Agri-Food Innovations: Support, Schemes & Success

Chris Danks
Interim Head of Agri-Food

UKRI Innovate UK

THE 2025 BAKING FORUM

Innovate UK is the UK's innovation agency

As part of UK Research and Innovation (UKRI), **Innovate UK** is publicly funded to drive innovation and productivity across the UK.

It works to create a better future by inspiring, involving and investing in businesses that are developing life-changing innovations.

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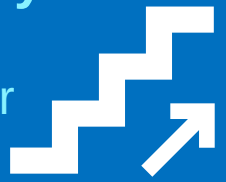
A typical Innovate UK backed business raises

>30%

more money
from the
private sector



Than similar businesses. Since 2007

Direct business benefit

£3.61

For every £1 invested

Over a seven-year period. Based on the most recent independent evaluation.

Our purpose

We drive **productivity and economic growth** by supporting businesses to develop and realise the potential of new ideas, including those from the UK's world-class research base.

We **connect businesses to the partners, customers and investors** that can help turn these ideas into commercially successful products and services, driving productivity, and supporting business growth.

Our mission is to enable the creation and adoption of innovation across the UK.

UKRI Innovate UK

At Innovate UK we:

Accelerate innovation, investment and productivity that supports UK businesses to grow, and develops the innovation talent and skills pipeline

Inspire and invest in **emerging technologies and cutting-edge science, research and development**

Create powerful connections that catalyse and create benefit from the **ethical and safe development of innovative technologies** across the whole of the UK

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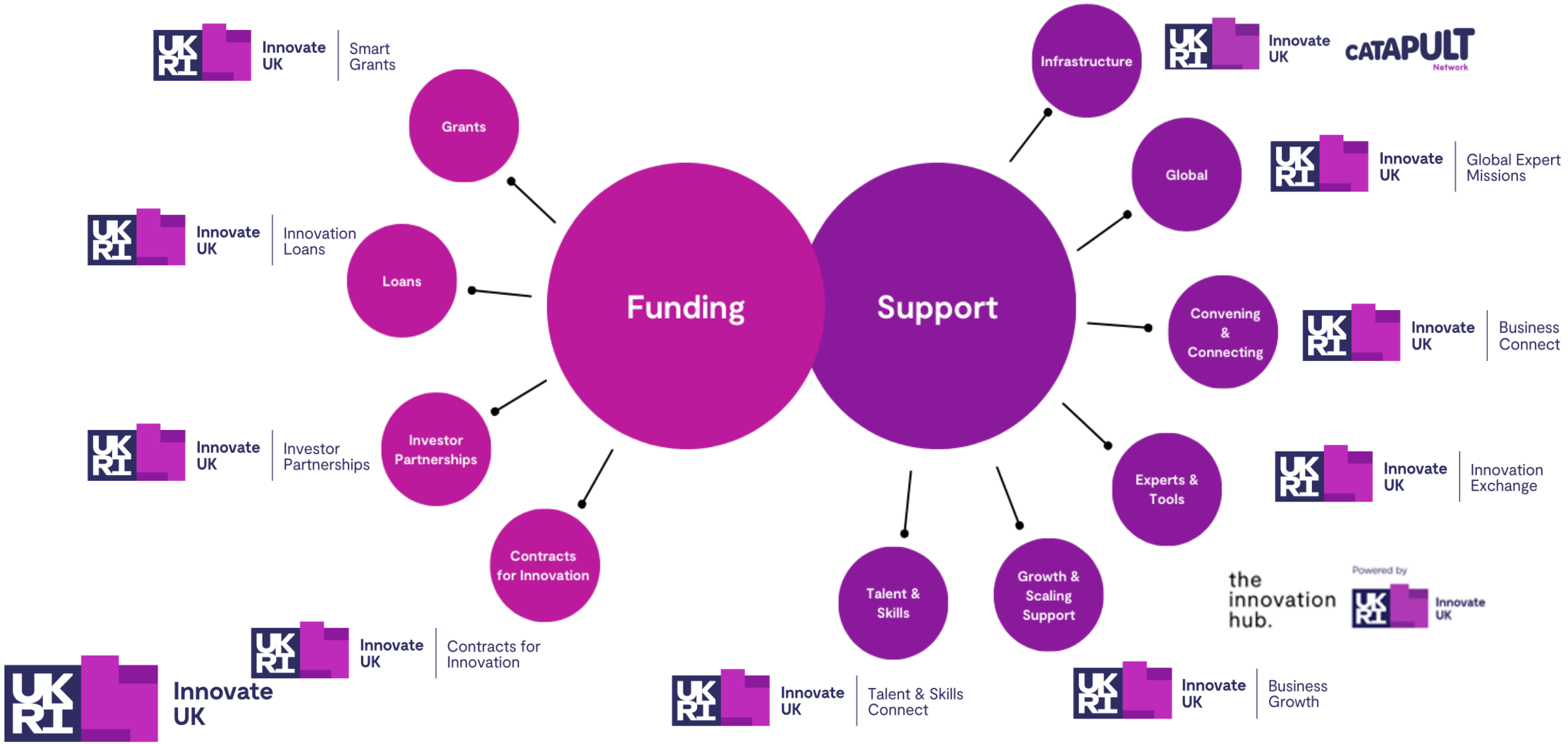
Products & Services: portfolio of examples



Where do the Agri-Food Systems Team Work?

