



## **Agri-Tech Innovation Showcase at Rothamsted Research, North Wyke**

The provision of sufficient, nutritious food for the increasing world population, combined with efficient use of nutrients and minimal losses to the environment, was the persistent theme of the Agri-Tech Innovation Showcase at Rothamsted Research North Wyke. Around 80 participants including agri-tech companies, academics and farming organisations attended the event. To achieve the conditions needed to deliver sustainable national and international farming systems, the speakers highlighted the need to develop science-based management strategies that optimise and tailor use of non-renewable and resource-intensive inputs in the context of an increasingly unpredictable climate.

The opening session was chaired by Prof Angela Karp, Associate Director Rothamsted, who gave an overview of the Institute's research strategy for the next 5 years (2017-22) to be funded by BBSRC. Speaking to workshop participants, Prof Michael Lee, Head of the North Wyke site, explained the unique feature of the North Wyke "Farm Platform" (NWFP) and the system level research on sustainable livestock production.

Rothamsted Research North Wyke is working on cutting edge science to find practical solutions for improving the nutrient use efficiency from soil to livestock products, and the vital role livestock will play in food security. To further this research, CIEL investment is being used at Rothamsted Research North Wyke to build a new sheep research facility to work with livestock and food industry.

The second session, focussing on collaboration opportunities, included around 20 elevated pitches, both from scientists and agri-tech companies. This session was chaired by Dr Andrew Spencer, Head of KEC, and Dr Khalid Mahmood, Rothamsted Research Business Development Manager, who outlined the knowledge exchange and collaboration support available from North Wyke.

Rothamsted Research North Wyke scientists, including Prof Adrian Collins, Dr Lianai Wu, Dr Chris Hodgson, Dr Martin Blackwell, Dr Paul Harris, Bruce Griffith, Dr Laura Cardenas, Dr Taro Takahashi and Jamie McFadzean highlighted the nutrient management, sensor and predictive modelling capability at Rothamsted Research's Farm Platform ([www.rothamsted.ac.uk/farmplatform](http://www.rothamsted.ac.uk/farmplatform)) which has direct application in sustainable agriculture and improving nutrient use efficiency on the farms, reducing greenhouse gas emissions.

North Wyke Farm Platform is the most instrumented farm in the world, with the ability to carry out systems level experiments, including whole life cycle analysis of alternative grazing livestock management systems from an economic, animal husbandry and environmental perspective. This enables the Institute to address some of agriculture's most pressing challenges, e.g. mitigating climate change, protecting natural resources and sustaining the rural economy in grassland dominated areas.

The Innovation Showcase Event provided a fantastic opportunity for companies to interact with Rothamsted Research scientists, leading research in agri-tech disciplines to both livestock and grassland farming. The agri-tech companies showed a keen interest in collaborating with the Institute and its partners, including CIEL, Duchy College, the University of Exeter, Plymouth University, and the Cornwall Development Company to provide R&D support to the agri-tech industry to improve their products and

services for the agriculture and livestock sectors, especially in the South West of England. Commercial companies presented ideas for improving livestock productivity, improving supply chain, reducing waste, improving quality, improving margins and sustainability of livestock production, both for milk and meat.

Presentations were made by organisations covering business support services and funding opportunities from regional, national and international context. Chris Garcia, CEO of the Heart of the South West LEP, spoke about the services offered by the local Growth [Hub](#), explaining that it was a free service acting as a single point of access for business support, which can introduce businesses to grants, advice and events, with extensive knowledge resources and a dedicated website.

Dr Ryan Law, Agricultural Research Manager at Dunbia, a leading meat processing company, elaborated the challenge of meeting consumer demand in respect of value, product quality, product attributes, convenience and provenance. Dr Law also highlighted the challenges faced by the meat processing industry due to variability of beef quality, in respect of age, weight, breed and conformation grade and fat class. He stated that other European countries had much better consistency with lower variability, and emphasised how important it would be for the UK to achieve similar levels.

Duncan Forbes, Managing Director of Kingshay, spoke about the current challenges and opportunities for dairy farming, ranging from the variability of milk prices through to innovation in combining state-of-the-art housing with precision grazing, all with a view to better cow health, which in turn will result in better milk yields. He highlighted the importance of forage based diet that could help to gain better margins per litre of milk produced.

Callum Harvey, Knowledge Transfer Manager with the Knowledge Transfer Network, gave a succinct overview of the funding competitions currently available and coming up in the future. The R&D Open competition from Innovate UK is open for companies to work on collaboration projects.

David Rodda MBE, Rural Delivery Manager from the Cornwall Development Company, outlined the agri-tech R&D and innovation funding opportunities available for SMEs in Cornwall and the Isles of Scilly via the recently approved £10.4m Cornwall Agri-Tech Project, funded from European Regional Development Fund (ERDF). David also highlighted the Invest in Cornwall project, offering business support and promoting regional agri-tech opportunities. The funding details will be made available in the New Year and encouraged SMEs to discuss their potential project ideas with research partners including Duchy College, Rothamsted Research, the University of Exeter, Plymouth University and Cornwall Development Company.

Robert Orr from Rothamsted Research North Wyke gave an overview of the precision agriculture practised on the Farm Platform for beef and sheep farming. The Farm Platform is sub-divided into three 21-ha farmlets, each having 30 cattle and 75 sheep which aim to improve pasture-based livestock systems through: (a) Green farmlet using mineral fertilisers, (b) Blue farmlet using legumes rather than inorganic N fertiliser; and (c) Red farmlet - re-seeding with the latest grass germplasm and innovative management.

The Farm Platform has a beef housing facility which provides a separate dedicated unit, housing animals from each farmlet during winter, providing forage collected from the same farmlet where they grazed during summer. The NWFP produces over 1 million data sets a year on soil, water, nutrient losses in run off, plant and livestock management and offers fantastic opportunities to develop commercial applications for precision agriculture. The connectivity between the timing and intensity of management in the three different systems and the resulting emissions of nutrients and additional pollutants is evaluated using state-of-the-art sensor technology coupled with more traditional field study methods.

The NWFP provides a systems level understanding of nutrient flows under contrasting management, and data is made available through the Farm Platform data portal. The data sets include: (i) automated 15-minute water quality (nutrient flow to water); (ii) field surveys (soil nutrients); (iii) livestock and field events (livestock nutrition); (iv) GHG (including auto-chambers, open-path laser, and eddy covariance towers; nutrients loss to the atmosphere); (v) images for remote sensing; and (vi) economic parameters.

Following the pitches, Robert Orr and Liz Dixon led a tour of the facilities including the Farm Platform and state-of-the-art laboratory facilities which attracted a great deal of interest from the participants.

The event attracted companies from livestock farming, input supplying industry, farm advisory/agronomy, grassland R&D, soil improvement, agri-machinery, remote sensing and satellite applications, farming apps, digital and sensor development, data handling and software sector, animal genetics, health, welfare, nutrition, abattoirs, meat supply chain, dairy processing, etc.