WHAT SMART AGRI-SYSTEMS CAN OFFER

We aim to help farms and companies, large and small, develop their competitive advantage and increase their business value. We will work with industry partners to assess the challenges they face and develop a research project to provide a solution, drawing on the necessary expertise and technology from across the University. We can also identify and source external funding to support the project.

THE UNIVERSITY OF LEEDS FARM

Situated between Leeds and York at an elevation of between 40-72m, the University of Leeds farm is a test bed site. The farm is under development with advanced monitoring and sensing technology, data capture and Internet of Agri-Things to enable a range of commercially relevant and cutting edge agricultural applications. Alternatively, we can bring the research to a location of your choice – we will work closely with our partners on a case-by-case basis to develop the best solution for the challenge.

GET IN TOUCH

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IMPROVING FUTURE RESILIENCE

Two projects, led by the University of Leeds and funded through Government research programmes, are developing evidence and data to model and improve resilience of two different farming systems.

The £2.1 million PigSustain project is drawing on a multi-systems approach to predict the future resilience of the UK pig industry. The farm is being instrumented and monitored to assess the impacts of climate change on the health and welfare of pigs and on pig production, and has analysed in relation to changing consumer, market, weather and consumer demands. The resulting model will be used to assess the economic resilience and global competitiveness of the UK pig industry in the face of current and future shocks.

AFRICAP will establish special agricultural zones across sub-Saharan Africa where farming practices and the impacts of weather and climate change can be assessed to develop more sustainable and productive agricultural systems. The focus is particularly on smallholders, who make up 80% of all farmers on the continent. A £9.2 million project, jointly led by the pan-African Food, Agriculture and Natural Resources Policy Analysis Network, the project’s aim is to combine on-farm monitoring, with laboratory research and policy analysis to develop a pathway for agricultural development in Africa.
**Smart Agri-Systems**

Research expertise in Smart Agri-Systems at the University of Leeds includes:

- Farm production: livestock production, health and welfare, optimisation of crop growth, productivity and pathogen resilience, precision nutrition
- Technology: artificial intelligence, robots, sensors, imaging, machine learning, automatic control, 5G telemetrics and data transmission, high-speed computing, big data analytics, mathematical modelling
- Environment: environmental monitoring, climate change, Earth observation, waste management, water quality and pollution, soil health, sustainability, energy, biofuels, social sciences
- Business: systems approaches, consumer analysis, supply chain modelling, agricultural policy, trade and governance

**About Smart Agri-Systems**

Smart Agri-Systems at the University of Leeds provides innovative, multi-disciplinary, systems-based solutions to help industry navigate the complex future challenges for sustainable development of global food production.

Farmers and agribusinesses face multiple competing demands to increase efficiency and productivity, ensure food is safe and nutritious, adapt to climate change, maximize high environmental and socially sustainable returns, and manage fluctuating prices and trading patterns. Meeting these demands requires complex decision making, drawing on evidence from the whole supply chain.

Smart Agri-Systems offers an integrated, solution-focused approach to tackling multi-faceted challenges across the food system: from the farm, through the supply chain, to the consumer.

On the farm, sensors – either fixed, or on drones and robotic crawlers – can monitor soil temperature and humidity, crop growth and density, assess ground water composition, and track the weather, with data streamed at high speed and analysed using complex algorithms to assess and project crop performance.

For livestock production, genomics data can be combined with real-time sensor outputs on environmental conditions, growth rates, feed consumption, behaviour and health to project performance at scale: from an individual animal up to a whole farm.

Beyond the farm, Smart Agri-Systems combines data and expertise on supply chains and logistics, consumer behaviour, health outcomes, environmental monitoring, international law, trade and business to provide sustainable whole system solutions, from field to fork.

**Technology and Innovation**

To support its goal of sustainably enhancing UK agriculture, the Government is providing £90 million funding for academics and industry to work together to develop new technology and innovation in the agricultural sector, focusing on artificial intelligence, robots and Earth observation.

The breadth of expertise at the University of Leeds allows us to apply a powerful linking systems approach to tackle challenges in national and international agricultural production, with commercial and industrial partners. The University also hosts a world of experienced researchers to develop solutions for a smarter, enhanced, integrated and sustainable future for farming.

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**Farming systems at the University of Leeds**

- Using artificial intelligence, robots, sensors, imaging, machine learning, 5G telemetrics and data transmission, high-speed computing, big data analytics, mathematical modelling
- Combining data and expertise on supply chains and logistics, consumer behaviour, health outcomes, environmental monitoring, international law, trade and business to provide sustainable whole system solutions, from field to fork.