Across all agricultural sectors

Food manufacturing, processing and nutrition

Broad spread of technologies sectors

- Biotechnology
- Genetics and Breeding
- Sensing, data management and IoT
- Robotics, Automation and Mechanisation
- Bio-Materials
- Innovative Foods
- Supply chain and Food Tech
- Novel Production Systems

Agri-Food Funding Programmes

- Agri-Tech Catalyst **£160m 2013- 2018**
- Transforming Food Production ISCF **£90m 2019-24**
- Defra Farming Innovation **£270m 2022-29 *TBC**
- Alongside Open and Future Economy Interventions total for Agri-Tech **exceeds half a billion pounds over 16 years**
- A **nascent sector** where the number of agri-tech companies has grown considerably over the past decade, from 25 to over 1000. The majority (60%) **being founded between 2016 and 2020.**
- Innovate UK have funded over **450 unique agri-tech companies** at various stages of development over the past 5 years

Delivered by Innovate UK and BBSRC

Catalysing the transition to net zero food production

Projects from the Transforming Food Production Challenge, a UKRI Challenge Fund Programme

"The opportunity brings with it the chance for Entocycle to benefit from substantial new revenue streams with new global connections"

Entocycle

"We now have 2,000 products deployed across nine different countries"

SPOTTA

"We can now complete a major installation of hundreds of cameras within two to three weeks rather than over several months"

Peacock Technology

"We can bring efficiencies throughout the full supply chain and maximise the effectiveness of the whole solution from the lab through to feed and animal health, and ultimately to the consumers"

DEVENISH

"This research was the first of its kind and by far the largest assessment of animal performance data in the UK sector"

dunbia

"The impact has been growth to our team from eight to forty employees"

Brilliant Planet

"The Investor Partnership was pivotal to meet this innovation opportunity in the novel food space. It has been a gamechanger for our business"

uncommon

"The TFP Challenge grant and external investment truly kick-started our growth"

DYNEVAL

"The grant and investment funding from the TFP Challenge was an important stamp of approval in the eyes of our investors and brought stability and certainty to the company"

Dogtooth

"We hope one day that our approach will be the standard bearer in lower emissions farming"

CCm Technologies

Broadacre

Developing a biopesticide for cabbage stem flea beetle

This project was a feasibility study to develop an innovative bio-pesticide technology for the control of cabbage stem flea beetle (CSFB) in oilseed rape (OSR). The OSR area grown in the UK has declined significantly since 2012 followed a ban on neonicotinoid insecticides, which resulted in increased CSFB damage. The beetle also developed resistance to the pyrethroid insecticides, the only chemical control option available to farmers.

The feasibility study involved developing a fungal-based treatment, shown to have a 100% kill rate against early-stage larval CSFB after four days, and a mean of 82% kill rate for adults. The project focused on the development of different formulation types of the bio-pesticide to target the CSFB at different stages of the life cycle, especially the adults which can cause major crop losses as OSR emerges in late summer.

The work also involved end-user engagement through knowledge transfer workshops, with the aim of gathering feedback to ensure that the project aligns with user needs. This highlighted the fact that farmers are using a range of IPM techniques to overcome CSFB, as there are no suitable synthetic or biological pesticide control options currently available.

The outputs of this work will have a significant impact on the UK economy, by helping farmers to safeguard yields through enhanced CSFB control, whilst increasing the area of UK-grown OSR to supply domestic demand for rapeseed oil. The project also helps to reduce emissions, through the development of targeted bio-pesticide application systems, reducing the use of machinery required and replacing synthetic chemicals with biological treatments.

Project participants:
Crop Health and Protection Limited, CAB International, Russell Bio Solutions Limited

Funded amount:
£212,365

Development and field testing of the next generation of vision-guided weeding systems

Current crop production systems have been reliant on the wide-scale application of herbicides to control weeds. However, this approach is not sustainable, due to unprecedented regulatory and environmental pressures, which place new emphasis on the development of novel techniques to kill weeds. Precision hoeing equipment is a promising alternative, but the current systems cannot achieve the accuracy required to remove weeds completely from fields.

This project helped to develop next-generation robotic weeding machinery, which enables the selective and accurate treatment of weeds growing amongst crop plants. The technology involved combines a precision hoe, guided by a vision system and machine learning for precise detection and localisation of crop and weed plants. The system can be rapidly deployed and adapted for various plant types and environmental conditions.

The new weeding system can be deployed both as a tractor-mounted solution, and through an autonomous mobile robot. An autonomous weeder can operate 24/7 and offers a solution for farmers who grow crops in glasshouses or polytunnels where traditional implements cannot be deployed. This more efficient weeding equipment should result in better management of weeds and reduced use of herbicides.

Project participants:
Garford Farm Machinery Limited, SAGA Robotics Limited, University of Lincoln

Funded amount:
£ 697,058

Transforming Food Production Challenge

92 Projects funded

£104.6m Full project costs

£68.3m Amount of grant funding committed

£394m Total co-investment

bitly

316 Organisations funded

218 Business

75 Research, Public Sector, Charity
Mostly academic institutions

23 Research & Technology Organisation (RTO)

- **Better Food For All**

  52 Projects with up to £20m to support food innovation focused on diet & health

- **Novel Low Emission Food Production Systems**

  32 projects with up to £19m to support AltPtn and CEA innovations for net-zero, including:
  - Plant-based foods
  - Fermentation-based foods
  - Cultivated meat
  - Enhancing food quality

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Discover more about the impact of Innovate UK's funding competitions which support businesses to improve the quality and sustainability of food.

Better Food For All Case study 1

Modern Baker ACFT-blend: enhancing the nutritional value of multiple commonly eaten products

©Modern Baker Ltd

Project lead: Modern Baker Ltd

Participants: Campden BRI (Chipping Campden) Ltd, Puratos Ltd

Funded amount: £321,116

Modern Baker is the UK's largest healthy baking brand. In collaboration with Campden BRI and Puratos, Modern Baker intends to adapt a novel ingredient blend towards several industrially scalable end-products, including bread, pasta, breakfast cereals, ready meals, biscuits and cakes. These play a significant role in the health of the nation, so the novel blend will enhance accessibility and nutritional benefits across multiple commonly eaten products.

