcomes	<i>“We need unified digital repository. Moving away from controlled glasshouses, the future of research relies on networked commercial farms (Digital Farm Network) to test how resilient new crop varieties or healthy diet pulses perform under actual climate volatility. A centralised data facility allows for the training of AI models that can predict pest outbreaks or nutritional density in real-time, helping farmers make precision decisions.”</i> Researcher 446	<i>“New national digital infrastructure for MRV, modelling of interventions and outcomes, and knowledge exchange.”</i> Researcher 558 <i>“A centralised repository of land management advice, practice and evidence for bracken control, management and use in upland farms.”</i> Researcher 451

8.4 / Propositions (Continued)

Box 43: Research infrastructure needs (Continued) (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” – see Box 41).⁸⁴

Infrastructure need	Description	Examples	
AI testbeds <i>n</i> =5	AI testbeds and dual-use autonomous on-farm monitoring	<i>“Robotics and AI test beds.”</i> Researcher 435 <i>“AI technology for rapid qualitative analysis.”</i> Researcher 590	<i>Developing dual use autonomous monitoring facilities and systems on-farm.”</i> Researcher 611
Climate testbeds <i>n</i> =5	Future-climate / scenario-simulation testbeds	<i>“Infrastructure with the ability to simulate future climates.”</i> Researcher 494 <i>“National field trial platforms for testing precision breed organisms that can provide different climate change scenarios.”</i> Researcher 548	<i>“Facilities with the capability of simulating future conditions and which allow replicated design long-term trials with large livestock species.”</i> Researcher 605
OMICS collections <i>n</i> =6	Curated biological collections with linked OMICS / phenotype / environmental metadata	<i>“A well-curated plant-microbiome repository that provides access to diverse, well-characterised microbial strains and associated plant genotype data. Access to linked genomic, phenotypic, and environmental metadata would be essential.”</i> Researcher 462	<i>“OMICS technologies with computational modelling and artificial intelligence.”</i> Researcher 509 <i>“UK Vegetable Genebank.”</i> Researcher 493

8.4 / Propositions (Continued)

Box 44: Research infrastructure investment priorities (Thematic analysis of responses to “Thinking about UK agricultural research overall, where do you think investment is most needed in research infrastructure?” – see Box 41).⁸⁵

Investment priorities	Priority	Examples	
Sustain existing estate <i>n=14</i>	Sustain and upgrade existing long-term experimental farms and platforms	“Research farms. These provide a crucial platform for research but there has been little investment in decades. As a result, the basic infrastructure at most is failing.” Researcher 442 “Upgrading facilities such as controlled environment, greenhouses, labs at existing centres which are ageing and inefficient. Wider investment in phenotyping facilities and agri-tech technologies.” Researcher 541	“Investment is most needed in infrastructure that enhances integration, co-ordination, and real-world application across the UK agricultural research system, building on and strengthening existing facilities rather than duplicating them. In particular, there is a need to upgrade existing experimental farms and research platforms, including those within universities and research institutes, into more integrated ‘smart’ research and demonstration environments.” Researcher 598
Translation & SME scale-up <i>n=12</i>	High-TRL validation, SME scale-up and commercialisation facilities	“Applied and translational research. BBSRC funding does not meet this need and there are no other suitable options since LINK funding was removed (Excepted that there is a version of this within BBSRC but it is less attractive to industry).” Researcher 488 “Infrastructure to help small companies (SMEs) scale up and commercialise their products. Infrastructure for researchers to trial new technologies and regenerative practices on working farms.” Researcher 606	“Accessible pilot-scale food processing facilities and food physical properties laboratories, particularly to support reliable processing and utilisation of diversified and underutilised crops. This includes mechanical fractionation and non-thermal processing technologies to enable sustainable scalable innovation.” Researcher 556
On-farm sensors <i>n=10</i>	High-resolution on-farm sensing, MRV and precision instrumentation	“Mobile, low-cost sensors for key emissions in air, water, and soils that can enable high resolution or frequency scalable data & information to be collected at farm level and inform systems-wide modelling of sustainability.” Researcher 455 “High precision measurement instrumentation especially for ammonia and greenhouse gases.” Researcher 472	“AI-based tools for early detection of pests, diseases, and nutrient deficiencies. Modern sensors for monitoring soil health, plant stress, and environmental conditions are essential for improving crop resilience and productivity.” Researcher 462

