Sheep farming in the 21st century: understanding adoption of Electronic Identification (EID) technology

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What is EID technology?

- **EID microchips,** containing and individual ID number, are placed in ear tags. ID is retrieved with a portable or static reader
- Readers retrieve **animal history and information,** aiding decision making on farm. **Interventions** (i.e. treatments, animal grouping) or **disease history** (i.e. lameness score) can be recorded.

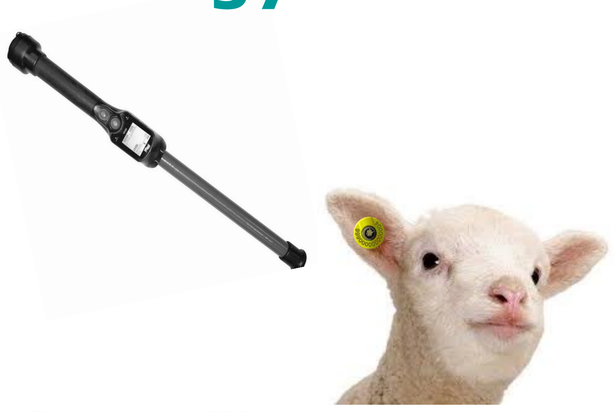

Figure 1*. EID ear tags are read in the field using a portable EID reader to retrieve individual animal information. This figure shows a reader stick with screen. Data can be downloaded and analysed with farm software.*

Study context & aim

Sheep farming in UK has **decreased in profitability** in past decades. **Technology** use could improve production efficiency.
EID sheep tagging is mandatory since 2014, but many **farmers do not utilise EID tools** for farm management.
Drivers and barriers of EID adoption are unclear.

Aim of the study is to improve understanding of factors associated with EID adoption.

Methods

Study design: In Autumn 2015, 2,000 questionnaires were sent to farmers of England and Wales , 439 replied (22% response rate). Questions on farmer practices, flock health and productivity, and on opinions about EID.

Analysis: Exploratory factor analysis for belief statements, univariable and multivariable logistic regression modelling of factors associated with adoption

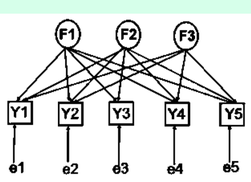

Figure 2: *Belief statements on EID characteristics, measured in a 5 point Likert scale, were analysed via Exploratory Factor Analysis.*

Profile of sheep farmers adopting EID technology in relation to non-adopters

Adopters' opinions

- EID is a convenient and practical tool
- EID brings benefits in terms of flock productivity
- Social pressure to adopt EID is not important

Flock health

- Lower flock lameness levels
- Lame sheep were treated with 'best practice'
- More lambs were kept as replacements

Adopters' practices

- Used computer to record information on farm
- Selected ewes for culling based on low productivity
- Intended to increase production in following 2 years

Figure 3: *Variables significantly associated with adoption of EID related technology (p<0.05).*

Conclusions and next steps

- **First study** in UK to investigate factors associated with EID adoption
- **Significant difference** between adopters and non-adopters with respect to their beliefs
- Study suggest both **individual and social factors** influence adoption of technology
- Results in this study can be used to understand adoption barriers to technology and **enhance adoption of technologies on farms**

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