

Electronic identification (EID) in sheep

Your technical guide



Who this leaflet is for and what it tells you

This leaflet has been produced for sheep farmers in England to explain why some sheep need to have electronic identification (EID) tags and how electronic reading and recording works.

The leaflet also describes the types of IT equipment available and gives you practical advice about what equipment might be right for you. **Remember, not everyone will need EID-reading equipment, or the same equipment.**

It is intended to help you weigh up the pros and cons and make decisions based on your circumstances. It is not definitive, nor does it recommend specific commercial products.

Knowing more about how EID works will help you decide whether you wish to use reading equipment, decide which equipment to use, and avoid spending more money than you need to.

Advice on best practice and options for tagging your animals, and the rules for identifying sheep (and goats), are explained in the updated sheep and goat keepers guidance booklet sent out with this leaflet. Also, see the leaflet on ordering new tags sent to all keepers in November 2009. The back of this leaflet contains further information and useful contacts for more advice.



Why do sheep need to be electronically tagged?

The rules on identifying sheep and recording their movements are changing.

You will have received an updated keepers handbook from Defra on what the law requires in respect of identification and movement recording from 31 December 2009. These changes will help us – both the farming industry and the Government – to track sheep movements more effectively in the event of a disease outbreak.

The new rules mean that sheep born (or tagged for the first time) after 31 December 2009, and not intended for slaughter under 12 months of age, must be electronically identified. In addition, for certain movements, these sheep may have to be recorded individually.

You can apply a single non-electronic slaughter tag to animals intended for slaughter within 12 months of age. This batch tag can be an electronic slaughter tag if you wish or if your customers require it.

Although the primary requirement of the new rules is individual recording aided by electronic identification, keepers who want to manually record their electronically identified animals can do so. For other keepers, central point recording and batch recording (for most moves within a farm business) will mean they may not need to undertake any electronic recording themselves. The use of reading equipment is **not** obligatory.

Do all EID tags need to be read electronically?

No – and you may not need to purchase electronic reading equipment. The main objective is to record sheep movements individually – when required to do so. For electronically identified sheep you can do this either visually or electronically, because the number visible on the outside of the tag will be the same as the number on the electronic chip. Sheep identified before 31 December 2009 do not need to be electronically identified but, unless they are moving to slaughter, they will need to be individually recorded from 31 December 2011.

You may find manual reading and recording suitable:

- for small flocks such as hobby or small pedigree flocks
- where only small groups of individually identified sheep are moved on or off your farm
- where devices are inserted shortly before your lambs are sold, so that the sequence of numbers which accurately identifies the individual animals moved (for example, you have used tags numbered 100 to 200) can be recorded



- where most sheep moving onto or off your farm are moved to an abattoir, or through a market, which will provide you with a reading and reporting service (central point recording).

Electronic reading is likely to be needed if:

- you have a large number of farm-to-farm moves that have to be recorded – for example, large numbers of sheep moving to temporary grazing or away wintering (where you do not retain care and control of the animals on a day-to-day basis)
- there are no practical options available for central point recording.

You will need to check with your customers in case there are identification requirements they need you to satisfy. It may be that to meet their individual or batch recording obligations, some market/abattoir operators may require slaughter lambs to be identified with an electronic slaughter tag.

How does EID work?

It is based on a system of electronic devices (typically ear tags or boluses) and readers. When the reader is switched on, it sends out a signal. The electronic ear tag or bolus receives that signal and transmits a signal containing the animal identification number back to the reader.

Two types of microchip are used for EID tags and boluses – Full Duplex (FDX-B) and Half Duplex (HDX). Although different, they effectively do the same job.

What is EID used for?

EID uses a unique individual animal identification code transmitted by the electronic identifier. It enables movements of animals to be tracked and helps with more accurate record-keeping on farms and at markets and abattoirs.

Types of EID

The electronic chip may be carried in an:

- ear tag
- ruminal bolus, or
- pastern tag (leg band).

In general, boluses have lower loss rates than tags but are more expensive and less convenient to read with a handheld reader. To show that they have a bolus, animals will have to carry a black (non-EID) ear tag as the main identifier. If this is lost, it must be replaced by a black tag carrying an identical number.

What will be printed on the tag?