8.4 / Propositions (Continued)

Box 44: Research infrastructure investment priorities (Continued) (Thematic analysis of responses to “Thinking about UK agricultural research overall, where do you think investment is most needed in research infrastructure?” – see Box 41).⁸⁵

Investment priorities	Priority	Examples	
Co-research platforms n=14	Co-research and farmer-engagement infrastructure (compensated, early-stage)	<i>“Platform that enables co-research with farmers, facilitates their 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.”</i> Researcher 546	<i>“Stakeholder engagement networks – supporting and normalising stakeholder engagement, ensuring that research that funding is dedicated to is actually relevant research.”</i> Researcher 591 <i>“Events such as Groundswell are excellent because there is a community of researchers and practitioners coming together physically.”</i> Researcher 478
Coordination backbone n=16	National coordination & data-integration backbone (joining-up, interoperability, shared analytics)	<i>“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.”</i> Researcher 555 <i>“A collegiate, cohesive, impartial hub for horizon scanning and co-developing strategic plans for investment in underpinning infrastructures.”</i> Researcher 458	<i>“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.”</i> Researcher 617
Technical workforce n=11	Technical workforce and researcher capacity (people as infrastructure)	<i>“A permanent technical workforce, data engineers, field technologists, and systems modellers, able to operate and sustain these assets.”</i> Researcher 438 <i>“I think people are needed to run the infrastructure we have.”</i> Researcher 459	<i>“Resourcing people to allow for continuous development of teams/skills, corporate memory, succession, talent development, capacity to respond rapidly to urgent/new opportunities.”</i> Researcher 596

8.5 / Future-proof infrastructure investment

The four propositions should be viewed as complementary approaches that are appropriate under different investment contexts, with potential to be combined.

Where investment in existing infrastructure is an option, the priority may be to maintain nationally important facilities that are heavily used and at risk (**Preserve**). Where investment is ring-fenced for a new research farm, equipping it to anticipate future climate conditions and analytical options adds value (**Predict**).

While any investment in research infrastructure can be designed to support the four features of 'evergreen' cases highlighted in Box 40, this would appear easier for some types of infrastructure than others. Box 45 offers a generic ranking of how each proposition aligns with these four features. This suggests that investments in decentralised farmer networks (**Ground**) and data-sharing infrastructure (**Connect**) may most readily be future-proofed. Given that researchers report very limited use of physical infrastructure outside their own institution, decentralised and virtual infrastructures shared by many institutional partners may be best placed to be widely used.

Box 45: Generic ranking of alignment between research infrastructure investment propositions and 'evergreen' features (1 = least alignment, 4 = most alignment).

It may be easiest to future-proof investment in farmer networks and data-sharing.

Proposition / Feature	Flexible	Broad	Active	Open
Preserve	2	2	2	2
Predict	1	1	1	1
Ground	4	3	4	3
Connect	3	4	3	4



Conclusions & next steps

9.1 / Potential

This independent review has been produced with the help of people and organisations responsible for agricultural research in the UK, to help strengthen the impact and social value of their work.

It suggests significant potential to achieve more, informed by the expectations of farmers, researchers and other stakeholders, and building on our sector’s hidden strengths.

The stakeholder expectations reported in this review are varied and challenging. Yet they are also realistic: for each, we have suggested actions that would help address the expectation and provided an example of where research organisations and funders in the UK are already taking relevant steps (Box 46).

Box 46: Examples of actions that address stakeholder expectations of agricultural research.

This table summarises examples from Sections 2 to 7 of the report.