In this project, the consortium refocuses from the food industry's 'calorie-dense' approach, towards a new, 'nutrient-dense' approach that reformulates the production of carbohydrate-based packaged foods. This brings the health benefits that specialist baking can bring to digestion, such as reducing the glucose release and providing beneficial substrates for gut microbiota, which current packaged foods often neglect.

The development of this innovative and broadly applicable blend has the potential to transform existing commercially available processed products, and will allow the production of alternative and affordable healthy flour-based and baked goods for both B2B (food manufacturers) and B2C (retail and direct-to-consumer).

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Better Food For All Case study 2

BetterBread: developing novel milling processes for improved nutrition in white wheat flour without fortification

Project lead: Shipton Mill Ltd

Participants: Aberystwyth University

Funded amount: £524,790

Shipton Mill is the largest UK organic flour mill and a Royal Warrant Holder that specialises in creating award-winning, natural, and organic flours. Sustainability is central to Shipton and the mill is 100% powered by renewable energy. All their packaging is plastic-free, and they work closely with local organic farms.

Shipton works alongside multiple large companies to innovate new products and is a key part of a company group that includes other specialist bakeries.

The primary consumer motivations underpinning this project include demand for cost-effective health benefits, including increased nutritional value, 'all-natural' clean-label products with reduced or no added preservatives. It will also consider industry regulations, including the Bread and Flour Regulations of 1998, that have been introduced to add calcium, iron, thiamine (vitamin B1) and niacin (vitamin B3) to all white and brown flour.

Shipton will be collaborating with Aberystwyth University, who will be supporting nutritional analysis during this project. With this project, Shipton and Aberystwyth University are seeking to improve the nutritional quality of flour by altering blend composition and implementing modifications to the milling process.

The project has the potential to bring significant social and economic benefits to the UK and will further establish the UK as a leader in the flour and flour-based food markets.

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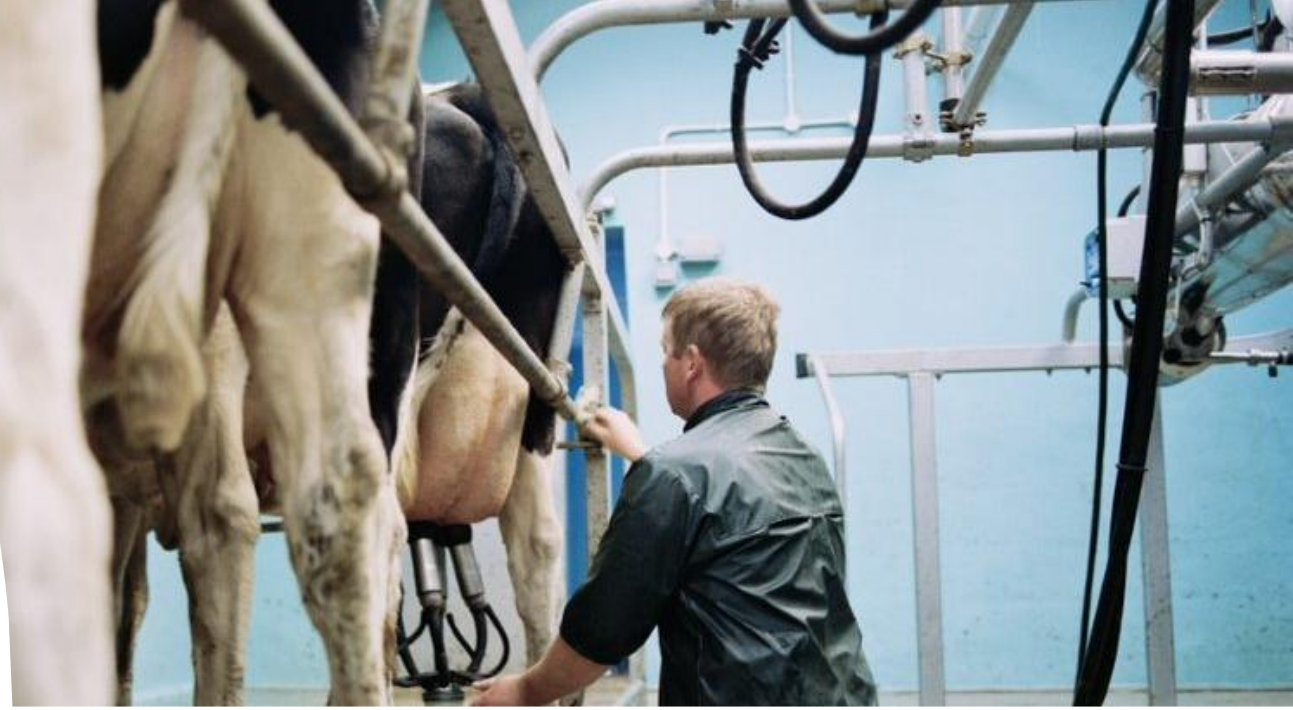
The Farming Innovation Programme



- Part of Defra's Agricultural Transition Plan alongside environmental schemes, productivity support and animal health and welfare
- **£270M** of grant funding for R&D through to 2028/29 – **delivered by Innovate UK**
- To enhance productivity, environmental sustainability, resilience and **profitability** in England's farming sectors
- Funding is awarded on a competitive basis to high quality, innovative projects
- Collaborative projects must **benefit farmers and growers** in England
- **Innovation is a driver for change**

