

## PhD Project Advertisement

**Project title:** The role of precision technologies in future grazing systems: Implications for animal welfare, performance and farm sustainability.

**Project No:** FBS2024-101-Arnott-qr

**Lead supervisor:** Gareth Arnott, School of Biological Sciences, Queen's University Belfast

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**Co-supervisors:**

Sokratis Stergiadis, University of Reading

Conor Holohan, Agri-Food and Biosciences Institute

Francis Lively, Agri-Food and Biosciences Institute

**Project description:**

**Are you interested in the future of farming?**

Now more than ever the way we farm matters! With increasing concerns regarding environmental sustainability and animal welfare research is needed to develop new farming systems and practices. One area gaining considerable attention is called Precision Livestock Farming (PLF). This is defined as “individual animal management by continuous real-time monitoring of health, welfare, production/reproduction, and environmental impact”. In essence, PLF encompasses the combined application of single technologies or multiple tools in integrated systems for real-time and individual monitoring of livestock. This has the potential to revolutionise how farm animals are managed. Historically this has been at the group level, and PLF technologies offer approaches to optimise the management of individual farm animals.

Many PLF technologies are already applied in intensive indoor rearing systems but could also be useful in pasture-based systems, where livestock control can be difficult due to the physical size of the animals, variability and density of the feed source and remoteness of location. Some examples of emerging PLF applications which could be used in grazing systems include virtual fencing, GPS systems, and multi-sensors technologies. Such applications could help farmers to improve animal welfare and management, and to deepen understanding of animal behaviour. Additionally they could aid in conservation grazing of hills and uplands, as well as supporting farmers in decision-making, reducing workload, and increasing economic sustainability.

PLF technologies have the potential to improve farm animal welfare. However, important knowledge gaps remain regarding how technology can be adopted and optimised to achieve this goal. In this exciting PhD project you will undertake a high impact research project at Queen’s University Belfast (QUB) in collaboration with University of Reading (UoR), and will also benefit from the farm animal research facilities at the Agri-Food and Biosciences Institute (AFBI), Hillsborough.

You will assess the impact of PLF technologies, such as virtual fencing, on the welfare of cattle and sheep in a range of production systems. The project will make use of state of the art animal welfare assessment techniques including those focused on animal behaviour, cognition and physiology. You will benefit from a strong interdisciplinary supervisory team involving world leading academic institutes and industry leaders. The team will be lead by Dr Gareth Arnott at QUB and will include Professor Sokratis Stergiadis (UoR), Dr Conor Holohan and Dr Francis Lively (AFBI).

This project is a CASE partnership with AFBI

**Training opportunities:**

This project will provide you with vast experience and cross-cutting training opportunities across various institutes. You will undertake extensive training in animal behaviour, welfare and animal science, including relevant physiological techniques. Behavioural and laboratory analyses will take place at QUB and UoR. At AFBI Hillsborough, you will carry out

fieldwork and be trained in animal procedures and gain a license for undertaking procedures.

**Student profile:**

This project would be suitable for students with a degree in agricultural sciences, veterinary medicine, biology, zoology or a closely related subject.

**Stipend (Salary):**

FoodBioSystems DTP students receive an annual tax free stipend (salary) that is paid in instalments throughout the year. For 2023/24 this is £18,622 and it will increase slightly each year at rate set by UKRI.

**Equality Diversity and Inclusion:**

The FoodBioSystems DTP is committed to equality, diversity and inclusion (EDI), to building a doctoral researcher(DR) and staff body that reflects the diversity of society, and to encourage applications from under-represented and disadvantaged groups. Our actions to promote diversity and inclusion are detailed on the [FoodBioSystems DTP website](#).

In accordance with UKRI guidelines, our studentships are offered on a part time basis in addition to full time registration. The minimum registration is 50% FT and the studentship end date will be extended to reflect the part-time registration.

**For up to date information on funding eligibility, studentship rates and part time registration, please visit the [FoodBioSystems website](#).**