



**Transforming Food Production winners list
Farming Innovation Pathways (FIP) – industrial research and feasibility studies**

Industrial Research:

Project and	Lead and location	Description	Award amount
Development of plant protein-based, biodegradable, microplastic-free seed coatings	XAMPLA LTD Cambridge	Working with Croda International and researchers at NIAB, Xampla will develop a bio-based, biodegradable and microplastic-free replacement for conventional petroleum-derived seed coatings. These coatings are useful in increasing agricultural productivity, improving seed handling, reducing dust formation, increasing flowability of seeds through planters; protecting seeds from pests and diseases; providing fungicides and pesticides; increasing germination and plant growth.	472,962.00
NatureMetrics: RAMP-ID: Rapid Assessment and Monitoring of Pathogens using In-field Detection	NATURE METRICS LTD Surrey	Incorporating very recent advancements in eDNA monitoring approaches, RAMP-ID will be a low-cost, all-in-one, accurate portable testing kit, enabling non-experts to detect multiple pathogens (bacterial/viral/fungal) in agrosystems (plant-tissue/soil/water/seed) in 15-30mins, with results visualised simply in-field. This supports targeted/reduced use of agrochemicals and more productive, sustainable agricultural systems.	449,318.00
LightWeeder by Earth Rover: eye-safe, carbon and chemical-free light weeding for speciality crops	EARTH ROVER LIMITED Telford	This project will develop LightWeeder - a world-first eye-safe, herbicide-free, carbon neutral, commercially viable light-based weeding system; delivered by lightweight autonomous field robots via UK agri-robotics company Earth Rover (ER).	532,423.00

<p>Improving tree seeds and establishment to support Agroforestry and on - farm sustainability</p>	<p>ELSOMS SEEDS LIMITED Lincolnshire</p>	<p>This project combines Cranfield's scientific expertise on seed physiology and soil science with Elsom's state-of-the-art facilities and know-how on seed treatments to develop processes to improve tree seed quality.</p> <p>These techniques will be tried on a range of tree / hedgerow species from the laboratory to the field, thereby supporting farmers meet the standards of Defra's SFI scheme, enhancing bio-diversity, improving habitat connectivity and increasing carbon capture.</p>	<p>422,245.00</p>
<p>RIPEHouse</p>	<p>RIPE BUILDING SERVICES LIMITED Warwickshire</p>	<p>The RIPEHouse project aims to revolutionise Controlled Environment Agriculture (CEA) through the development of an innovative 'Natural Light Growing' solution which harnesses the full spectrum of natural daylight and optimises light-mediated processes in plants using biostimulants to produce high quality crops with enhanced nutritional and flavour characteristics. The project will create a step-change in the sustainability, productivity and competitiveness of domestic fruit and vegetable growing compared to conventional glasshouse production, as well as extending the production season and removing the need for pesticides in production.</p>	<p>479,424.00</p>
<p>PigProGrAm – Developing a Circular Economy for UK Pig Production through Green Ammonia Harvesting</p>	<p>BETA TECHNOLOGY LIMITED Doncaster</p>	<p>**PigProGrAm** aims to develop and demonstrate a novel farm-focused solution for the harvesting of green ammonia from livestock. This innovation will help to create a more sustainable livestock industry in the UK, reducing the environmental impacts of production by reducing ammonia emissions, creating an additional income stream for farmers, and delivering valuable hydrogen to decarbonise power and transportation.</p>	<p>474,612.00</p>
<p>A new plant-derived flukicide: increased farm profitability and reduced carbon footprint by overcoming losses caused by existing flukicide resistance</p>	<p>RIDGEWAY RESEARCH LIMITED Gloucestershire</p>	<p>Common ivy contains a molecule that partly controls liver fluke (<i>Fasciola hepatica</i>-LF) in sheep. This project will optimise its effect, developing a drug that efficiently controls LF and overcomes resistance, creating a supply chain from cultivating ivy to a livestock treatment. This will help increase feed-use efficiency,</p>	<p>402,035.00</p>