Expectation	Action	Example
Relevant	Transparent mechanisms to include stakeholders in research priority-setting.	Scottish Government has established systems to engage stakeholders when setting research priorities through its Strategic Research Programme.
Joined-up	Sector-wide strategic coordination of agricultural research and research funding.	The LUNZ Hub is taking a systems approach, building interdisciplinary teams and collaborating across the four nations.
Useful	Increase the share of research geared towards improving practitioner knowledge and skills.	UKRI, Waitrose and University of Reading co-developed a simple scorecard to help farmers compare the impact of changing practices.
Grounded	Strengthen and grow user-centred research programmes.	Defra and Innovate UK are backing farmer-led innovation at scale with the ADOPT Fund.
Timely	Include mechanisms to respond to emerging needs in projects and programmes.	The Animal and Plant Health Agency carry out long-term monitoring and respond quickly to outbreaks.
Future-proof	Regular foresight and long-term funding pathways.	IBERS and industry partners take a long-term view to funding and project development.

This review also reveals hidden strengths of the UK's agricultural research system, beyond its established reputation for excellent basic, foundational science:

- The system is **responsive** to government priorities – the balance of research investment and activity across different themes and approaches is consistent with previous policy commitments to invest in agri-tech.
- The UK's **specialist institutes** and **agricultural universities** have retained important capabilities for applied research in a challenging funding landscape.
- Defra and the devolved governments are responsible for a growing share of public research funding, so can further increase **alignment** with agricultural policy objectives.
- It is highly **innovative**, with research funders and organisations experimenting with novel approaches to stakeholder engagement, co-design, peer review and other ways to increase the relevance and impact of research.

9.2 / Opportunities

This is a period of significant change in research and agricultural policy.

Recent and ongoing developments are set to strengthen the impact and social value of agricultural research, helping to meet expectations that have been identified through this analysis. For example:

- **UKRI's new strategy** increases coordination of research and innovation funding across the Research Councils and Innovate UK; it puts the public benefit of research centre stage while also underlining the value of curiosity-driven science (Section 2.2).
- The Horticulture and Poultry **Sector Development Plans** offer mechanisms to include stakeholders in research priority-setting (Section 1.3).
- Defra's new **ADOPT Fund**, with its precedents in Wales and Scotland, represents a major investment in user-centred research and innovation (Section 5.2).

Opportunities to extend and consolidate these developments, informed by the actions outlined in Box 46, include:

- **UK coordination** of public-interest research relating to agriculture, convening research organisations and funders from across the four nations. This would be collaborative, with the bodies involved sharing plans and insights, and open, in the sense of actively inviting perspectives on priorities from diverse stakeholders.
- **Regular foresight** into emerging challenges and opportunities, recognising that most research will continue to be geared towards longer-term impacts, and enabling those involved to anticipate needs on a relevant timescale.
- Ongoing innovation and experimentation in the design and delivery of research funding programmes, particularly to further ensure: the accessibility of **user-centred** research to farmers and civil society; sufficient investment in

9.3 / Next steps

It is for organisations involved in agricultural research and innovation, including those represented on SARI's Steering Group, to consider whether the evidence presented here warrants action on their part.

At the Centre for Agricultural Research Impact (Ag.Impact), which conducted this review, we will undertake to:

- **Update SARI** annually, building a reliable, independent evidence base on public research in agriculture and stakeholder priorities. We welcome feedback on this report so we can improve future editions.
- **Convene** organisations across the sector through the SARI Steering Group, at least until government implements formal mechanisms for sector-wide strategic co-ordination.
- Provide **foresight** into emerging challenges and opportunities in agriculture that warrant medium- to long-term research.
- Review evaluations of relevant agricultural research funding programmes to identify **'what works'** in programme design.
- Support research funders to develop, test and refine novel ways to support user-centred research and **long-term** innovation pathways.
- Support the development and use of research **impact metrics** that recognise pre-competitive and social innovation, alongside commercial innovation pathways.
- **Share evidence** from SARI with research organisations, funders or other organisations seeking to strengthen the impact and social value of their research, including through strategic infrastructure investment.

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⁵ Data source(s): SARI data 2022–2026 (projects and funding). See methodology section <https://www.ag-impact.org/sari> for details; UK region boundaries via ONS Open Geography Portal: <https://geoportal.statistics.gov.uk/datasets/ons::european-electoral-regions-december-2018-boundaries-uk-bfc/explore?location=54.315439%2C-3.250000%2C5.82>.

