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Tracking livestock to enhance food safety and improve subsidy control

Electronic animal identification systems for cattle, buffaloes, sheep and goats invented by the European Commission's in-house science service, the Joint Research Centre (JRC), have helped to transform the way we protect animal health, public health and guarantee food safety. Scientists have created a high-tech ceramic capsule – a bolus – that when placed in the stomach of a given animal, provides an accurate and above all, permanent means to track its identification, premises and movement from birth to slaughterhouse. In addition to this enhanced food safety control, irregularities in subsidy payments for each animal are less frequent, saving the EU tax payer millions every year. Partnerships with companies granted a licence to exploit and further develop the product means that it is becoming the dominating technology across the EU.



Joint Research Centre (JRC)
– the European Commission's in-house science service

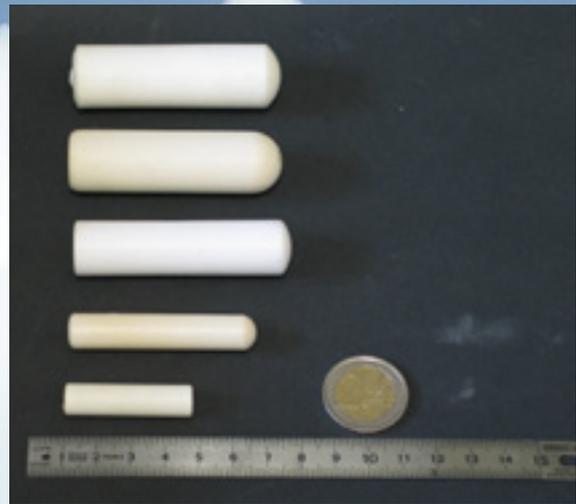
Electronic tagging using a bolus is more humane to animals than conventional systems based on ear tags, tattooing and marking. It is a single control measure covering their lifespan, and is more accurate and more cost-effective. In a nutshell, it offers greater protection to the welfare and pockets of all consumers.

Conventional systems suffer drawbacks including tag loss, breakages or alteration. Data recording is slow, with manual transcription errors posing further problems. Furthermore, the bolus method ticks a lot of boxes insofar as it works across a broad spectrum of conditions: intensive and extensive rearing, transport within and outside the EU, different slaughtering techniques, and environmental extremes in the north and south.

How it works is that the bolus, a ceramic capsule is inserted down the throat of an animal. It is designed to lodge in the second stomach for life. It contains an electronic transponder marked by a manufacturer's number and sealed with special odourless silicon resistant to the animal's gastric juices. The transponder emits a radio frequency helping to keep track of the animal throughout its lifetime. Meat entering the food chain is 100% traceable back to the individual animal and to the herd of origin.

Did you know?

The JRC is central to the scientific response to food safety and currently operates six EU Reference Laboratories. These are designated by EU law to establish common standards for testing, routine procedures and reliable methods. For example, JRC scientists are responsible for authorising what is included in the feed we give animals.



Boluses exist in different sizes.

Background

Food security became a major political and scientific priority following a series of food crises in the 1990s. JRC scientists had already patented the technical aspects of their ruminal bolus invention by 1996, and were well-placed to take the coordinating lead in initial EU-wide feasibility studies. Demonstration activities were organised on a number of farms as well as in slaughterhouses. Field tests were equally carried out on over half a million animals in six Member States. Results were encouraging and further research improved performance, while smaller boluses were developed for smaller animals.

Currently, 11 European companies have been granted a licence to manufacture and market the JRC bolus.

The JRC's solution to better tracking animals via advances in electronics coupled with new, better-suited components is a story of technical foresight and delivering answers to pressing societal problems. It exemplifies how smart science can make great leaps in a seemingly mundane field such as animal tagging which has genuine and daily repercussions for us all. Their use is also sufficiently cost-effective to allow introduction amongst the entire livestock population in Europe.