Agri-EPI's Farm Network

Agri-EPI Centre's comprehensive solution for testing, validating and understanding challenges of new agri-tech on farm

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Connecting tech innovators with agriculture

Agri-EPI's team of experts help start-ups and tech innovators with research trials set up by brokering relationships with relevant parties, with a representative sample, in a commercially relevant setting.

You've spent months, years, and maybe even decades, taking an extraordinary idea from a concept to a prototype. Whether your innovation is a sensor, a feed additive, a diagnostic, a biological solution, a change in animal management or anything else, your end-users are going to want to know that they're buying into a tried and tested product, service, or model.

What is the challenge?

For a technology company with no former experience in the agriculture sector, finding access to the suitable farm environment on which to undertake research, trials and demonstrations can often prove impossible. First and foremost, farms are places of business via which livelihoods are made – understandably, farmers can be less than forthcoming with their desire to get involved with anything that could adversely affect their bottom line. Furthermore, farms can be dangerous settings with heightened biosecurity measures to boot. Operating technology in such a setting should be the job of an expert.

Knowing which farm type to work with for trials, validations and demonstration purposes will be key to achieving the desired outcome. You'll want to ensure a representative sample has been used, in a commercially relevant setting. Agri-EPI's team of experts can help guide you to achieving just this, brokering relationships with the relevant parties along the way.

Validating and demonstrating agricultural technologies

- **Anecdotal Trials: for innovations at TRL 4-5**
  This stage isn't crucial for on-farm demos but can give innovators extra peace of mind that their technology is making a positive difference at a farm level before they invest in further work. Gathering anecdotal evidence will likely involve asking personal connections to engage with your innovation and report back any noticeable changes to production.

- **Commercial Farm Trials: for innovations at TRL 5-7**
  This stage is vital for those required to understand more precisely the impact of their innovation on production. During commercial farm trials, data for a particular set of parameters will be collected and should be analysed to determine any changes. On most commercial farm settings, projects are at risk of disruption from everyday occurrences such as a change in animal feed or labour providers.

- **Research Farm Trials: for innovations at TRL 5-9**
  Undertaking trials, validations and demonstrations via research units ensures a level of control beyond that which can be achieved on a commercial farm setting. For example, animals will be carefully grouped into representative samples and groups maintained under identical environmental settings. Research level projects are the only way to produce robust results with which to scientifically validate technology.

Successfully working with farmers to develop agri-tech

Funding bodies increasingly expect or require farmer engagement in agri-tech innovation projects because user understanding and commitment are key for the adoption of new products. Here are some additional tips from Agri-EPI Centre on how to successfully engage and work with farmers on your agri-tech innovation:

- Use industry bodies set up to facilitate these partnerships
- Make sure your innovation or engagement suits the farmers needs
- Make sure the problem your project addresses is clearly identified, and that the solution you are posing is a viable one
- Understand the farmers' other commitments and needs
- Be time-sensitive with your project roll-out
- Communicate clearly

To facilitate successful engagement between agri-tech innovators and farmers, Agri-EPI Centre has developed our own ***Farm Network***.

What is the Agri-EPI Farm Network?

We at Agri-EPI Centre are always looking for new ways to help develop and support the commercialisation of new technologies that aim to enhance the profitability and sustainability of the agricultural sector.

But, in our experience, the majority of agri-tech companies face the exact same roadblock on the path to commercial realisation – **an inability to test their solutions in practice**. This leaves them without a foundation of precise, reliable data to support the tech's real-life efficacy, making pitching, funding, and scaling next to impossible.

Which is why we developed the Agri-EPI Farm Network. It's a UK-wide network of real farms producing a range of agricultural commodities, all equipped with the latest precision sensor technologies that are purpose-built to measure your agricultural innovation. With it, we can collaboratively achieve the following:

Demonstrate the **scientific validity** of new on-farm technologies

Generate data to support the **commercial potential** of your innovation

Foster relationships between agri-tech companies and end-users

Identify **key issues** in the real-world implementation of your technology

Discover and share **new opportunities** in the agri-tech space

How does the Agri-EPI Farm Network work?

As a key, government-backed player in the agricultural sector, we at Agri-EPI Centre have been able to enlist **25 farms** spread throughout the UK to participate in the Agri-EPI Farm Network.

We equipped these farms with a suite of **precision sensor technologies** to measure variances across every dimension of food production – quality, productivity, wastage, and more.

The basic package includes computers, IT infrastructure, meeting rooms with displays, a DJI drone, and a Davis weather station designed to get 'offline' farms digitally connected. We also offer satellite imagery, soil-zoning, soil-sampling, and other bespoke technologies based on the needs of the farm and collaborators.

