

Heiko Georg, Gracia Ude and Anja Schwalm, Brunswick

# Up to date Topics of Electronic Identification of Cattle – Part 1

*The enactment of the Animal Movement Regulation (VVVO) amendment on July 8, 2007 made using electronic ear markers for cattle identification optional for the Federal States in Germany. Along with its introduction, the question of costs and benefits of electronic cattle identification was researched. Experts from selected user groups were questioned on the introduction of electronic cattle ear markers in Germany. A part of the results is presented in this report.*

Global trade, traceability and animal health, driven by epidemics were the main reasons to introduce an international standard of visual animal identification for bovine animals within the EU. The strategy document on animal health, released by the EU [1], which should be implemented between 2007 and 2013, is aiming on an improvement of the existing EU-Traceability frame.

The improved traceability should be realised by means of electronic identification of animals (EID). The German regulation on livestock movement (VVVO), passed by the upper house of parliament on July, 8th 2008, has delegated responsibility to start voluntary with EID of cattle to the federal states.

Theoretically three different types of transponders, bolus, injectable transponder and electronic ear tag, could be used as EID. The German regulation VVVO selected the electronic ear tag as the official EID for cattle. An evaluation of different transponder types (Table 1) according [2] illustrates the reasons. Regarding identification rate, utilization for administrative and management purposes and protection against unauthorized access were evaluated with “high”. The time needed for the identification had been characterised as “medium” for bolus and electronic ear tag and could be seen as “high” for injectable transponders. The intensity of the connection to the animal had been pointed out as “high” for bolus and injectable transponders, compared to “medium” of electronic ear tags. However the risk

of losses at slaughter had been “medium” for bolus and injectable transponders, whereas electronic ear tags got a “high” rating for successful return rate.

## Material and Methods

At the beginning of the study, different user groups being affected by the introduction of EID were defined. The choice of consulted experts was done according to a plan, which is typical for explorative studies. In the first step, manufacturers of milking and feeding equipment, software, EID and local operators of the identification database were interviewed. A specific questionnaire for every user group had been developed. The questionnaire consisted of 8 up to 15 questions. Most of them were categorised, except questions on individual rating. After a phone call in advance to give background information, the questionnaire was submitted either electronically or printed. Concerning the group of manufacturers of milking and feeding equipment it was proposed to include nearly every type of equipment on the market.

At the second stage of the study veterinarian authorities, trade and transport enterprises as well as farmers were consulted in three selected federal states Bavaria, Lower Saxony and Thuringia.

## Results

In total, the response rate on the questionnaires was 86 % (Table 2). Compared to

Table 1: Evaluation of the three types of transponder

Attribute	Bolus	injectable transponder	electronic ear tag
utilization for administrative and management purposes	high	high	high
well known in practice	low	low	low
time needed for the identification	medium <sup>1</sup>	high	medium
identification assurance	high	high	high
Intensity of the connection to the animal	high	high	medium
risk of losses at slaughter	medium	medium	high
protection against unauthorized access	high	high	high <sup>2</sup>
<sup>1</sup> : trained personnel needed (source: according to [2])		<sup>2</sup> : in combination with data bank	

Dr. agr. Heiko Georg, Dr. agr. Gracia Ude and Dr. med. vet. Anja Schwalm are members of the scientific staff at the Institut für Agrartechnologie und Biosystemtechnik (Head: Prof. Dr. K.-D. Vorlop and Prof. Dr.-Ing. A. Munack) of Johann Heinrich von Thünen-Institut (vTI), Bundesallee 50, 38116 Braunschweig; e-mail: heiko.georg@vti.bund.de