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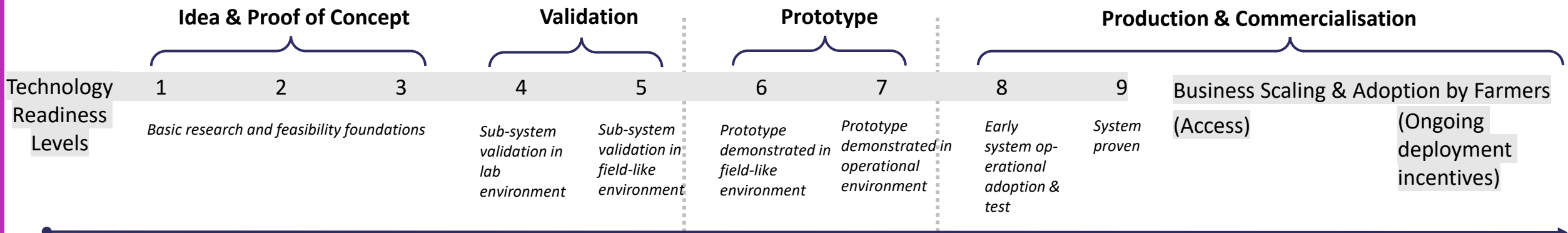
Creating an innovation pipeline from idea to commercialisation



(FIP) Farming Innovation Programme
Flagship Collaborative R&D programme, to fund projects that benefit farmers, growers and foresters in England to enhance productivity, sustainability and resilience.

Research Starter
£28-56k

Feasibility Study
£200k-500k

Small R&D Partnership
£1m-£3m

Large R&D Partnership
£3m-£5m

Farming Future R&D
£200k - £6m

ADOPT
Grants supporting farmers to trial new technologies and innovative ideas. Grants of 80% from £1-100k

Investor Partnerships
Grants for innovative projects aligned with private investment. Aligned investment must be 2x grant requested. Grants for projects costed between £750k - £3m

Farming Investment Fund (FIF) (Large grants)
Grants supporting farmers to invest in technology around specific themes. Grants of 40-60% from £25k - £500k

FIF Small grants (Farming Equipment & Technology Fund (FETF))
Grants supporting farmers to purchase specific items of equipment and technology. Grants of 50-60% from £1k-50k.

Sustainable Farming Incentive (Environmental Land Management)
Grants paying for actions using **precision farming** equipment. Grants of £27-£150 per ha

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Agri-Tech Centre Delivering sector leadership, with core focus on investment, growth and adoption of agri-tech

Farming Innovation programme Timeline

March 2022
£8m - Large Partnership Projects (round 1)
£12.5m - Climate-smart farming

May 2022
£1m - Research Starter Projects (round 2)

July 2022
£12.5m - Sustainable farm-based Proteins

Autumn 2022
£5.5m Feasibility Projects (round 2)
£11m Small Partnership Projects (round 2)

January 2023
£12.5m - Automation and Robotics
£1m Research Starter Projects (round 3)

2023

February 2023
£8m – Large Partnerships Projects (round 2)

May 2023
£12.5m On Farm Environmental Resilience

July 2023
£5m Investor Partnerships Projects

August 2023
£9.8m - Small R&D Partnership Projects (round 3)

September 2023
£4.5m - Feasibility Studies (round 3)

December 2023
£850k – Research Starter (round 4)

2024

January 2024
£7.8m – Large Partnership Projects (round 3)

May 2024
£15m – Nutrient Management

Programme 'additions':
- £6.3m assigned to follow on funding (invite only)
- £2m assigned to funding 7 additional projects from previous Feasibility round (invite only)

COMING 2025/26

£63m of funding across:
£12.5m - Precision Breeding Round
£12.5m - Net Zero farming
£17.6m - Industry led rounds
£20.6m - Adopt

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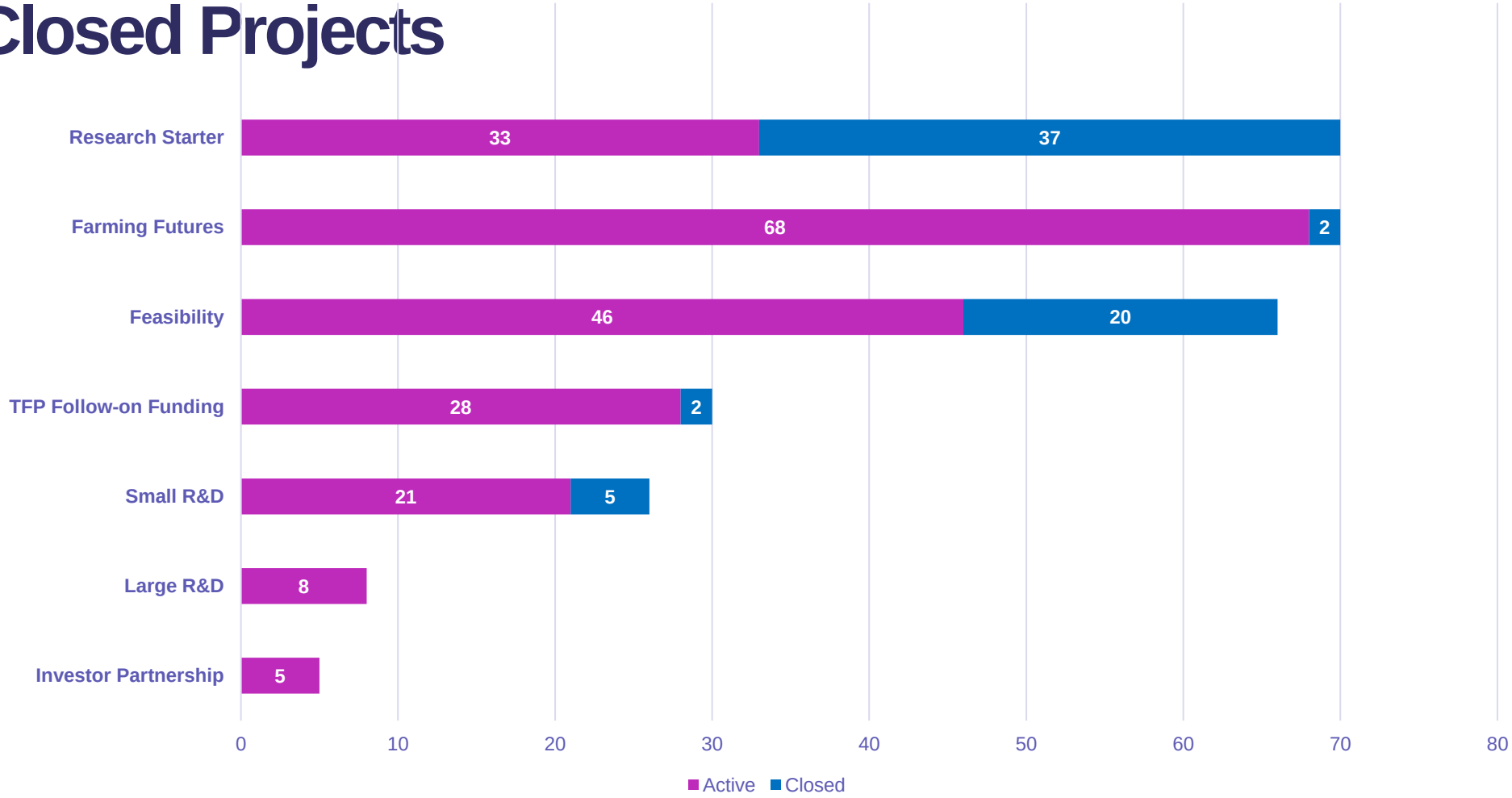
Open/Closed Projects