		improve animal welfare and reduce greenhouse gas production.	
High-throughput discovery of natural product fungicides targeting <i>Zymoseptoria tritici</i>	BACCUICO LTD London	<i>Z. tritici</i> is the most damaging wheat pathogen, responsible for significant yield losses, with farmers' use of causing pathogen resistance. This project will exploit Baccuico's library of natural compound-producing bacteria to target field samples of <i>Z. tritici</i> provided by CHAP. The project will develop a rapid and high-throughput screen to find and test natural compounds in plants in CHAP's environmentally controlled greenhouses as a safer, greener alternative to chemical fungicides.	293,319.00
PASTORAL - Pasture Optimisation for Resilience and Livelihoods	ENVIRONMENT SYSTEMS LIMITED Powys	PASTORAL combines satellite data with advanced algorithms, delivering weekly intelligence on grass biomass and carbon budgets through a co-designed platform to increase farm productivity and carbon efficiency.	591,790.00
Development of bacteriophage cocktail to control <i>Enterococcus cecorum</i> in the poultry sector to increase productivity and sustainability	ARDEN BIOTECHNOLOGY LIMITED Tamworth	Through this industrial research project, Arden Biotechnology (global leaders in bacteriophage research) and Avara foods (one of the UK's largest poultry integrators) are developing a novel bacteriophage solution to replace banned antimicrobial growth promoters to prophylactically control the opportunistic avian pathogen <i>Enterococcus cecorum</i> from the poultry sector.	331,803.00
Farm-PEP: Performance Enhancement Partnerships	RSK ADAS LIMITED Cheshire	Farm-PEP (Performance Enhancement Partnerships) develops the platform, tools and partnerships that will enable farmers, advisors, industry and scientists to identify, test and share crop production practices that work on-farm.	490,968.00

Project Insight - Fruit Scouting Robot Validation and Integration into Supply-Chain	ANTOBOT LTD. Chelmsford	Antobot is developing its novel crop scouting robot, Insight, initially targeting the high-value fruit sector, with the aim of digitalising at the earliest growth stages. The product uses advanced technologies (e.g. autonomous navigation, artificial intelligence) at an affordable level - a key factor for wide adoption.	555,602.00
Improved Productivity and Sustainability of England's Potato-Farming Sector	APS BIOCONTROL LIMITED Dundee	This project focuses on a sustainable, highly-specific technology based on natural-bacterial enemies (bacteriophage) to target blackleg. It has been developed with Scottish seed growers and aims to engage with England's wider potato industry to demonstrate and enable farm-based blackleg solutions.	564,410.00
New Sustainable Solution To Save Healthy Fruit From Spotted Wing Drosophila: STOP-SPOT	ZYZZLE LIMITED Reading	This project will develop and validate Zyzle's innovative farm-focused sterile insect technique (SIT) SWD solution by conducting trials in controlled and commercial settings. SIT can improve crop yield compared to chemicals, increasing agricultural productivity. It is species-specific and non-toxic, protecting biodiversity and facilitating adoption of organic farming through sustainability and reduced emissions.	363,934.00
Increasing crop productivity, sustainability and resilience by converting nitrogen pollution into nitrate (R-LEAF)	CROP INTELLECT LTD Lincolnshire	Crop Intellect Ltd, Agrovista UK Ltd and Tathwell Farms (Lincs) Ltd will develop and commercialise a technology (R-LEAF) for converting nitrogen-pollution into nutrients for increasing crop growth and yield. The project-consortium will design field efficacy-trials to reduce atmospheric nitrogen-pollution and produce crop-nutrients from nitrogen-pollution, resulting in reduced application of synthetic-fertilisers. These innovative concepts aim to increase productivity, sustainability and resilience in agriculture.	255,189.00
Bringing H2OPE to Agriculture - On-Site Transformation of Dairy Cow Slurry into Valuable Byproducts including Fertiliser and Growth Substrate	SEM ENERGY LIMITED Aberdeen	Working with Agri-EPI Centre, SEM Energy will develop a pilot-scale, zero-waste, on-farm slurry management system to transform slurry into valuable byproducts - including fertiliser, growth substrate, and water for reuse.	545,812.00

Facilitating production of insect protein feed through valorisation of 'organic waste' from UK farms, using an innovative "Hub and Spoke" model	INSPRO LTD Nottingham	INSPRO will develop a Hub-and-Spoke model using Black Soldier Flies to economically and efficiently process agri-waste feedstocks into insect protein as an alternative feed, enabling farmers to recover value from farm waste (estimated at £1.2bn) in a nutrient circularity approach.	547,110.00
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Feasibility Studies winners:

Project and Location	Lead and location	Description	Award amount
Tenderstem Harvest Feasibility Study	MUDDY MACHINES LTD London	English agriculture needs an alternative to the annual migrant of harvest labourers. Domestic labour does not provide a solution and growers cannot profitably offer higher wages. Therefore, this project aims at providing reliable mechanical vegetable harvesters to address the needs of UK growers	159,049.00
Recycling coir in a circular economy for horticultural cropping substrates: PEAT-FREE	MICROBIOTECH LTD Leamington Spa	This SME-led feasibility study will enable peat-free production of mushrooms and leafy salads by twice recycling plant-based substrates from other sectors supporting a truly sustainable solution for these two, high-value sectors of horticulture.	111,643.00
Testing a novel, net-zero, waste-derived treatment for Cabbage Stem Flea Beetle on Oil Seed Rape	AGRIGRUB LTD Cambridgeshire	AgriGrub uses food waste to grow Black Soldier Fly larvae and converting them into agricultural inputs, including feed and fertiliser. By combining and processing these grubs, their manure and added ingredients in a specific way, AgriGrub manufactures a product which has shown to reduce pest damage to crops. Because food waste is used as a feedstock, this product has zero CO ₂ emissions. This project seeks to commercialise this early research and examine the feasibility for the use of this product in agriculture.	109,439.00

<p>SlurryBugs - a novel bacterial approach to mitigating slurry ammonia emissions and enhancing fertiliser value</p>	<p>ENVIROSYSTEMS (UK) LTD Preston</p>	<p>Envirosystems has partnered with Myerscough College to deliver an 18-month lab-to-field feasibility project into a novel approach to reducing slurry ammonia emissions. The projected outcome is to deliver a new cost-effective option for dairy farmers for reducing slurry ammonia emissions, that will also reduce bought-in synthetic fertiliser costs. This project will also produce wider human health benefits through improved air quality and environmental benefits to ecosystems affected by excess ammonia emissions.</p>	<p>196,570.00</p>
<p>Intelligent screening of Mycobacterium avium paratuberculosis (MAP) in dairy cattle</p>	<p>ROBOSCIENTIFIC LIMITED Cambridgeshire</p>	<p>This study will test the feasibility of Volatile Organic Compound (VOC) analysis in the headspace of bovine milk and faecal samples to detect the presence of viable Mycobacterium avium paratuberculosis (MAP) and miniaturise the technology into a portable device. The bacteria may be a possible cause of Crohn's disease in humans.</p>	<p>173,382.00</p>
<p>Development of an Innovative Agricultural Water Management Platform (Holistic Automated Irrigation Management - HAIM)</p>	<p>FMEC GROUP UK LTD Hertford</p>	<p>An innovative, integrated platform for holistic measurement, monitoring and control of water usage from source-to-crop, which will integrate into existing farm infrastructures. Valuable water usage data will inform future improvements in efficiencies, crop yields, and reduce environmental impacts - thereby contributing to net-zero targets.</p>	<p>172,411.00</p>
<p>Identify innovative solutions for monitoring and forecasting wireworm (Agriotes spp.) in potato crops to improve sustainability for English farmers (DETECT-PEST)</p>	<p>BRANSTON LIMITED Lincoln</p>	<p>Wireworm is becoming a major pest issue in potato farming, as chemicals previously used to eradicate are being withdrawn from the market. This project will focus on identifying technology solutions to detect, quantify and forecast wireworm activity.</p>	<p>159,454.00</p>