From there, we can begin to implement the technologies and innovations that will **change the future of farming**, and assess the ways in which we can work together to bring these ideas to full commercial viability.

The Agri-EPI Centre and the Agri-EPI Farm Network are supported with funding from Innovate UK
UKRI Innovate UK

Case studies

The following projects are all success stories of Agri-EPI's Farm Network research and development system. Each company was able to implement their tech on real farms to perform technical tests and gather data, enriching the farmers with positive effects as a result.

Crover: The World's First Bulk Grain-Monitoring Robot

Crover is a world-first agricultural innovation, tested and developed at Upper Nisbet farm, one of the farms in Agri-EPI's Farm Network, located in Jedburgh in the Scottish Borders.

Purpose

When grains such as wheat and barley are stored long-term in sheds and silos, they're at increased risk of spoilage from infestation by insects and moulds. The legacy method of assessing grain conditions was to send a farmer in to manually sift a sample — which is not only dangerous and time-consuming, but also fails to represent the conditions underneath the top-layer of the grain.

Solution

Founded by Lorenzo Conti, CROVER is a company that has developed the world's first bulk-grain monitoring subterranean drone. The robotic device is remotely operated, and 'swims' deep within grain bulks to analyse conditions like temperature and moisture to identify sub-optimal storage conditions and physically mix grains in-situ, flagging and avoiding spoilage.

Results

The implementation of CROVER at Upper Nisbet farm was very encouraging, and produced the following outcomes:

- An 80% saving of bulk-grain losses, on average
- Streamlining of storage facility management
- Grain condition database for enhanced decision making
- Continuous farmer access real-time bulk-grain conditions

Ritchie Beef Monitor

The Ritchie Beef Monitor is a cloud-based cattle weighing solution, tested and developed at Upper Nisbet Farm, Bielgrange Farm, and Borders Estate, Satellite Farms located in Jedburgh, Dunbar, and Selkirk.

Purpose

Farmers commonly cite the traditional cattle-weighing procedure as time-consuming and inefficient, as well as highly stress-inducing for cows. The value of beef production is significantly hampered by weighing, as it requires intensive labour which eats into profit margins, as well minimising the quality and yield of the meat due to undue stress.

Solution

The Ritchie Beef Monitor combines several technologies to streamline the process of cattle weighing. First, a water-trough scale is fitted with sensor technology that reads information from ear-tags on the cattle. As the animals drink, their weight is recorded, organised, and stored on the cloud, which the farmers can access and monitor on a continuous basis.

Results

As a result of the Ritchie Beef Monitor, farmers can enjoy the following outcomes:

- Enhanced welfare of the cattle
- A higher degree of accuracy in cattle growth monitoring
- Faster cattle growth and larger beef yields
- Reduced labour demands

The Healthy Heifer project

The Healthy Heifer project is a heifer data collection, analysis, integration and delivery system, currently being tested and developed at Godminster Farm, Parkend Farm, and Mackie's of Scotland, Satellite Farms located in Somerset, Fife, and Aberdeenshire.

Purpose

Currently, the 'average first calving' in the majority of British dairy farms is 26 months, falling short of a key target of 24 months. Some 15% of heifers fail to enter the milking herd, with a further 19% culled during first lactation due to poor health or injury. This is a significant animal welfare issue, and also produces a significant amount of greenhouse gasses (GHGs) without yielding further commodities.