Open	Closed	Total
209	66	275

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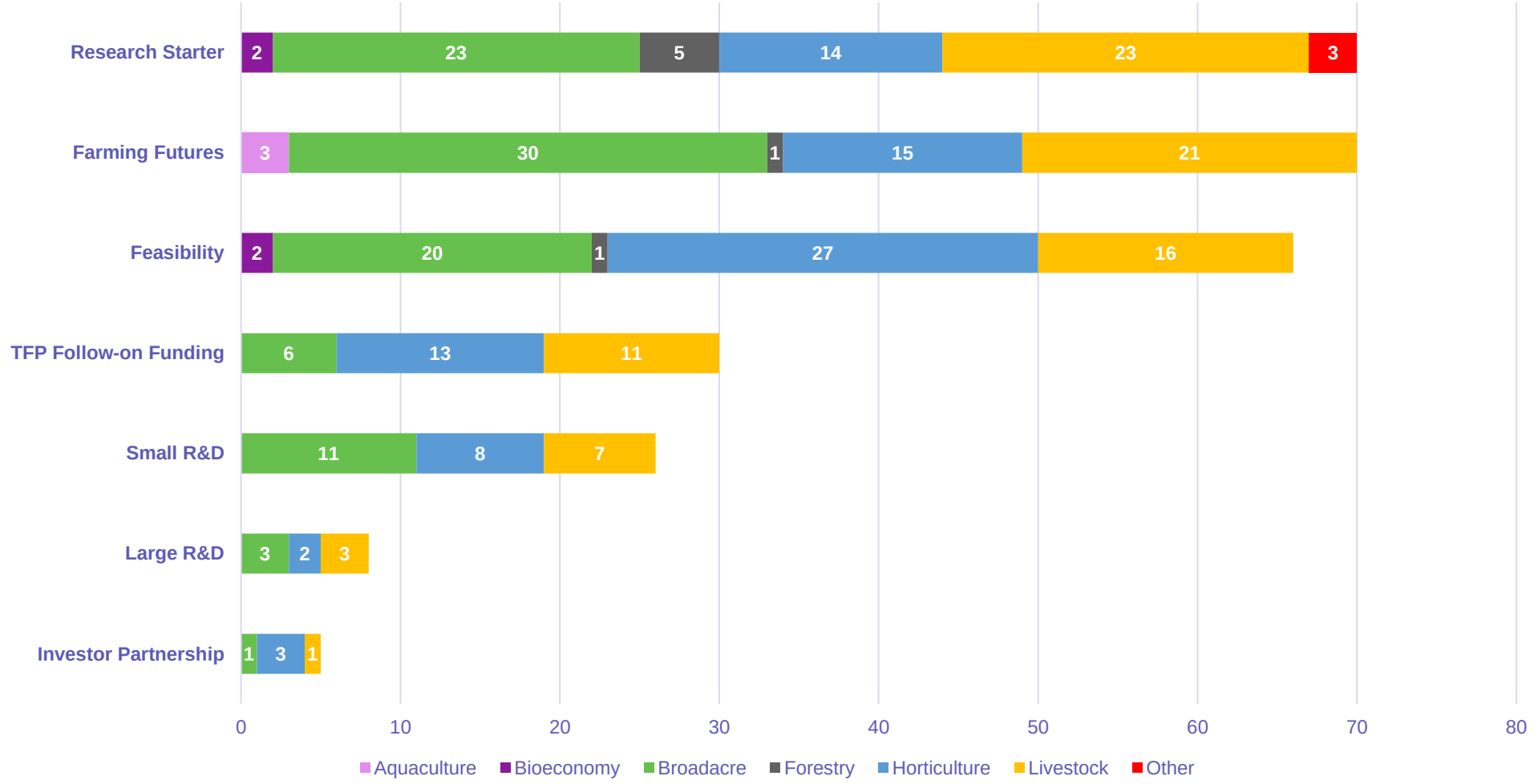
Competition Strand by Sector



