

Enhancing the profitability and productivity of livestock farming through virtual herding technology.



Australian Government
Department of Agriculture
and Water Resources

Why is this project being undertaken?

About 10 years ago, CSIRO started to examine the potential of virtual herding (VH) for the beef cattle industry. Using a GPS system to define fence boundaries and a specially designed collar that alerts the animal to the fact that it has reached the "fence", a prototype of the system was successfully demonstrated with beef cattle. This work has provided useful information on the response of animals to protocols of various cues and controls, and prompted an Australian company Agersens Pty Ltd (<http://agersens.com/>) to obtain the rights to the VH technology that CSIRO developed to the pilot stage. The studies in this project will evaluate the application of the technology in various key applications across different production systems, and will examine the responses of different livestock (dairy cattle, beef cattle, sheep) to various cues and stimuli to improve productivity and profitability in the livestock industries.

Who are the main partners?

The project has been funded by the Department of Agriculture and Water Resources, through their Rural R&D for Profit program. The project is a partnership between CSIRO, University of Sydney, University of New England, Tasmanian Institute of Agriculture and The University of Melbourne and involves the dairy, beef, wool and pork industries and their respective RDC's; Dairy Australia, Meat and Livestock Australia, Australian Wool Innovation and Australian Pork Limited.

What will the project achieve?

By 2020 the proposed project will deliver significant (10 to 20%) productivity and profitability improvements for livestock enterprises through evaluation, demonstration and participatory adoption of VH technology.

Overall, this project will ensure more efficient use of pasture, protect environmentally sensitive areas, improve the performance of livestock by better matching their nutritional requirements to feed availability, and reduce labour to enable significant productivity and profitability gains for Australian farmers.



How is the research being done?

The VH technology will be assessed across livestock sectors, regions and livestock farming systems. The project will:

- i) Develop and optimise VH and animal response.
- ii) Evaluate VH to better match grazing livestock nutritional demand with pasture availability.
- iii) Apply VH with the aim of significantly reducing or eliminating farm labour requirements for tasks associated with livestock movement.
- iv) Quantify the animal productivity gains possible by adopting VH allowing for either individual or sub-herd animal level management control as opposed to whole-herd management.
- v) Achieve improved environmental outcomes by restricting livestock from environmentally sensitive areas.
- vi) Quantify the benefits and costs, skills development and management changes required to integrate VH into livestock production systems across Australia.
- vii) Establish an effective extension pathway between research and on-farm application of VH technology.

In all these studies it will be critical to monitor the welfare of animals through behavioural observations and physiological measurements to not only ensure that the technology does not adversely affect the welfare of animals, but may actually deliver welfare benefits.

This project will also develop an understanding of the learning, management and ethical challenges faced by farmers that may implement VH on their farms. ■ ■

