Tech that turns CO2 into animal feed gets funding boost

- Innovative agri-tech projects across the UK, including fruit picking robots and autonomous crop systems, to benefit from £24 million government investment
- leading project in Nottingham that recycles carbon dioxide from Drax power station into sustainable animal feed gets £2 million boost
- funding will help the UK meet its net zero target by reducing carbon emissions in food production

An innovative project in Nottingham that converts carbon dioxide into clean animal feed is 1 of 9 pioneering agricultural technology projects set to benefit from £24 million of government funding.

Nottingham-based consortium REACT-FIRST will receive over £2 million to generate clean, sustainable food for fish and poultry with an up to 75% smaller carbon footprint. Led by Nottingham company Deep Branch Biotechnology, the project will use its unique technology to turn carbon dioxide from Drax Power's Selby power station into animal food with minimal water usage and without the need for arable farmland.

The funding will allow the consortium to provide a greener alternative to soy and fishmeal for the animal industry, enabling industries that traditionally create higher levels of waste, such as agriculture, to contribute to a cleaner environment.

The project will work with leading retailer Sainsbury's as well as the Scottish Aquaculture Innovation Centre to integrate into the fish and poultry supply chain, helping to ensure that industry demand is met.

It is 1 of 9 projects benefitting from a £24 million package from the UK government, which are applying big data, artificial intelligence and robotics to UK farming, with the aim of establishing a more efficient system of food production that cuts costs and reduces greenhouse gas emissions.

Science Minister Amanda Solloway said:

> From robotics assisting our farmers in fruit picking, to technology that converts CO2 to clean animal feed, the incredible projects we are backing today represent the future of farming.
>
> Working with the best of British science, we are turning our most creative ideas into pioneering projects that will accelerate our transition to net zero food production, boost jobs and drive forward the UK's economic recovery.

Other projects receiving funding include the world's first Autonomous Growing System (AGS), led by Optimal Labs in London, which will receive over £2 million to provide autonomous technology that controls climate, irrigation and lighting, enabling any crop variety to be grown in any location. This will significantly increase production levels and resource-efficiency in existing UK greenhouses, helping to protect the UK's food system against climate change and population growth.

A further project led by Saga Robotics in Lincoln will receive nearly £2.5 million to perform the largest known global demonstration of robotics and autonomous technologies on a farm. The robots will assist farmers by carrying out essential, energy intensive physical farm processes such as picking and packing fruit and treating crops to reduce critical pests and diseases. This will help provide a more efficient food supply at a cheaper cost, allowing farmers to commit more time to the wider running of their farms.

Farming Minister Victoria Prentis said:

> It's great to see investment in these outstanding ideas which will help us tackle the farming industry's greatest challenges, from achieving net zero emissions to investing in sustainable alternative protein for animal feed. Farming has never before been at the centre of such exciting and forward looking innovations.

Projects receiving funding include:

REACT-FIRST (Nottingham), led by Deep Branch Biotechnology, will receive over £2 million to use carbon dioxide from Drax Power's Selby power station and apply its unique CO2-to-protein process to generate food for fish and poultry with up to 75% smaller carbon footprints, no requirements for arable land and minimal water usage.

Autonomous Growing System (London), led by Optimal Labs, will receive over £2 million to provide autonomous technology that controls climate, irrigation and lighting, enabling any crop variety to be grown in any location. This will significantly increase production levels and resource-efficiency in existing UK greenhouses, helping to protect the UK's food system against climate change and population growth.

Robot Highways (Lincoln) led by Saga Robotics, will receive nearly £2.5 million to perform the largest known global demonstration of robotics and autonomous technologies on a farm. The robots will assist farmers by carrying out essential, energy intensive physical farm processes such as picking and packing fruit and treating crops to reduce critical pests and diseases.

Production at the Point of Consumption (Maidstone) led by Evogro, will receive nearly £850,000 to research and develop the next generation of autonomous growing systems, to ensure they are affordable for new consumer markets, and to make it an economic method to produce mainstream crops.

InFarm2.x (London) led by vertical farming business InFarm will receive over

£3 million to develop a farming system that can grow a wider variety of fruit and vegetables than is currently possible by growing their crops in vertically stacked levels, rather than on a single level surface, such as a field. It will also use technology including gas sensors and monitoring cameras to observe the growth patterns of their crops, helping to identify the optimal growing conditions, increasing productivity.

AGRI-SATT (London) led by Feed Algae, will receive over £4 million for its project which is based around an algae growing system that exploits natural seawater to produce food in deserts. This project aims to combine data from the growing system with satellite data to automate production and increase the nutritional quality of the food produced.

GelPonic (Manchester), led by AEH Innovative Hydrogel, has developed a new growth material that will improve crop yields on farms worldwide. It will receive over £1 million to develop a material that conserves water and protects plants by filtering pathogens and includes a new graphene-based IoT device that allows remote-monitoring of conditions in vertical farms.

REMEDY (Bath), led by Quality Milk Management Services, will receive over £1.7 million to provide precision technologies to dairy farmers enabling them to access real time data to ensure their farm is as productive, efficient and environmentally friendly as possible. This includes technology such as wearable devices for cows that tracks their behaviour and nutrition, ensuring farmers can make more informed decisions when managing their farm.

TUBERSCAN-DEMO (Lincoln), led by B-hive, will receive nearly £2 million to develop and test an innovative demonstrator system to measure average potato sizes and yield throughout potato fields, providing insights that will enable selective harvesting to take place, optimising crop yield and resource use. It is anticipated that this technology could generate an estimated 5-10% increase in UK marketable potato production.

The investment in new resource efficient, low-emission production systems is part of the government's commitment to boost spending on research and development to £22 billion by 2024 to 2025. It follows the publication earlier this month of the government's ambitious R&D Roadmap, announced by the Business Secretary, setting out plans to establish the UK as a science superpower.

Today's funding is being awarded through 2 competitions – the Future Food Production Systems competition and the Science and Technology into Practice Demonstration competition. It forms part of UK Research & Innovation's (UKRI) Industrial Strategy Challenge Fund Transforming Food Production (TFP) challenge, which aims to set food production systems on the trajectory to net zero emissions by 2040 producing food in ways that are more efficient, resilient and sustainable.