

Using Radio Frequency Identification (RFID) for Dairy Cattle Management

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USDA, along with livestock industry committees, has developed the framework for The National Animal Identification System (NAIS). This effort has centered totally on use of animal identification and technology for trace back in case of disease outbreak. All states have implemented systems for cattle owners to register their premises. This registration is very important to the success of NAIS and is required by the end of next year. All cattle owners are encouraged to register. Florida livestock producers can obtain an application for premises registration at:

http://www.doacs.state.fl.us/ai/pdf/nais_app.pdf



We think that this new technology along with the discussions about national Animal ID present a unique opportunity to develop and expand the use of automatic ID for management as well as disease inquiry. Body weights on heifers are needed badly, but with previous manual procedures have been difficult and labor intensive! Additionally, other management data collection can be automated to improve effectiveness and efficiency, thus helping justify the cost of electronic ID.

Our group has been working to determine usefulness of electronic identification for collection of dairy cattle information including: heifer body weights, milk weights on test-day, reproduction and veterinary checks, health data and group movement. Animals were tagged with ear tags containing the RFID chip. Cows are identified in the chute or lockup stanchions by waving a wand near the ear, which transmits to a hand-held computer (Palm PDA). Using the newly developed PocketDairy for RFID program associated with PCDART from Dairy Records Management Systems, management data can be entered and automatically attached to the cow's data file. This electronic identification can reduce labor required for record keeping and improve accuracy of records.



RFID tags can be read by use of a portable wand connected by cable to a laptop or other portable computer. Alternately, a special kind of wireless communication called "Blue Tooth" can be used to transfer the RFID from the wand to a Palm or other handheld computer. Another



method of reading the RFID utilizes a stationary panel reader.

One objective of our project was to gain experience with tags from different manufacturers. Early in the project, we installed 100 tags of each of the following types: Allflex half duplex (HD), YTex full duplex (FD) and Temple FD. These were placed in the left ear of Holstein heifers between 3 and 12 months of age. Each of these tag types was easy to apply and had similar retention. After 18 months only one of the 300 tags has been lost.

After the initial tagging of young animals, we have tagged all animals at the University of Florida, Dairy Research Unit including 527 adult milking cows, 354 heifers and 47 bulls. At two other cooperator herds, 390 cows and 268 heifers have been tagged.

Readability of tags has been variable. Our standard procedure was to apply the tag then read it with the AgInfolink wand, immediately. All of the tags except one, read successfully, immediately after tagging. We attempted to read the tags again approximately two weeks after tagging. Only seven tags would not read at all after two weeks. These tags were removed and replaced. So far, we have used three different wand readers: 1) AgInfolink's Blue tooth, 2) Digital Angel Blue tooth, and 3) Allflex stick reader (wired). All three wands have given satisfactory reads, but the Allflex stick reader has performed the best in our study. Evaluation criteria included distance from the tag and successful read on first try. We found the two wireless wands to be different in that the Digital Angel wand reads from the tip and the AgInfolink reads from the side. Keeping this in mind, similar read results were obtained. Charging and wireless connectivity characteristics have been better for the Digital Angel wand in our experience, so far.



Not counting the initial reading, we have read tags on thirteen different days (reading sessions). Number of animals with attempted reads ranged from 7 to 516 per session. Results of these reads are summarized in the graph "Tag Read Success Rate".

Having RFID on all heifers has enabled us to evaluate the electronic weighing system manufactured and marketed by TruTest. We have used the XR3000 with the companion load bars and the Allflex stick reader. While heifer weighing at the DRU is usually associated with treatments and other management, we have been able to evaluate the system for collection and retrieval of body weight data. In our facilities, the weighing sequence goes like this: 1.heifer enters the approach chute; 2. we open the gate which allows her to enter the platform scale; 3. Identification is read by the wand; 4.press the button to record; 5.open gate to release heifer.



We have conducted a preliminary trial to use RFID for collection of milk weights on test-day using a prototype version of TruTest's new DataHandler. This device is a battery powered, hand held unit being manufactured as a single purpose device for milk weight collection. We are encouraged about the future possibilities of the DataHandler system.

Future plans include use of a panel reader system to help automate RFID reads.

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