

EXAMINING THE POTENTIAL FOR VIRTUAL FENCING IN MERINO SHEEP

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ABSTRACT

Managing livestock grazing behaviour is essential to understand grazing distribution and to optimise grazing management. Many of the problems associated with grazing livestock in extensive systems are related to their uneven patterns of use across the landscape. Fencing is the most frequently used tool for influencing grazing distribution. Virtual fencing (VF) has the potential to automate animal management and provide autonomous animal control in real time. They require that animals wear an electronics package that includes hardware, software and an antenna to receive radio frequency signals. However, there is limited information on how VF might affect grazing distribution, animal behaviour and welfare in a large scale commercial context.

The aim of this trial was to study animal responses to stimuli and evaluate the potential of VF for sheep. Using a familiar paddock, 8 sheep were fitted with radio frequency (RF) based electronic containment devices (ECD's) to simulate VF and were placed at one end of the paddock. The paddock was subsequently divided in half by an RF ground wire. Within 1.5m of the ground wire an audible warning was delivered by the device, if the sheep continued to move towards the ground wire an electrical stimuli was applied. The other side of the "virtual fence" was made attractive by the presence of the animal's campsite. The experimental period was 7h, after which the ECD's and ground wire were removed. The sheep were returned to the paddock to test if their spatial behaviour had been modified because of their experience with VF.

The ewes demonstrated a strong ability for associative learning, one which could be further exploited to reduce the need for electrical stimulation. No short term detrimental effects were noticed, with sheep returning to graze within 10-20 sec following electrical stimulation. After ECD removal, there was no evidence of any behavioural changes, with the ewes crossing the position of the ground wire and returning to pre-VF spatial utilisation immediately upon returning to the paddock. This experiment found a number of problems facing the fitting of VF units to sheep. The deployment of collars on sheep is not a long term option as they interfere with fleece and skin.

The results suggest that there is potential for the application of VF technology to sheep to modify their behaviour however further research is required into how sheep might actually be fitted with VF devices.

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