

Determining cattle learning and behavioural response to a virtual fence*Sabrina Lomax and Cameron Clark**The University of Sydney, School of Life and Environmental Sciences, Australia; sabrina.lomax@sydney.edu.au*

Virtual fencing (VF) has the potential to revolutionise control of livestock movement. Cattle can associate an audio cue with a mild electrical shock. This study investigates individual animal learning with VF collars, and if training time can be reduced using a visual cue (VC). The experiment utilised dog training collars fitted in Moo Monitors. 8 non-lactating dairy cows were subjected to one of 2 treatments: (1) Virtual Fence (VF) only; (2) visual cue with VF (VC). Habituation to the laneway, pellets and manual collars occurred 2× per day for 4 days prior to testing. Testing was performed in a laneway twice daily. A VF line was set halfway down the laneway with a feed trough containing pellets at the end of the laneway. Cows received an audio cue for 2 sec at the VF line. If they kept moving forward they received a mildly aversive electric shock. After 3 days the VC was removed and test repeated for 3 days. Animal behaviour, and number of cues received was recorded. The visual cue reduced the number of times cows tested the fence line, with VC cows receiving less cues (mean 2.13) than VF cows (mean 4) overall ($P=0.007$). The number of cues reduced with each test ($P<0.001$), however the cows were less likely to test the VF once they had received a shock. Cues increased with removal of the VC, with cows receiving the most cues when the VC was removed ($P<0.001$). Results indicate that there is variation in learning VF cues, and a visual cue does not improve learning in the laneway test. Positive reinforcement using a reward in the laneway is necessary between tests for future studies.