FlockLight: An automated lighting system for poultry behaviour management	AVIASENZE LIMITED London	This project will develop a smart lighting system that dynamically responds to chicken behaviour to improve welfare and productivity.	164,903.00
Improving sEed QQuality In the Post-plant protection Product Era (EQUIPPE)	A.L.TOZER LIMITED Surrey	The withdrawal of many approved pesticides has led to the search for alternative plant protection products which leave no residue. This project employs a novel approach to seed treatment, combining laser treatment and a novel bioactive compound that will disinfect vegetable seeds of seed-borne pathogens, improve germination, seedling establishment, growth rate and yield.	181,862.00
Industrial heat to fruit and veg	NFU ENERGY LIMITED Warwickshire	Identifying and overcoming the challenges of supplying recovered waste industrial heat to English, Protected Edibles Crops growers aim to reduce energy costs and CO ₂ emissions in both. Develop model contracts and a 'match making' service to ensure barriers are minimised.	87,628.00
Oxi-Tech in situ ozone disinfection for robot milking	OXI-TECH SOLUTIONS LIMITED Devon	Oxi-Tech Solutions seek to demonstrate that ozonated water provides a chemical-free alternative for cleaning robotic milking machinery, while lowering both costs and environmental impact. The proposal is to also improve herd health, deliver a safer working environment, and lower carbon footprint.	170,669.00
Integration of UAV with UGV in Agricultural Scenarios	Loughborough University	This project will develop an autonomous platform to integrate UAVs with UGVs, offering capacities such as auto-calibration of cameras, auto-docking and auto-charging of the UAV. The system will be tested and demonstrated on a farm.	191,564.00

Novel technologies for on-farm measurement of greenhouse gas emissions	Newcastle University Newcastle upon Tyne	This project will focus on developing a novel solution to the challenge of managing greenhouse gas emissions in the UK farming sector. It will demonstrate the application of MIRICO Ltd's ORION gas sensor which can be used to measure emissions of greenhouse gases from farming activities, including methane, carbon dioxide and nitrous oxide.	167,890.00
Phosphate circularity: from dairy cow slurry to grassland agronomy	ELENTEC LIMITED Shropshire	This project will work with dairy farmers to re-design how they manage their slurry using safe, affordable and energy-efficient technologies that are compatible with their existing systems. It will aim to help dairy farmers use their slurry in an environmentally and economically sustainable way, helping to recycle essential nutrients for plant growth and use their grasslands for carbon capture.	189,017.00
Chronoculture to increase production of leafy crops	VERTICAL FUTURE LIMITED London	This project is combining the expertise of Cambridge University in the biological rhythms of plants, with Vertical Future, the UK's leading vertical farm research company, to develop practices and monitoring equipment that aims to increase the productivity and quality of indoor-grown salad crops.	160,886.00
Novel sensors for monitoring aphid infestation: fusion of FBAR sensor technology and insect olfaction to reduce the environmental impact of UK farming	SOREX SENSORS LIMITED Cambridge	By combining recent advances in volatile compound detection and insect olfaction bioscience, this project will develop a sensor that can proactively monitor fields for aphid infestation. This will allow for a more targeted application of pesticide, resulting in a significant decrease in application to UK farms.	117,402.00
Feasibility study of a novel agricultural biostimulant	SUGAROX LIMITED St Albans	SugaROx was launched in Feb 2021 to develop and commercialise biostimulant formulations with an Active Ingredient invented through a collaboration between Rothamsted Research and the University of Oxford. It will further validate and develop a state-of-the-art technology in one of the fastest-growing segments of agricultural inputs.	160,758.00

Evaluating the potential of IVP to transform assisted breeding in sheep	ANIMAL BREEDING EUROPE LIMITED Hereford	ABEurope has developed In Vitro Production (IVP) in cattle, offering a successful alternative to Multiple Ovulation Embryo Transfer (MOET). Preliminary work suggests ovine IVP could transform the UK sheep industry by offering a new, less-invasive approach to assisted breeding. This project will evaluate IVP in sheep by comparing IVP and MOET in a cohort of selected females and will identify the components that are key to success.	75,086.00
A novel biological attract and kill strategy for control of spotted wing drosophila: BIOAKIL	RUSSELL IPM LTD Deeside	The global soft fruit industry suffers up to 80% crop losses from an invasive fruit fly, spotted wing drosophila (SWD). This project has identified a SWD pathogenic fungus and a bait which SWD feeds on. This project will test these two approaches in combination, to develop a more targeted and less environmentally damaging approach to SWD control.	96,368.00
Visual Monitoring of Broiler Behaviour, Health and Welfare using Artificial Intelligent Image Machine Learning	HUDSON & SANDERS LIMITED Derbyshire	This project will improve our knowledge of intensively raised broiler chicken behaviours in relation to modern management techniques allowing for improved health, welfare and performance. 24/7 monitoring of poultry environments with quantified visual observations aim to record which behaviours are being displayed by ratio at specified times and known conditions. This potentially enables early disease detection reducing mortality, suffering and antimicrobial use. V7 labs, working with H&S and RVC aim to develop a cost-effective camera solution to monitor broiler chicken behaviour. The trials will be hosted on H&S-managed farms, with RVC observing selected behaviours.	188,986.00
BioFactory - Demonstrating the feasibility of a commercially viable micro-AD solutions for manure processing in small UK dairy farms	THE BIOFACTORY LTD Bath	In the UK, high capital costs of commercial Anaerobic Digestion (AD) systems require unsustainable models to be effective. A lack of technological advances and innovation in this sector has led to a market gap between large-scale AD solutions and expensive small-scale options. In this project, Agri-EPI will support BioFactory in assessing the feasibility of adapting its existing micro-	188,285.00