⁶ All survey results were combined for the purpose of data analysis, and participant demographics were summarised, with personal identifiers being anonymised prior to data analysis. Details included primary role of the respondent, participant location (nation/region), age and gender. Multiple approaches were required to analyse the range of survey question types (e.g. free text versus ranking questions). These approaches included: ranking analysis, linkage analysis, cluster analysis, regression analysis. Full survey analysis methods can be made available on request.

⁷ Semi-structured interviews were held with 21 stakeholders across research, farming and the supply chain. A targeted sampling method was used, selecting participants based on their specific interests or perspectives. The interviews lasted an average of 51 minutes and were held by telephone or Microsoft Teams, then automatically transcribed and analysed using a combination of manual and LLM methods.

⁸ Three online stakeholder workshops, loosely themed around an industry sector – livestock, crops, and horticulture – were held to explore early SARI findings and proposals for infrastructure investment. A total of 59 people attended, roughly half academics plus farmers, growers and supply chain and NGO representatives. A targeted sampling approach was used to select and invite participants, with attendees representing devolved nations and a mix of research and farming disciplines. Two further workshops were held with citizen members of the Food, Farming, and Countryside's Commission's Food Conversation panel. Twenty participants took part, selected from a wider group of interest to represent a spread of demographics and political views. The same group were invited to both workshops.

⁹ (In preparation) Tiwasing, P. MacMillan, T. Crouch, K. Bong, Y. Khafagy, A. Pressland, K. Lewis, K. (2026). Strategic priorities for agricultural research infrastructure investment in the UK. Oxford, UK: Innovation and Research Caucus.

¹⁰ Data source(s): SARI data (projects and funding). See Methodology paper <https://www.ag-impact.org/sari> for more details. Scope defined as per Box 6.

¹¹ Data source(s): SARI data 2022-2026 (projects and funding). See Methodology paper <https://www.ag-impact.org/sari> for details;

'One Health' is an integrated approach to human, animal and ecosystem health; Scope defined as per Box 6.

¹² Data source(s): SARI data 2022-2026 (projects and funding). See Methodology paper <https://www.ag-impact.org/sari> for details; Calendar years of project start date used throughout.

¹³ ONS (2026). *Research and development expenditure by the UK government*. London: Office of National Statistics. Accessed 16.09.26 Available at: <https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/datasets/scienceengineeringandtechnologystatisticsreferencetables>.

¹⁴ Data source(s): SARI data 2022-2026 (projects and funding). See methodology section <https://www.ag-impact.org/sari> for details. Additional notes on funder categories: 'DSIT' includes Horizon Europe Guarantee funding (£26M), and International Science Partnerships Fund (ISPF £16M). 'Devolved govts' is Scottish Government project funding (£84.8M) with one record of Welsh Government funding (£21k); at the time of analysis, data from Wales and Northern Ireland's governments were not available. SARI data focuses on public spending; however, 'Industry' includes £3.9M from AHDB, alongside other funding in the data (e.g. industry, non-UK, and philanthropic) reported by research providers.

¹⁵ Data source(s): SARI data 2022-2026 (survey).

¹⁶ Free text responses were analysed thematically by participant group (farmers, researcher & other stakeholder) with assistance from Claude AI (2026).

¹⁷ Features are based on a combination of manual and LLM analysis of qualitative survey responses, separated by job role. The concepts were explored in more depth in interviews and workshops.

¹⁸ Data source(s): SARI data 2022-2026 (survey). See methodology paper <https://www.ag-impact.org/sari> for details.

¹⁹ UK Government (2025). Advanced Manufacturing Sector Plan. *The UK's Modern Industrial Strategy*. (Accessed on: 15.06.2026). Available at: <https://www.gov.uk/government/publications/advanced-manufacturing-sector-plan>.

²⁰ Department for Business & Trade (2026). Industrial Strategy Sector Definitions List. *Policy Paper*. (Accessed on: 30.07.2026). Available at: <https://www.gov.uk/government/publications/industrial-strategy/industrial-strategy-sector-definitions-list>. Government (2025). Advanced Manufacturing Plan. Policy Paper. (Accessed on: 30.07.2026). Available at: <https://www.gov.uk/government/publications/advanced-manufacturing-sector-plan>.