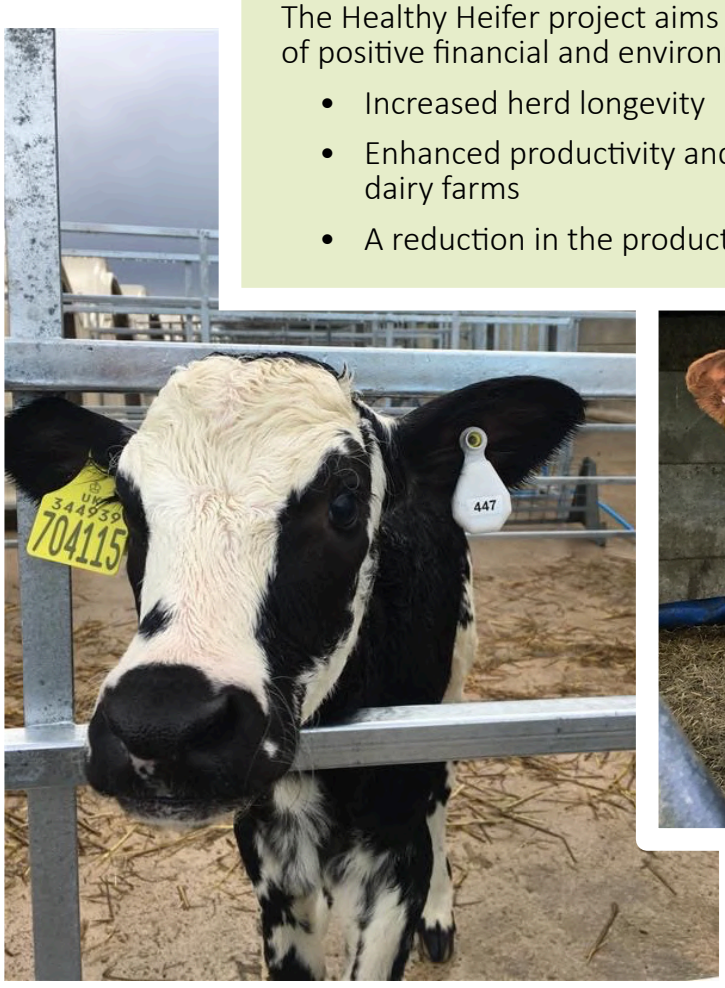
Solution

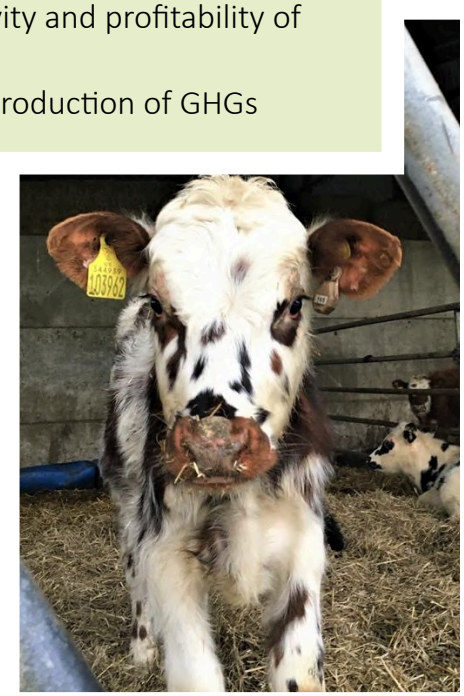
In partnership with Agri-EPI Centre, Cambridge Animal Technologies are developing a data collection, analysis, and integration system that draws an array of heifer data into a single database. Genetic, nutritional, environmental, and health data collected from technologies such as smart ear-tags offer an accurate and detailed picture of heifer health, with which to make better farming decisions.

Results

The Healthy Heifer project aims to produce a range of positive financial and environmental outcomes:

- Increased herd longevity
- Enhanced productivity and profitability of dairy farms
- A reduction in the production of GHGs





Soil Essentials: Carbon and Nitrogen Modelling for Retention of Inputs and Soil Carbon Building on Agricultural Land

The Soil Essentials project aims to increase the productivity and sustainability of agricultural land by understanding nutrient cycling in the soil and using that knowledge to capture Carbon and avoid Nitrogen leaching events. It's currently being tested and developed at Kaiapoi Farming, a Satellite Farm located in Hertfordshire.

Purpose

The productivity of agricultural land hinges on the level of organic matter in the soil, with greater amounts increasing land water retention and Carbon capture – a key element of climate change mitigation. Water companies invest a lot of time and energy in water treatment, and emphasise that addressing water pollution issues at the source is more effective.

