Developing and integrating sensor technology to improve dairy cow health and welfare

Harper Adams University
Current Postdoctoral Research Briefing

Linking and developing sensor technology

A project designed to explore the use of sensor technology could lead to an improvement in dairy cow health and welfare through the continuous monitoring of animal behaviour.

The CowAlert® system, from IceRobotics, which tracks cow movement and behaviour, has, so far, been applied primarily to **heat detection** but is believed to have wider application in **the detection of early signs of ill-health.** Cows which are becoming unwell, lame or sustain an injury change their normal pattern of movement. These changes can be automatically detected to prompt early intervention by the farmer.

An increasing number of sensors are being used in dairy herds. For example, cow identification, milk recording, and heat detection all commonly use sensor technology but involve **separate software systems**. By **integrating systems**, better use can be made of the arising, combined data and duplicate data entry can be avoided, thereby optimising the alerting sensitivity, improving the system performance and keeping its use straightforward.

Study aim

This project, known as DASIE (Dairy Animal Sensor Integrated Engineering), aims to improve dairy cow health and welfare through the use of sensor technology.

Methodology

- **Continuous long-term monitoring** of 100 dairy cows on the Harper Adams University Farm is underway, to investigate, monitor and measure any changes in cow behaviour. The cows are fitted with **IceQube®** leg sensors (see panel, right). Every two weeks further measurements are taken, including body condition score and mobility score.

- **The CowAlert® system,** which is linked to **the IceQube® sensors,** is being validated to produce alerts for **heat detection and health and welfare issues.**

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What next?

Ultimately, this integrated approach to sensor technology could lead to reliable alerts for dairy farmers so that they can take action to address cow health issues at an early stage.

Research programme

This postdoctoral research briefing outlines the initial work of a three-year study by **Dr Gemma Charlton**, *Postdoctoral Researcher.*

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IceQube® sensors

The IceQube® accelerometer sensors record cow lying and standing time, steps and motion (see photos above and left).

Acknowledgements

IceQube® and CowAlert® are registered trademarks of IceRobotics (Edinburgh).