

- **Research**
- **Editorial**

Investigating the suitability of electronic identification in livestock

1. **Toby Mottram**, PhD

www.ecow.co.uk

1. e-mail: toby@ecow.co.uk

THE radio frequency identity device (RFID) was first developed for agricultural use in the 1970s as a collar system for identifying cows for automated feeding and milking systems. The full potential for these devices has been realised in other industries where the location and tracking of relatively low value items is routine.

Within cattle husbandry, a forthcoming publication by [Bell and others \(2011\)](#), shows how an ear tag RFID can provide an automatic mobility score replacement for the manual inspection. The use of implanted devices remains controversial in animal husbandry and the Sheep Veterinary Society in the UK is quoted in this paper as being opposed to their introduction. In companion animals, the subcutaneous RFID for health and security is widely accepted.

The delay in applying this useful technology in animal husbandry is due to a number of factors, some of which are amenable to scientific evaluation. A number of unknowns have contributed to the reluctance of governments to mandate the introduction of a particular technology (boluses, implants or ear tags). Ingested devices (boluses) and implanted devices, such as the ones examined in a study by [Løken and others \(2011\)](#) in a paper summarised in this week's issue of *Veterinary Record*, have the benefit that they are less liable to fraud but there are fears that the injection of RFIDs may be a source of damage to the animal or to the device. In pets the injection is generally conducted by a trained technician in a well-controlled environment with time available and with the animal outnumbered by people. In contrast, on a sheep farm a lone shepherd would be expected to tag large numbers of animals quickly in a variety of outdoor handling facilities and thus the chance of an error occurring would be considerably larger.

The large study in cattle described by [Løken and others](#) has produced numerical evidence of the loss or damage to transponders, the number of lesions and the effect of different transponder encapsulations (glass or polymer). It is a useful addition to the debate on whether implanted transponders are beneficial in comparison to ear tags or boluses, both of which have their own problems. It is a debate made more urgent by the desire to replace traceability schemes subject to human fallibility in correctly recording ear tag numbers on pieces of paper.

The type of research required needs a mix of applied veterinary and engineering skills to develop and assess better systems for uniquely identifying farm animals. This paper is a useful contribution to a debate that recent changes in scientific priorities have hampered.

The next step required is a study to compare the effects of ear tags and implanted transponders not only in terms of animal health and welfare but also the attenuation of radio signals for high throughput identification of sheep, which is a requirement for modern traceability schemes.



View larger version:

• [In a new window](#)

• [Download as PowerPoint Slide](#)

New rapid tagging systems for radio frequency identity device (RFID) ear tags are becoming available but injectable RFID implants are not so well supported. Research is needed to assess the relevant merits of different systems

References

1. 
 1. Bell N. J,
 2. Miedema H.,
 3. Blajan I. &
 4. Mottram T.(2011) **Automatic measurement of mobility score in dairy cows using walking speed.** Computers and Electronics in Agriculture (In press)

[Google Scholar](#)

2. 
 1. Løken T.,
 2. Vatn G. &
 3. Kummen E.(2011) **Subcutaneous electronic identification in cattle: a field study.** Veterinary Record doi:[10.1136/vr.d2789](https://doi.org/10.1136/vr.d2789)