## Keywords

Cattle, electronic identification, traceability

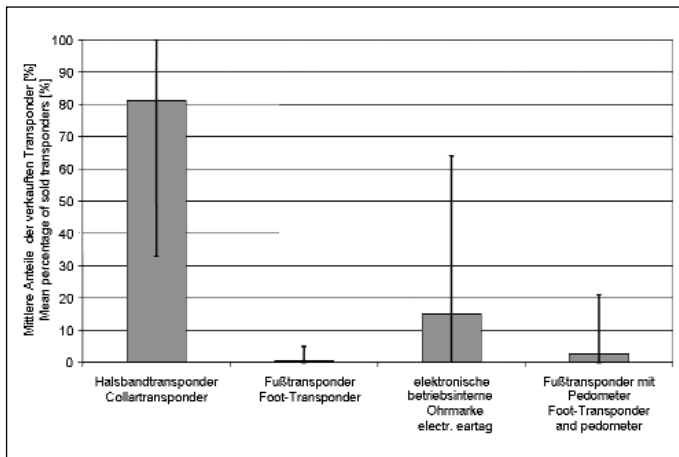


Fig. 1: Market share of the different transponder types

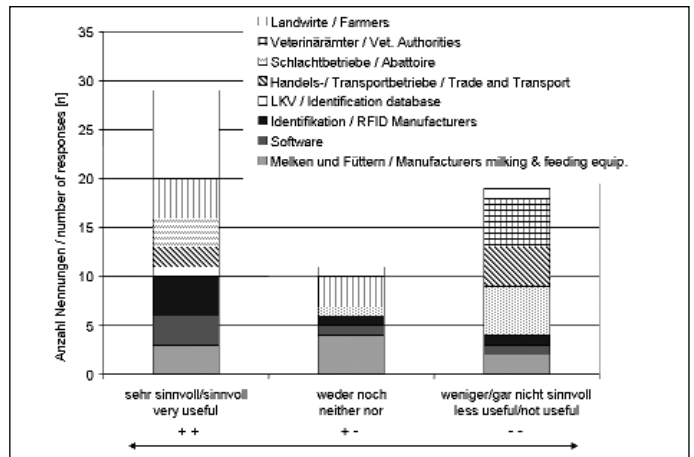


Fig. 2: Evaluation of electronic identification for cattle

ordinary questionnaires it is a high quota, which could be achieved by low sample size and personal motivation. The response rate per user group varied between 33 and 100 percent. The manufacturers of milking and feeding equipment included in this study represented a market share of approx. 50 % of dairy farms in Germany. The seven interviewed regional operators of identification database stand for 171.913 cattle, 34.671 sheep/goats and 97.052 pigs, whereas the 12 veterinarian authorities correspond to 14.150 farms in total with 1.07 Million cattle.

The consulted farmers run medium and large dairy enterprises. Farms in Thuringia ranged from 700 to 1630 dairy cows, whereas the herd size in Lower Saxony varied between 60 and 250 cows. Farmers consulted in Bavaria keep 65 up to 110 dairy cows.

The consulted manufacturers of milking and feeding equipment sell mainly collar transponders, except one manufacturer. Mean value in total is 81 % based on the individual data of manufacturers which varied from 33 to 100 %. Ear tag transponder had a market share of 14, 9 % (mean value), with a minimum value of zero and a maximum of 64 %. Foot transponder and foot transponder with integrated pedometers were used rarely (Fig. 1), which is corresponding to results of [3].

The application field of collar transponder and electronic ear tag were the identification of cows in the milking parlour and concentrate feeders as well as individual feeding of calves and herd management in general. Foot transponders were exclusively used for dairy cows and management purposes. Foot transponders with pedometer (two manufacturers) were used in milking parlours and feeding systems.

The statement in regard to a compulsory introduction of EID had been evaluated 29 times positive, 11 interviewed persons rated neither nor and 19 respondent denied a compulsory EID more or less (Fig. 2). Manufacturers of herd management and EID rated the mandatory introduction of EID for cattle in their own interest positively. Manufactures of milking and feeding equipment, which is compatible to future EID of cattle, estimate a compulsory introduction in a positive way, whereas manufacturers with incompatible technology were cautious.

The regional operators of the identification database as representatives of the national database do not expect any advantage of EID regarding traceability.

The interviewed trade and transport enterprises as well as the abattoirs had not yet discussed the introduction of EID and do not see any need for a mandatory introduction. In contrast to trade and transport enterprises,

abattoirs think positive regarding a compulsory introduction.

Veterinarian authorities showed a balanced rating of pro and con regarding EID. With special regard on monitoring of epidemics, control of drugs and traceability the veterinarian authorities rated optimistic for EID. However, they do not expect a positive effect of EID on time till "stand still".

The interviewed farmers were quite optimistic regarding the introduction of EID, because they expect long term synergy effects in case of replacement of internal electronic identification by official EID of cattle.

## Literature

- [1] EU-Kommission (2007): Zugriff am 11. 3. 2008; [http://ec.europa.eu/food/animal/diseases/strategy/animal\\_health\\_strategy\\_de.pdf](http://ec.europa.eu/food/animal/diseases/strategy/animal_health_strategy_de.pdf)
- [2] Klindtworth, M.: Elektronische Tierkennzeichnung – Anwendungen und Perspektiven. In: KTBL (Hrsg.): Precision Dairy Farming - Elektronikeinsatz in der Milchviehhaltung. KTBL-Schrift 457, Darmstadt, 2007, S. 89-98
- [3] Motika, D.: Elektronische Tiererkennungs- und Herdenmanagementsysteme - Einsatz und Erfahrungen in größeren Betrieben. Landtechnik 60 (2005), H. 5, S. 288 - 289