On the tag:

UK 0 244220 00123

In the chip:

826 0 244220 00123

When each tag is printed, the chip is programmed by the manufacturer to carry the same electronic number as the number printed on the outside. This means that you can record the individual number electronically using a reader, or visually (by looking at the number printed on the tag).

The way in which tags are numbered will change slightly for sheep being identified from 31 December 2009. The electronic number in the chip will be preceded by the numeric ISO (International Organization for Standardization) country code for the UK (826), while the visually displayed number on the tag will be preceded by 'UK'. Both are followed by '0'. For both visual and electronic recording, the next string of six digits will be the flock number, while the last five digits will be the animal number. Visual and electronic ID devices will continue to be ordered through existing suppliers.

What kind of system is right for me?

Sheep farming includes many different types and sizes of business, from smallholders to medium-sized and large-scale commercial operations. Every farmer will need to decide whether they need reading equipment and, if so, what the best type of equipment is for them.

So it will be for you to decide whether your scale of production and the number of farm-to-farm moves requires the use of reading equipment, or whether the individual recording requirement can be met manually. You may have the option of central point recording.

How do I choose EID equipment?

All the parts of your EID system must be able to work in practical farming situations. Equipment is made to withstand normal shock, dirt and exposure to water. However, any electronic device has its limitations if it is treated roughly. Suppliers will be able to provide detailed guidance on how specific equipment should be used, but will often make assumptions about your level of background knowledge. Asking questions early on can often give you a better understanding of EID, reduce frustration and simplify subsequent trouble shooting.

When choosing your EID equipment, make sure you do some research:

- Consider starting with a basic system, which can be added to if required.
- Attend demonstrations and group discussions on the practicalities of sheep EID.
- Get independent testimonials on equipment performance and the quality of back-up support.
- For the more expensive and complex applications, take professional advice and ask for a site visit/installation survey.
- Insist on an instruction manual and read it carefully.
- You should consider using a reader that is compliant with ISO standards, which will mean that it should read both FDX and HDX devices.
- Check the Rural Payments Agency's website for a list of suitable reading equipment (see the address on the back page).

There are a number of options for electronic reading:



Stick reader

- Designed for quick and easy electronic reading.
- Displays the number just read, alongside a total group count.
- Sound and/or light signal indication of a successful reading.
- Typical storage for 3,000–10,000 individual numbers.
- Can be integrated with other equipment, for example a handheld computer, PC or mobile printer (as shown above).
- Downloads by cable or wirelessly through Bluetooth technology.
- Can create simple sub-groups, to update group management actions on PC-based software, including time and date of reading.
- From full charge, approximately four to six hours' battery life depending on settings.
- Typical price: £450–£850.



Handheld with operating system

- These in effect are mini computers, designed to allow you to store individual animal information in the field, and allowing higher levels of data processing.
- Data such as flock records can be carried into the field (see below).
- Typically, these are integrated with more advanced electronic weighing, race-reading and shedding systems.
- Typical price: £1,000–£1,600.



Handheld reader

- Scans EID through an antenna, connected to a keypad.
- Basic readers have simple keypads, which limit their ability to add additional data or management information.
- More expensive models have a numeric keypad, which allows some management information to be added more easily.
- Boluses are less easy to read with handheld readers due to the short antenna.
- Typical prices: basic handheld reader £300, advanced handheld reader £650.



Static/panel reader

- May be used in a sheep-handling race, installed in a sheep weigh crate or in a mobile handling system.
- Basic reading systems capture animal ID only.
- More advanced systems link ID with the collection of other data.
- For a 100% read rate, the ability to stop sheep which do not read automatically may be needed.
- Electromagnetic interference can drastically reduce the reader's performance. Choice of static/panel reader, siting and installation, and nature of the power supply are important factors.
- Typical prices: £1,250 for a panel reading system; £5,000–£6,000 for fully integrated reading, weighing and shedding system; £8,000–£10,000 for an EID-compatible, mobile, automatic handling system.

Readers should be used in accordance with suppliers instructions on how close they need to be to EID tags/boluses.

Typical read distances are:

- 12cm for an EID ear tag when read with a portable (handheld) reader,
- 20cm for a bolus in the rumen when read with a portable (handheld) reader,
- 50cm for all types of identifiers when read with a stationary reader (e.g. static/panel reader).

Transferring electronic data

How can I transfer electronic data?

