

Will there ever be a virtual shepherd?

Dr Mark Rutter, Harper Adams University

The IT revolution has already impacted many sectors of agriculture. Arable farmers use satellite technology to map crop yields to help target fertiliser. Dairy farmers are increasingly using precision technologies to monitor cow behaviour to help predict oestrus and detect disease, and robotic milking is gaining in popularity.

This begs the question: will such precision approaches ever be available to beef and sheep farmers?

Electronic identification is already making a big impact, especially when combined with electronic weighers, making accurate recording of liveweight quicker and easier.

So there is no fundamental reason why technology cannot be used to increase the productivity of extensive systems. Indeed, I would argue beef and sheep farmers will have a lot to gain from the application of technology in the future, making them more efficient, without necessarily making them more intensive.

The biggest challenge will be how to bring a precision approach to managing grazing. Already, rangeland farmers in Australia use satellite imagery to monitor pasture growth, helping them plan where to graze next.



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Virtual fencing is also being developed. Originally this involved placing a satellite navigation collar on the animal and then warning the animal when it approached a 'virtual' fence line. If the animal ignored the warning sound and tried to cross the line it received a short electric shock (similar to that delivered by an electric fence).

Public concern over the use of 'shock collars' means that such approaches are unlikely to be adopted in the UK. However, it should be possible to train animals, using rewards, to follow sounds that guide them in upland systems to desired locations, either to fresh pasture or shelter if bad weather is forecast.

The grazing of more intensively-managed grassland could be achieved using robotic fences. Ideally, the movement of the fence would be tied to the grazing behaviour of the animals, with one or more of the animals fitted with sensors that determine not only when they are grazing, but also how much they are eating. This information can be determined by the sound animals make when they graze. A bio-acoustic approach like this is already being used on farms to monitor rumination in dairy cows.

Together, these monitoring and guiding technologies have the potential to create a 'virtual shepherd' that can monitor animal health and welfare and control the grazing of extensive livestock.