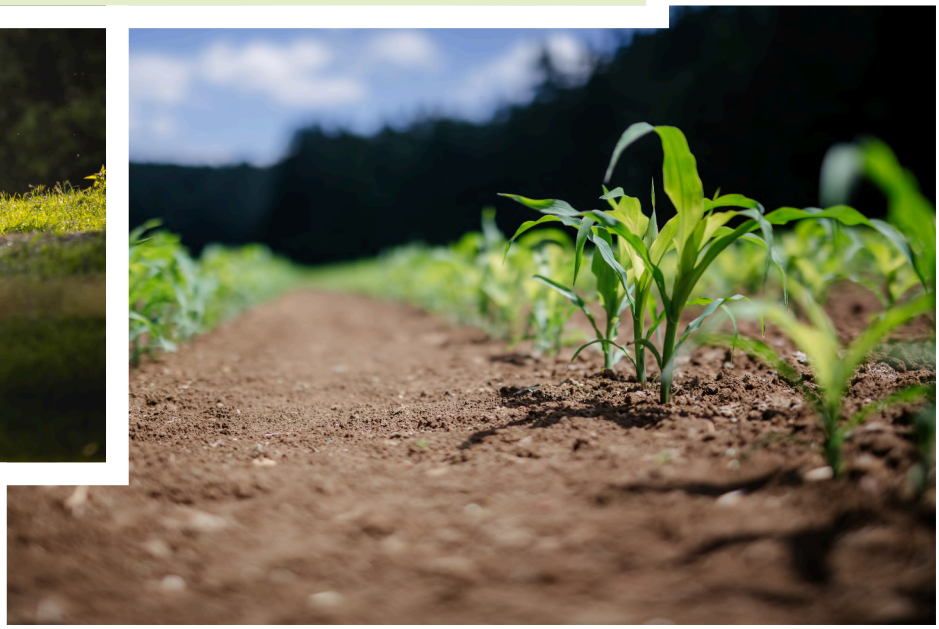
Solution

In partnership with Agri-EPI Centre and supported by Imperial College London and the Voluntary Initiative, Soil Essentials offers a set of business tools to effectively guide farmers and water companies towards better management of soil organic matter that will build soil Carbon and retain soil inputs, thereby helping to control pollutants and increase land productivity.

Results

As a result of the Soil Essentials project, the farms have experienced:

- Decreased leaching events
- A lesser need for water purification
- Lesser nitrogen fertiliser usage



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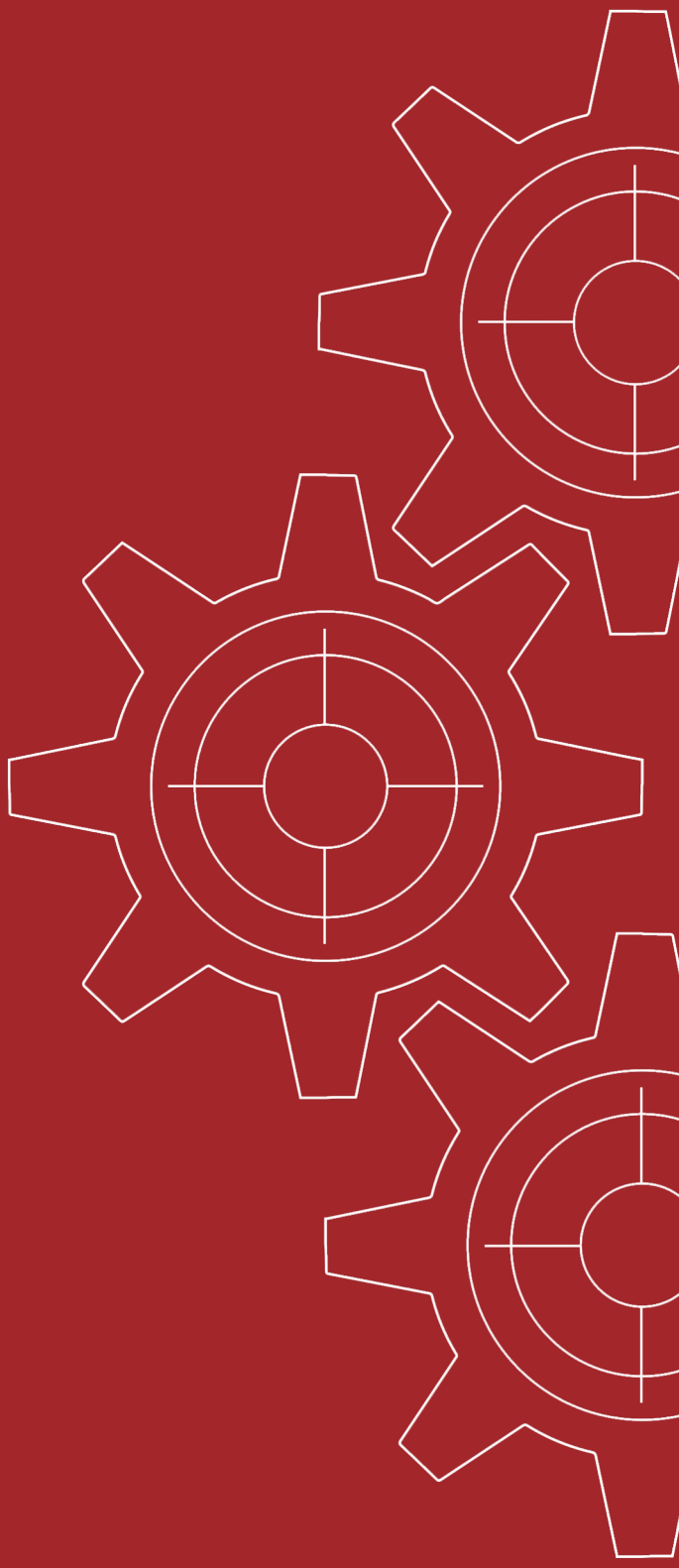

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https://agri-epicentre.com/