You can transfer information captured electronically:

- from a stick reader to a portable printer to produce a simple paper printout, which you can give to a haulier or attach to the holding register
- to a laptop or office-based PC, where you can store and print
- to a personalised digital assistant (PDA) which can store or transmit data to another device, for example a printer or PC
- to a PDA/mobile phone, which can also email data to your farm PC or to another location.

See the illustration on page 7 for an explanation of how data transfer works.

You might want to consider using wireless data transfer through Bluetooth as cables are more prone to becoming caught or damaged, particularly when used in sheep pens. But adding Bluetooth will increase the cost of equipment and drain batteries more quickly. If the Bluetooth connection is lost, data stays in the recording device until you download it. Where the sheep handling system is reasonably close to the farm office, a cable connection to a PC may still be your simplest and most cost-effective solution.

What kind of software do I need?

Software – the programming that makes the reader work and communicate with other devices – is critical to the operation of any EID system. The quality of the on-board software operating handheld readers will affect the reliability and ease of use of the electronic equipment. Flock management software can offer you an extensive range of features – individual performance data, veterinary records, medicines management etc. Some packages are ‘whole-farm systems’ that include cattle recording, field records and farm accounts. The software should be easy to use and able to store, analyse and report data efficiently and in a convenient, accessible way.

Using data for flock management

You may decide to use electronically captured data for flock management, for example to maintain veterinary and medical records. Or you may be interested in breeding and genetic improvement.

EID can be used to record (for sheep on an individual basis):

- dam performance (for example litter size, lamb growth rate, litter weaning weight, carcass weight and grading, ewe longevity)
- sire performance (carcass weight and grading, lamb growth rate).

EID offers you a number of other potential uses and benefits:

- ease of record-keeping
- traceability
- reliable records
- labour savings.

Tagging and EID – dos and don'ts

Ensure that:

- you take a careful look at the design of EID devices (for example size, weight, pin length, plastic quality, button versus fold-over etc.) in relation to your sheep breed(s), age at insertion, feeding, housing and fencing arrangements
- if necessary, you think about using other designs for a small number of sheep to arrive at the best choice for your farm and system
- you follow good tagging/bolusing techniques, using the correct applicators, according to manufacturer's instructions, to ensure retention and avoid welfare problems
- you refer to Annex A of the *Sheep and Goat Keepers Handbook* for best tagging practices
- the size of your farming operation justifies any planned investment
- you have sufficient computer know-how if you want to use more complicated IT products
- the correct data is collected and it's relevant to your management objectives
- your software produces clear, straightforward data and reports in the right format
- you set aside sufficient time for analysing the information and producing results
- you read your reports correctly and make use of the results.

Top tips

- Before buying, give yourself sufficient time to examine the equipment and software, in order to gauge suitability, ease of use and level of IT knowledge required.
- Consider buying equipment and software from one source which can supply and support full integration of your chosen system.
- Only purchase the level of EID equipment you need and will use regularly.
- Use good-quality conventional and electronic tags and boluses, to aid visual and electronic reading.
- Remember that some liquid crystal display (LCD) screens are more easily read in the dark or in high sunlight than others, and the speed of LCD screens can be reduced in low temperatures.
- When not in use, store reading equipment indoors at ambient temperature.
- Be aware that a static/panel reader can also pick up readings from extraneous sources (such as surplus devices, car key fobs and microchipped dogs).
- Avoid using a stick reader and a static/panel reader close together as they could interfere with one another.
- Charge batteries sufficiently for the work planned, or keep a fully charged spare.

Tags and readers: how they can work



Non-electronic matchup ear tag

UK 0 244220 00124

Read visually, for example a keeper of a pedigree flock with a small number of animals.