²¹ Defra (2017). Defra annual report and accounts 2016 to 2017. *Corporate report*. (Accessed on: 01.10.2026). Available at: <https://assets.publishing.service.gov.uk/media/5a81ec9340f0b62302699e54/defra-annual-report-2016-2017-print.pdf>. Defra (2026). Defra's annual report and accounts for 2023 to 2024: financial statements. *Corporate report*. (Accessed on: 01.10.2026). Available at: <https://www.gov.uk/government/publications/defras-annual-report-and-accounts-2023-to-2024/defras-annual-report-and-accounts-for-2023-to-2024-financial-statements>. Relative comparison adjusted for inflation, 2016/17 spend would be estimated at £48M compared to £83M for 2023/24, if weighted using HM Treasury GDP deflator estimates (c. 25% over the time period 2016/17 to 2023/24); HM Treasury (2026). GDP deflators at market prices, and money GDP. UK Economy. (Accessed on: 01.10.2026). Available at: <https://www.gov.uk/government/collections/gdp-deflators-at-market-prices-and-money-gdp>.

²² Data source(s): SARI data 2022-2026 (survey). See methodology paper <https://www.ag-impact.org/sari> for details.

²³ DEFRA, UKRI (2026). Farming Innovation. (Accessed on: 29.07.2026). Available at: <https://farminginnovation.ukri.org/>.

²⁴ Scotland: Scottish Government (2022). Environment, natural resources and agriculture – strategic research 2022–2027: Overview. *Official press release*. (Accessed on: 06.08.2026). Available at: <https://www.wired-gov.net/wg/news.nsf/articles/Environment+natural+resources+and+agriculture+strategic+research+20222027+overview+13062022120500>. Scottish Government (2026). Environment, natural resources and agriculture – strategic research 2022–2027: Overview. (Accessed on: 06.08.2026). Available at: <https://www.gov.scot/publications/environment-agriculture-and-food-strategic-research-2022-27-overview/pages/strategic-research-programme-2022-to-2027/>. DAERA (2025). Food Strategy Framework Action Plan 2025–2027. Scottish Government (2026). SEFARI. (Accessed on: 06.08.2026). Available at: <https://sefari.scot/>.

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²⁵ Strategic Research Programme 2022 to 2027 – Environment, natural resources and agriculture – strategic research 2022–2027: overview – gov.scot. Available at: <https://www.gov.scot/publications/environment-agriculture-and-food-strategic-research-2022-27-overview/pages/strategic-research-programme-2022-to-2027/>.

²⁶ DEFRA, UKRI (2026). Farming Innovation. (Accessed on: 29.07.2026). Available at: <https://www.farminginnovation.ukri.org/>. LUNZ Hub (2026). Land Use for Net Zero Hub. *Webpage*. (Accessed on: 06.08.2026). Available at: <https://lunzhub.com/>. UK Dairy Carbon Network (2026). Helping farmers find practical ways to cut emissions. *Webpage*. (Accessed on: 06.08.2026). Available at: <https://ukdairycarbonnetwork.co.uk/>.

²⁷ Data source(s): SARI data 2022–2026 (survey). See methodology paper <https://www.ag-impact.org/sari> for details.

²⁸ Data source(s): SARI data 2022–2026 (projects and funding). See methodology paper <https://www.ag-impact.org/sari> for details.

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³⁰ (In preparation) Tiwasing, P. MacMillan, T. Crouch, K. Bong, Y. Khafagy, A. Pressland, K. Lewis, K. (2026). Strategic priorities for agricultural research infrastructure investment in the UK. Oxford, UK: Innovation and Research Caucus.

³¹ Data source(s): SARI data 2022–2026 (survey).

³² Data source(s): SARI data 2022–2026 (survey). See methodology paper <https://www.ag-impact.org/sari> for details.

³³ Data source(s): SARI data 2022–2026 (survey). See methodology paper <https://www.ag-impact.org/sari> for details.

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³⁶ Data source(s): SARI data (projects and funding). See Methodology paper <https://www.ag-impact.org/sarior> for more details.