		AD technology to suit the needs of the small-scale agricultural sector, to reduce operating costs and positively impacting GHG emissions to move towards net zero.	
Moo-thane: A feasibility study into a net-zero enabling intelligent-housing technology to remove dilute methane emissions from livestock.	JOHNSON MATTHEY PLC London	This project pulls together a team spanning commercial, engineering and scientific aspects to demonstrate the feasibility of a catalytic process to decompose dilute methane. Building on already developed technology that decomposes dilute methane (e.g. in coal mining), deployment to the agricultural sector requires an additional process to first concentrate the very dilute methane in barn air.	162,374.00
The use of microRNAs in detection and prediction of Johne's disease in cattle.	MI:RNA LTD Edinburgh and Scotland	MI:RNA Ltd are a veterinary diagnostics company with a unique, patent pending biomarker testing technology. This novel technique, coupled with our bespoke AI modelling system, can provide accurate, early diagnoses in a wide range of disease types and species. This project aims to determine whether Johne's disease can be detected in the early stages.	182,383.00
Machine-Cast: A scalable machine learning framework for forecasting risk of crop pests and pathogens	CLIMATE EDGE LIMITED London	This project is building a novel pest/disease forecasting service that uses machine learning 'ensemble' techniques to imbue highly localised predictive power and wide pest-crop-geography application potential.	183,335.00
D-FLOWS: Data For Livestock Optimisations for Wiser Supply chains	CAMBRIDGE ANIMAL TECHNOLOGIES LTD London	D-FLOWS is focused on developing an innovative solution for optimising the production efficiency of the dairy-beef sector. It will adopt a novel data solution that will collect and integrate key productivity, health, and environmental metrics across the value chain. It will further take a rewards system with aligned incentives for all actors along the supply chain.	197,500.00

<p>Integrating Visual and Context Information into a Mobile Intelligence Solution for Sustainable Management of Wheat Pests and Soil Health</p>	<p>University of Sheffield</p>	<p>This project will investigate the technical feasibility of integrating visual and contextual information with advanced data fusion techniques into a mobile pest management solution that offers: rapid detection and quantification of wheat pest by mobile devices; efficient forecasting of accepted pest thresholds for sustainable management; and estimation of the corresponding efficacy of a pesticide for pest control.</p>	<p>135,232.00</p>
<p>Innovations in agrivoltaics: implementing cost-effective, dual land use in UK protected agriculture</p>	<p>University of Greenwich Chatham</p>	<p>Using agrivoltaic materials in existing greenhouses or polytunnels could help UK-protected agriculture to meet net-zero-carbon targets. This energy-intensive and valuable UK farming sector will trial how best to install next-generation panels, practically and cost-effectively, in a real-world commercial setting, as well as comparing their effects on soft fruit and show how generated energy can facilitate automated farming.</p>	<p>174,703.00</p>
<p>Fenland Agro-voltaic Veg Production</p>	<p>F.C Palmer & Sons Cambridgeshire</p>	<p>Restoring wetlands could reduce environmental impacts, however, this will cut off one third of UK vegetable supply at its roots. To avoid this, the project will integrate food and renewable energy production (Agro-voltaics) with zero-trafficked soil and crop management, to allow re-wetting of peat soils. This study will build and demonstrate the feasibility of the Agro-voltaic cultivation system and evaluate the wider potential to enable the production of zero-emissions Fens vegetables on peat soils.</p>	<p>149,964.00</p>