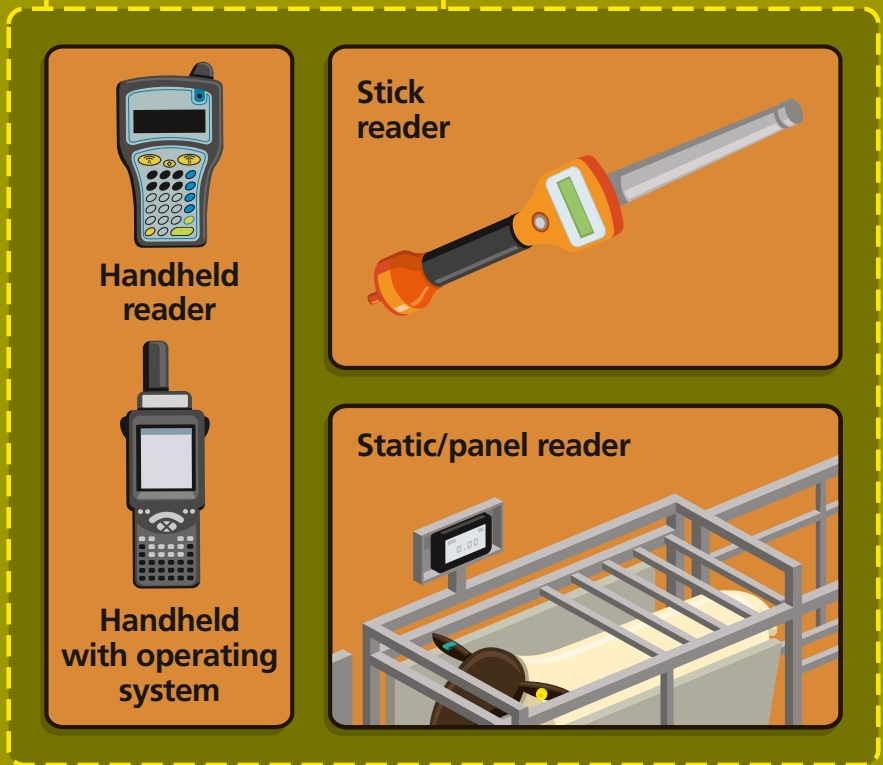
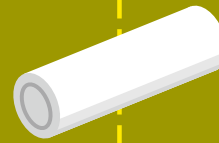
Electronic ear tag



Signal received from the reader is sent back with the tag/bolus number and that is then passed on to your PC etc.

Electronic (ruminal) bolus

UK 0 244220 00122



PC



Mobile phone



PDA



Printer

You don't need to own all of this equipment if you decide you want to read electronic tags.

Please see page 5 for typical reading distances.

Summary

- Manual recording, or central point recording (for example at markets and abattoirs), may still be the best options in many circumstances.
- Where a system of on-farm electronic reading is required, a number of general approaches can be considered, depending on the application required.

Objective in using EID	Example equipment options			
	1. Stick reader and mobile printer	2. Stick reader, PC, printer, basic software	3. Handheld reader (numeric keypad), PC, printer, software	4. Handheld reader, EID-enabled weigh head, weigh crate, PC, printer, software
Produce a simple list of sheep numbers	✓	✓	✓	✓
Above, plus: Read sheep and assign simple group actions, e.g. movement or veterinary treatment		✓	✓	✓
Above, plus: Input individual animal data, maintain flock records, produce management reports			✓	✓
Above, plus: Automated data capture, comprehensive flock management reports, data transfer from office to field				✓
Indicative cost*	£700–£1,200	£1,000–£1,300	£1,200–£1,400	£5,000–£6,500
IT literacy required (1=lowest; 5=highest)	1	3	4	5

*For options 2, 3 and 4 above, indicative costs can be reduced if a PC (£450) and office printer (£50) are already available on the farm.

Summary of key messages

- Be sure that you actually need EID reading equipment.
- Only purchase the level of EID reading equipment you need **and** will use regularly.
- Use good-quality, Defra-approved electronic tags and boluses.
- Choose reading equipment which meets ISO standards.
- Ensure that reading equipment already integrates with any computer software and other ancillary equipment (such as weigh heads) required.
- Purchase reading equipment/software from a source providing ready access to training and back-up support, including maintenance arrangements if needed.

Further information

Don't hesitate to ask for help. Below are some contacts that can provide you with further information to help you make informed choices.

- For details of tag suppliers, approved electronic devices and reading equipment, go to www.rpa.gov.uk and search for 'electronic ID'.
- For general information on sheep identification and EID, call the **Defra Helpline on 08459 335577** or go to: www.defra.gov.uk/foodfarm/farmanimal/movements/sheep/index.htm
- For an explanation of sheep identification rules, consult the *Sheep and Goat Keepers Handbook* sent to you by Defra.
- Further information on tagging options and ordering is contained in the Defra *Ordering your tags* leaflet sent to keepers in November 2009.