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Aberystwyth University, AHDB, AID, Royal Agricultural Society of England, NFU, NFU Scotland (2013). Feeding the Future. Innovation requirements for primary food production in the UK to 2030. (Accessed on: 06.08.2026). Available at: <https://www.farminguk.com/content/knowledge/feedingthefuture%20-%20final%20report.pdf>.

⁷⁴ SARI draft research infrastructure directory, based on InfraPortal (251 records) and data provided by Sustainable Farm Networks (62 records).

Research infrastructure taxonomy combined concepts from the following sources:

Formats – InstructERIC (2025). What is research infrastructure? About European Research Infrastructures. (Accessed on: 05.12.2025). Available at: <https://instruct-eric.org/network/rivis/about-european-research-infrastructures>; Geographical regions – InfraPortal (2025). About InfraPortal. *What is research and innovation infrastructure?* (Accessed on: 04.12.2025). Available at: <https://www.infraportal.org.uk/about>.

RI Infrastructure types and sub-types – CASA (2019). Inventory of Research and Innovation Infrastructures. SCAR AKIS (Accessed on: 09.12.2025). Available at: https://scar-europe.org/images/SCAR-Documents/Reports_outcomes_studies/AKIS1_SCAR_AKIS_Report_CASA_Template_20190629.pdf & European Commission (2025). European Research Infrastructures. *Research and innovation*. (Accessed on: 05.12.2025). Available at: https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/our-digital-future/european-research-infrastructures_en.

Methods – To determine the types of agricultural research infrastructure across UK, data were collated from the sources outlined in Table A2. Data were manually categorised based on infrastructure type (e.g. physical equipment and labs or virtual networks and databases) and distribution (e.g. virtual, single-site, multi-site). Details on agricultural research infrastructures were then developed into an interactive online directory and can be explored at <https://public.flourish.studio/story/3576486/>.

Caveat – The directory has 313 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. It shows concentrations of site-specific facilities such as long-term experiments, distributed networks such as farmer communities, and a mix of physical (e.g. plant collections) and virtual repositories (e.g. databases).

⁷⁵ Data source(s): SARI data 2022–2026 (survey). Average n respondents as question segments were optional.

⁷⁶ Data source(s): SARI data 2022–2026 (survey). Average n respondents as question segments were optional. Data source(s): SARI data 2022–2026 (survey). Frequencies indicate summed responses from all researcher respondents, as multiple infrastructures are included in each geographical category.

⁷⁷ Data shows researcher respondents indicating yes/no whether they had used infrastructure categories in the last 5 years. Frequencies of indicated use were plotted against the number of equivalent available infrastructures identified in Box 35.

⁷⁸ OECD (2026). Research Infrastructure. *Policy sub-issue*. (Accessed on: 14.04.2026). Available at: <https://www.oecd.org/en/topics/research-infrastructure.html>.

⁷⁹ Conceptual framework developed by Ag-Impact. Table created with examples discovered using Claude AI (2026). Research infrastructure prompts and outputs. Available at: <https://claude.ai/share/4f14614c-82d1-406b-9ddb-b87650647f92>. Claude AI software was used to help identify key examples of RIs that illustrate each of the five bands of performance, and the following tables are adapted from the Claude outputs. The sources cited in the outputs have been manually checked and amended where appropriate for accuracy. Sources include:

Rothamsted Broadbalk – Rothamsted (2023). Access to data from the Rothamsted Long-term Experiments & Broadbalk. *About the Rothamsted Sample Archive. Broadbalk* (Accessed on: 13.04.2026). Available at: <https://www.era.rothamsted.ac.uk/info/rsg/index> & <https://www.era.rothamsted.ac.uk/Broadbalk> & Perryman, S.A., Castells-Brooke, N.I., Glendining, M.J., Goulding, K.W., Hawkesford, M.J., Macdonald, A.J., Ostler, R.J., Poulton, P.R., Rawlings, C.J., Scott, T. and Verrier, P.J., (2018). The electronic Rothamsted Archive (e-RA), an online resource for data from the Rothamsted long-term experiments. *Scientific Data*, 5(1), pp.1–17. DOI: 10.1038/sdata.2018.72.

