

Electronic ear tags for complete automatic identification of pigs from birth to post-slaughter A. Stationary RFID antenna systems for the automatic identification of pigs in a group

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Key words

Stationary RFID antenna system, Electronic Identification, Electronic ear tags, Transponder, Fattening pigs

Aim of the study

The aim of this study is to evaluate the manageability of electronic ear tags and stationary antenna systems for the identification of individual animals in a group. To do this the practical application of various types of identification systems was tested in col-laboration with companies.

Material and methods

The study involved pigs being herded in a group through a stationary antenna in order to evaluate different antenna systems. Both standardised (ISO) transponders and those with anti-collision algorithms (AC ear tags) were used. This technology allows the virtually simultaneous detection of several transponders by only one antenna. Transponders mounted on a plastic panel in a recently developed test rig simulated a group of pigs. The focus here was on the identification reliability (reading rate) of the transponders passing through the detection area in different numbers, orientations and speeds.

Results and significance

In tests with AC transponders and two different antennas it was possible to identify an average 65 and 84 % of the pigs respectively. In the case of ISO ear tags with various antennas the quota read was between 60 and 98 %. The simulation of herding a group of animals highlighted the technical limitations of RFID technology. It was impossible to read the transponder when the transponder was horizontally aligned with the field lines of the magnetic field, so the results varied between 0 and 100 %, depending on the test set-up. Of the variants tested an average of between 43 and 48 % of the AC transponders and between 68 and 85 % of the ISO transponders were automatically identified on weaners, rearers and fatteners.

A tagging system with electronic ear tags for the complete automatic identification of pigs from birth to slaughter is not yet ripe for practical application. The results when reading the individual animal from the group demonstrated the potential of the technology. Although it was possible to improve the reading rate by means of refinements and alterations to the antennas, a one hundred percent readout reliability of all transponders remained the exception. Further research is needed to optimise stationary antennas in order to achieve a sufficiently high reading rate when identifying pigs during herding.

Publications, posters and presentations

Burose, F.; Zähler, M. (2007): Stationäre Antennen zur automatischen Identifikation von Schweinen. Published in: Informatik 2007 - Informatik trifft Logistik, Band 2, Tagungsbeiträge, Bonn (D), p. 27-31.

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