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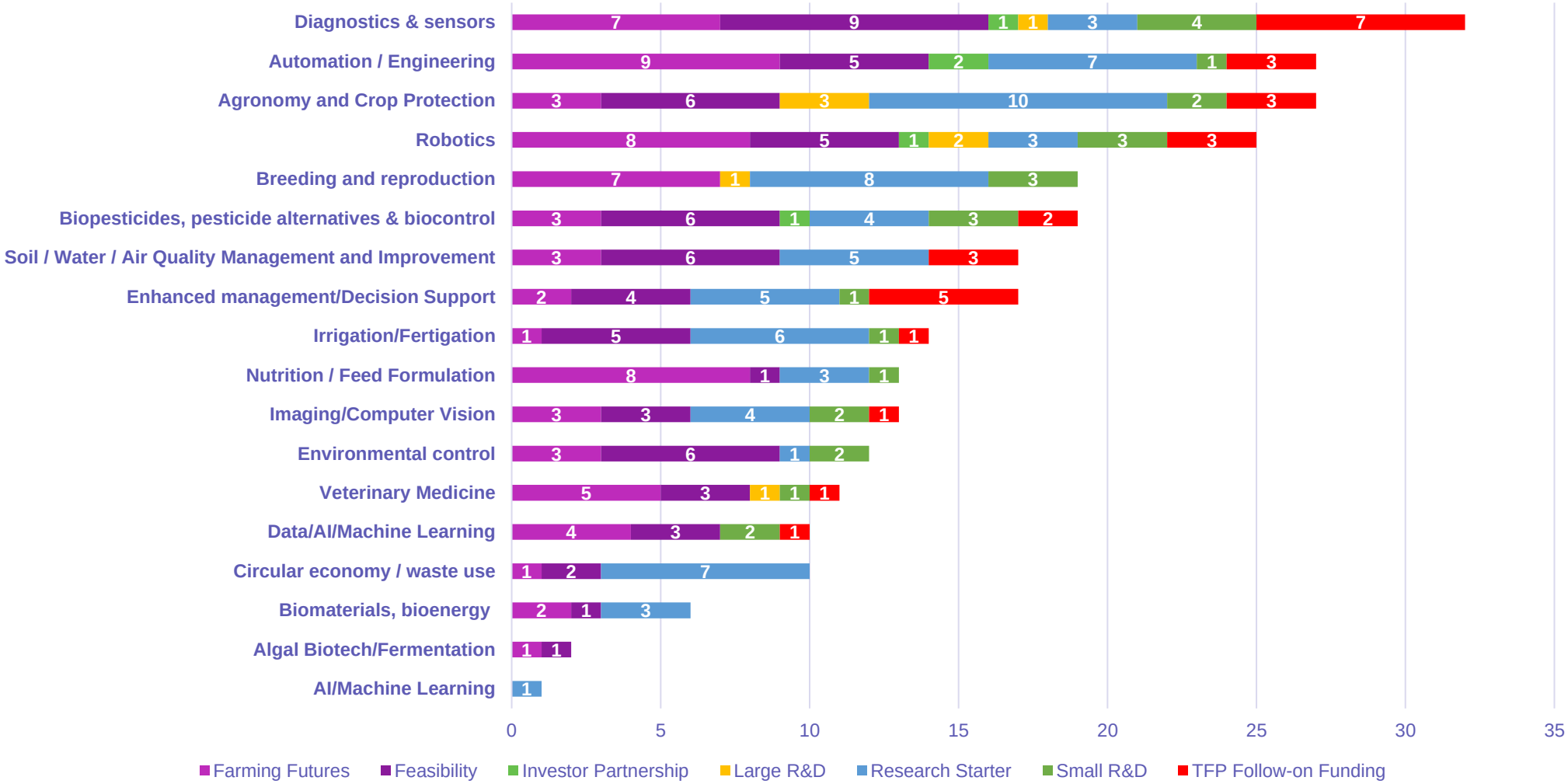
Competition Strand by Primary Technology



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Farming Innovation Programme Projects

Exploring spatial patterns of planting winter wheat (£35k)

Farmer runs mixed farm with livestock and cereal crop operations.

Project is aiming to investigate if yields in cereal crops, especially wheat that have remained relatively static for last 10 years, can be increased by optimising plant spacings.

ARWAC (£0.5m)

This project lays the foundation for next-generation robotic vehicles powered by renewable energy and tooled to control blackgrass. It drives productivity by increasing yield through weed eradication.
This project will push the technology from laboratory stage to full testing in multiple farm environments.

Slimers (£2.6m)

Slugs are one of arable farming's biggest pests estimated to cause about £43.5m worth of damage to UK wheat and oilseed rape crops every year. Protecting the longevity of this will require both a holistic and precision approach to slug management. SLIMERS aims to change the way slugs are monitored and treated, in a bid to drive sustainable solutions. This was linked to a Research Starter project where Wheat variety Watkins 788 has been identified as resistant to slugs. Lab trials have demonstrated it is not eaten by slugs who prefer to eat other plants Field trials will examine this in case there is a trait for exploitation in the future.

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Farming Innovation Programme Projects

F°I°N°E°

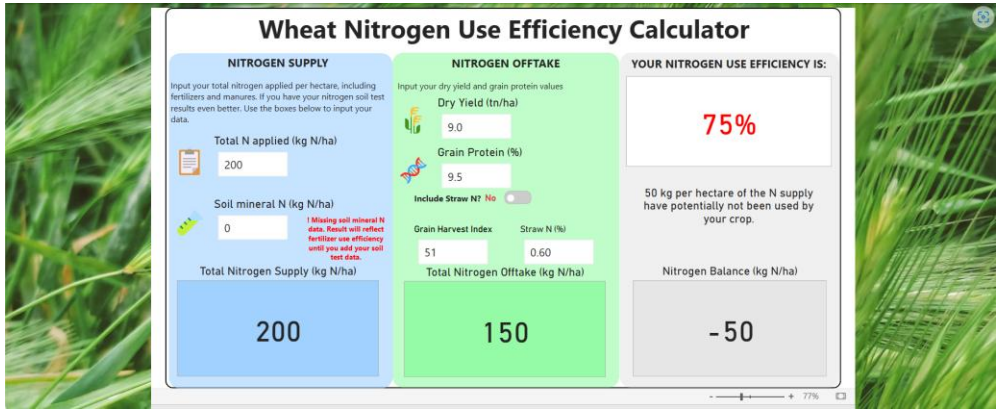
Framework for Improving Nitrogen Efficiency

By using plants as sensors this project will provide farmers with a Framework for improving Nitrogen efficiency (FINE) a management tool to support better nitrogen utilisation, management input decisions and Nitrogen use efficiency reporting. Nitrogen uptake data measurements will taken from plants through the season, through remote sensing, sensors, and soil measurement and be used to support accurate nitrogen timing and rate input decisions. This system will support reduced nitrogen applications though more efficient use, providing clear insight to use. With reductions in Nitrogen use and emissions we will explore new income opportunities for farmers financed by reduced carbon emissions. Our aim is to make nitrogen use efficiency measurements the new benchmark from which farmers utilise nitrogen providing more profit, and environmental gains. (£3.7m 48 months)

Become a FINE participant

We have a wide distribution of FINE participants throughout England and Scotland but are always looking for more farms to join and be part of our trials.