UKVGB – University of Warwick (2020). Seventy years of crop research at Warwick’s Wellesbourne campus celebrated at industry event. *Press release*. (Accessed on: 13.04.2026). Available at: https://warwick.ac.uk/news/pressreleases/seventy_years_of/ & University of Warwick (2022). £1.5m Crop Research Centre opens at University of Warwick. *Press release*. (Accessed on: 13.04.2026). Available at: <https://warwick.ac.uk/news/pressreleases/?newsItem=8a1785d88461a3150184626254420e63>.

USDA BARC – Gao, F.N., Jennewein, J.S., Hively, W.D., Soroka, A., Thieme, A., Bradley, D., Keppler, J., Mirsky, S.B., Akumaga, U. (2022). Near real-time detection of winter cover crop termination using harmonized Landsat and Sentinel-2 (HLS) to support ecosystem assessment. *Science of Remote Sensing*. 7. Article 100073. DOI: <https://doi.org/10.1016/j.srs.2022.100073>. USDA access: <https://www.ars.usda.gov/research/publications/publication/?seqNo115=397778> & USDA (2026).

USDA Reorganization. Secretary Memorandum & Press Release. (Accessed on: 14.04.2026). Available at: <https://www.usda.gov/about-usda/reorganization> & Sockstad, E (2025). USDA reorganisation will cut agricultural and forest research. Scientific Community. (Accessed on: 14.04.2026). Available at: <https://www.science.org/content/article/usda-reorganization-will-cut-agricultural-and-forest-research>.

Rothamsted North Wyke - Rothamsted Research (2024). The North Wyke Farm Platform. National Bioscience Research Infrastructures. (Accessed on: 14.04.2026). Available at: <https://www.rothamsted.ac.uk/national-capability/north-wyke-farm-platform> & InfraPortal (2022). The North Wyke Farm Platform. Research Infrastructure. (Accessed on: 14.04.2026). Available at: <https://www.infraportal.org.uk/infrastructure/the-north-wyke-farm-platform>. CGIAR genebank network - CGIAR (2026). Research and Impact. CGIAR Overview. (Accessed on: 14.04.2026). Available at: <https://www.cgiar.org/cgiar-research-portfolio-2025-2030>. CGIAR (2026). About the UK-CGIAR Centre. CABI. (Accessed on: 30.09.2026). Available at: <https://www.cabi.org/uk-cgiar-centre/aims-and-objectives/>.

NIAB Cambridge - NIAB (2026). The NIAB Crop Transformation Group provides an efficient platform for a range of plant biotechnology techniques. *Plant Biotechnology*. (Accessed on: 14.04.2026). Available at: <https://www.niab.com/research/agricultural-crop-research/plant-biotechnology>.

UK university research lab estates - National Audit Office (2026). UK research infrastructure better reflects national priorities - but university maintenance lags. Press release. (Accessed on: 13.04.2026). Available at: <https://www.nao.org.uk/press-releases/uk-research-infrastructure-better-reflects-national-priorities-but-university-maintenance-lags/>.

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⁸⁰ Informed by mini-literature review assisted by Claude AI. All references were manually reviewed and alternative references were identified where needed. Claude AI (2026). Research infrastructure prompts and outputs. Available at: <https://claude.ai/share/4f14614c-82d1-406b-9ddb-b87650647f92>.

⁸¹ Details provided in this table are derived from the following sources:

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Diversified - ESFRI (2018) and Terjesen, S., Al Asady, A (2023). In trust, we trust: ensure transparency in university endowments. Times Higher Education Campus. (Accessed on: 27.04.2026). Available at: <https://www.timeshighereducation.com/campus/trust-we-trust-ensure-transparency-university-endowments>.

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⁸² Investment propositions developed for discussion at the citizen workshops, informed by researcher survey responses and deliberations at three proposition development workshops held with researchers, farmers and other stakeholders.

⁸³ Thematic analysis using Claude AI (2026). (prompts available on request).

⁸⁴ Thematic analysis using Claude AI (2026). (prompts available on request).

⁸⁵ Thematic analysis using Claude AI (2026). (prompts available on request).



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