If you want to measure and manage your NUE and become a FINE participant, please fill out the form below and we will contact you with more details.



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Agri-Tech Investor Partnership Concept

- Innovate UK fund **projects** and Investors fund **companies**
- An Investor Partnership deploys grant funding for late stage (TRL 6-8) projects **alongside** equity funding from private investors often referred to as Public-Private Partnerships or ‘Blended’ Finance
- Not just R&D grant support, but enable high growth companies get direct access to **commercial acumen** and **market opportunities** through their relationship with an investor and company investment
- Aim to encourage **incumbent sector** investors to invest and to create opportunity for **new investors** to focus on the sector
- UK Agri-Tech is less effective at raising investment beyond early stage. The number of companies receiving later stage investment (Series A) after Seed Investment was **45% lower for the UK** compared to globally

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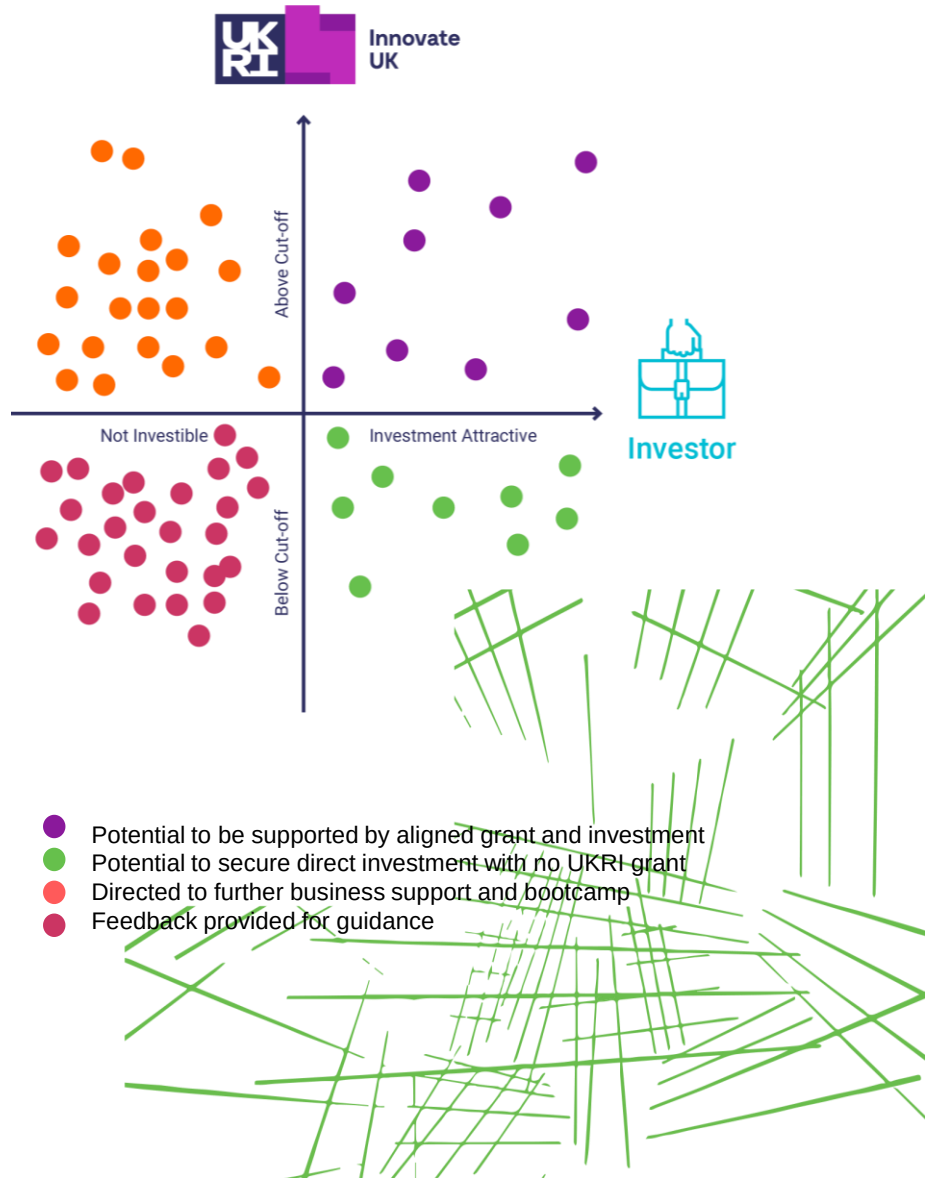
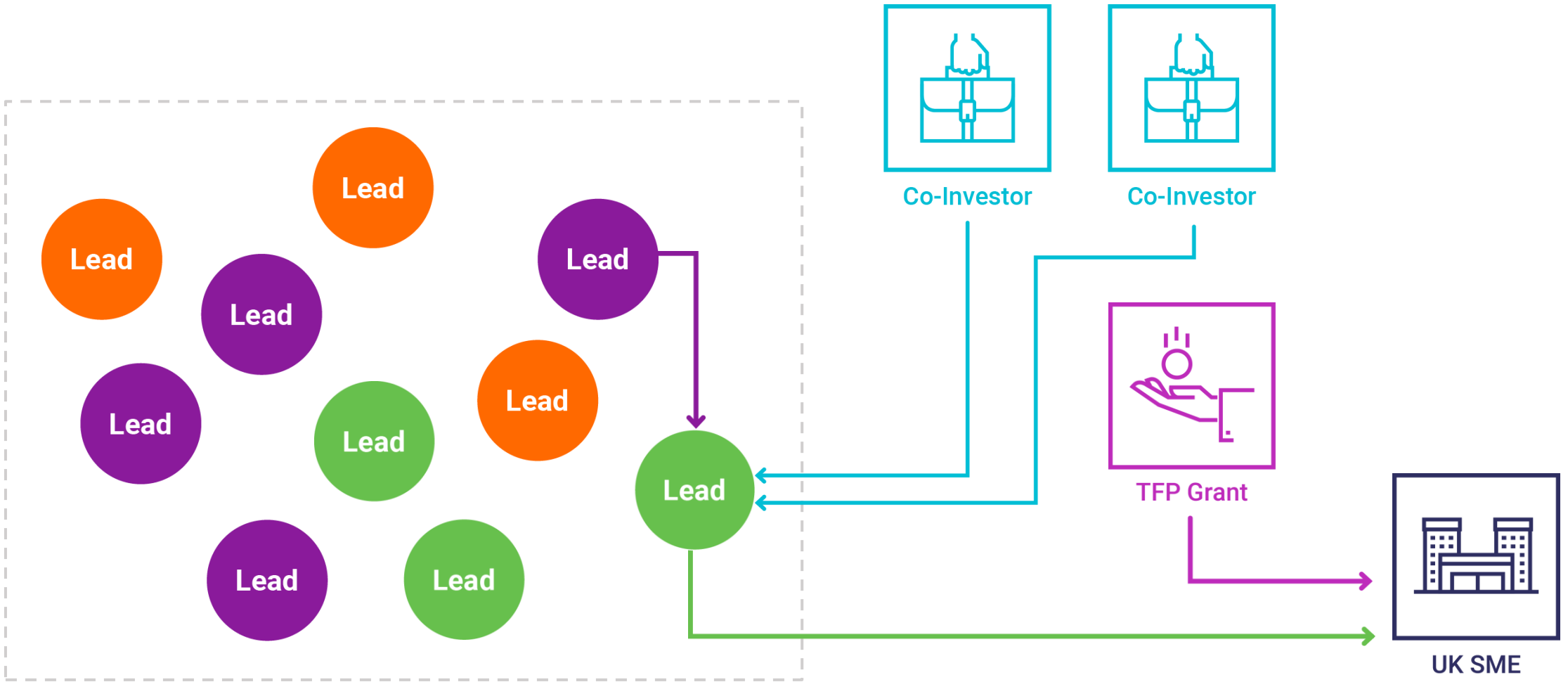


Investor Pool & Syndicates



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Investor Partners

The current cohort of Investor Partners formed across Innovate UK which is currently made up of over 150 Investors and growing

Investors can apply to become one of Innovate UK's Investor Partners through an application process. To be selected they must demonstrate they are:

- are a **credible** investor, or can facilitate investment, with a clear investment strategy aligned with Innovate UK priorities and can generate returns and add value to their portfolio businesses beyond financial support
- have the **capacity** to invest in companies that are successful in their application to the investor partnerships programme
- have the **aptitude** to follow your investment or to encourage other investors to fund further rounds of investment as and when required
- have the **capability** to successfully transact investments and manage their portfolio
- are in a position to lead or take a significant role in the investment

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www.ukri.org/publications/innovate-uk-investor-partners/

Investor Partners (AgriFood)

Consolidated impact across all Agrifood Investor Partnerships

Sector	No of Projects (35 SMEs)	Project Size	Grant Request	Aligned Investment *
TFP	11	£ 21.4m	£ 9.6m	£ 47m
Defra & NOLEPS	12	£ 17.7m	£ 7.7m	£ 24m
Core IUK	14	£ 10.4m	£ 6.5m	£ 13m
	Total			
	37**	£ 49.5m	£ 23.8m	£ 84m

To date follow-on **additional** private investment predominantly from the TFP cohort already **exceeds** £**75m**

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*Two deals to be completed and a number awaiting verification
** **35** SMEs benefitted to date :Dogtooth & Spotta have raised in two IP Rounds

Investor Partnerships Case Study

SUGAROX

Investor Partnership 2023-2025	Project Size	Grant Request	Aligned Investment	Additional Investment
Sugarox	£ 556k	£ 250k	£ 850k	£510k

The flagship active ingredient in our pipeline is a proprietary version of trehalose-6-phosphate (T6P), a sugar with critical role in carbon use and allocation. T6P acts on that through the inhibition of SnRK1, an energy-regulating enzyme. Our first product is a T6P biostimulant for wheat. Applied by spray using typical farm equipment during grain filling, our product enables farmers to direct more carbon allocation in the crop towards the grain, increasing yield. Glasshouse results published by Rothamsted and Oxford in **Nature** in 2016 showed the potential of this proprietary T6P to increase wheat yields by of up to 20%. Since licensing the proprietary T6P in Feb 2021, we have launched a network of field trials in the UK, Canada, United States, European Union, India and Brazil, showing equally exciting results for wheat in a real-world environment.

SugaROx wins Innovation Prize at Biostimulants World Congress 2024

Nov 27, 2024

Innov UK

regenerate ventures

UK INNOVATION & SCIENCE SEED FUND

FUTURE PLANET CAPITAL

STAKE CLIMATE CHANGE

ROTHAMSTED RESEARCH

OXFORD UNIVERSITY INNOVATION

UNIVERSITY OF OXFORD

Thank you for listening

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