



Western Dairy News

July 2005
Volume 5, No. 7

for the West, about the West, from the West

Reaping a management bonanza from a regulatory requirement

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Many times, we are faced with implementing regulations that seem to have no benefit to the day-to-day operation of our dairy herds. We question why they have to be implemented. However, the upcoming national identification program is a potential "goldmine" to linking accurate cow identification to management action lists, as well as milk weight input for herd recording. The identification system will have direct application into how we track animals on a daily management basis, as well as dramatically increasing the accuracy of animal identification.

Recently, much publicity has been directed to the need for the U.S. to have a reliable and efficient method of tracking and finding livestock during an animal health investigation, or when an animal health emergency occurs. Success of the plan when fully implemented requires the ability to correctly and accurately track each animal back to the herd or premises that is the most logical source of a disease. Its long-range goal is to establish a system that can complete the source identification within 48 hours of discovery of a disease.

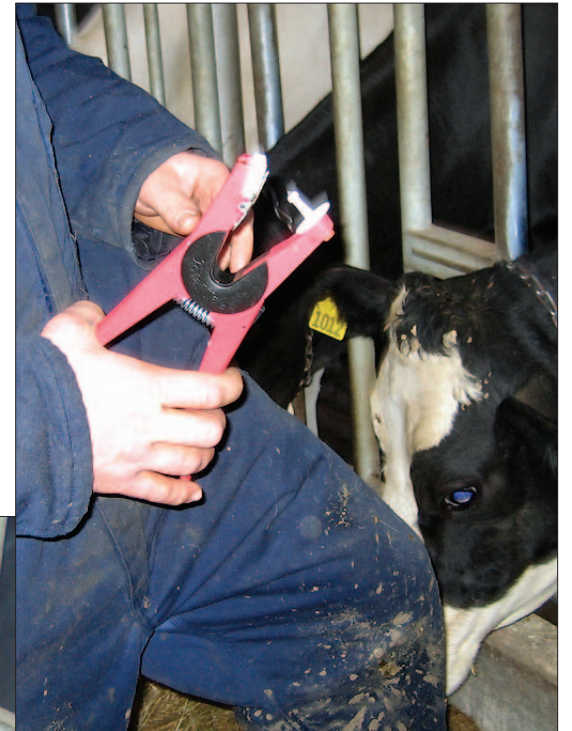
Herd recording benefits.

Although the program is aimed at traceback, the system could have a major impact in herd recording. The system is based upon each animal receiving a permanently affixed Radio Frequency Identification

(RFID) eartag.

RFID tags are called passive devices. This means that they have no battery to deliver power, but instead operate by means of induced voltage.

Under the plastic coating of the eartag is a coil of copper wire, which is the antenna. This connects to the electronic chip containing the unique electronic number. The electronic identification (EID) works because a



hand held reader or panel reader generates an alternating electro-magnetic field.

When the tag comes into proximity of the field, the interaction induces a small voltage in the antenna coil of the tag. Once the voltage reaches a specific level the elec-

tronic chip in the tag turns on and simply transmits the unique number to the reader. When the data has been collected by the reader, various methods are employed to move EID to a computer or hand held device, such as a Palm or Pocket PC.

One interesting technology that may be used to accomplish this data flow is

Bluetooth wireless technology. Like infrared, Bluetooth is a cable replacement technology for passing information between devices. However, devices using Bluetooth do not have to be pointed at one another, the distance between

Western Dairy News is a collaborative effort of Dairy Specialists from:



Production effort for Western Dairy News is generously sponsored by Monsanto Dairy Business

(continued on next page)

devices can be much greater, the speed of transmission is much higher, and the data passed can be encrypted and secure. Despite these powerful features, battery consumption is relatively low. The importance of this technology is the lack of wires.

How does this help in dairy management? One of the greatest challenges in dairy management is to link the cow accurately to the data being recorded for that animal. Historically, eartags have played an important role, but cows lose them and the letter/numbers become unreadable.

These are just the problems with the physical tag itself. Once it is read, was the number read, recorded, and entered correctly into the herd management system? Especially in recording milk weights, when records were entered centrally they were always keyed a second time to verify the data entry.

With on-farm data entry, verification no longer takes place at a central location. However, since data entry takes place at the point of origin, some of the problems with missing records might be eliminated. The ultimate error occurs when the wrong cow is identified to be culled. One large producer estimates this loss to be three percent of those culled!

May reduce data problems.

If RFID tags are affixed to a cow's ear, why not incorporate that system in your normal management software? By electronically tying that cow to the data entry process, many data reading and entry problems can be eliminated. Since tags are affixed in a portion of the ear close to the cow's head, the potential for loss is virtually eliminated.

One example of how RFID is incorporated are several applications that have been built using PCDART, a herd management

program used by 14,000 producers nationally. The process for using RFID is:

RFID eartags are affixed to each cow. The farm database that contains all cows, is synchronized with a handheld PC. Using a Bluetooth wand, each cow's RFID eartag is read. A screen appears on the handheld with the RFID number, and the visible eartag of the cow to which it is affixed is recorded.

The producer is able at any time to transfer the handheld PC database to the on-farm database; thereby adding the RFID database values to the on-farm database. The cow is now tied electronically to the database. Synchronization of the RFID tag to the cow has been accomplished with this activity. It is done only once for the life of that cow in that herd.

The producer then creates reports just as he has done previously. The RFID number, per se, is not included on the list because that link has already been created. Whenever a cow is wanded, if she is on the transaction list her number will appear on the screen or an audible beep or sound will be emitted.

This technology is opening new areas for using herd management. For example, how do you identify cows that are in the wrong pen? Do you take a list that has pen number and tag number and then read each cow's ear tag? This is time consuming. However, once cows are in the headlocks, take the wand and ID each cow. If she is in the wrong pen, an audible beep sounds and the PC displays the correct pen number. If you have a "daily to do list", wand the cow and if some activity is on the list, that task appears. Since you are reading ID electronically, you have THE correct cow.

On test day, RFID is opening a whole dimension in increasing accuracy in cow identification. Once the cow is in the parlor, she is wanded. By wanding the cow to that

milking location, you have the correct cow to the correct location. Using a handheld unit, milk weights are entered either electronically with a barcode device, or by a hand entry system. Vials could also be encoded with barcodes that are then tied to the cows.

In the past, these links relied on a technician hand-numbering vials and then tying sample vials to cows to milk weights. With this RFID system, these three facets are electronically combined, significantly reducing error.

By using RFID panel readers to operate cutout gates, a cow that needs some designated action could automatically be sorted. With a panel reader, much of the management activities previously restricted to herds that had transponders has now moved to a system that virtually everyone has the opportunity to use. Accurate identification of the cow electronically is the secret to the program.

Regulatory data reminders.

What about the regulatory part? Again, entering an event which triggers necessary notification activates a tab on the menu that indicates you need to send data to the national center. This is handled seamlessly within the program. DRMS has created the necessary links to move the data to its necessary destination.

What about cost? RFID tags cost under \$3 and the scanner technology is readily available from commercial sources for producers who wish to purchase them. If a producer does not want to purchase the technology, DHI technicians will be equipped to operate the ID system.

RFID significantly increases the accuracy of cow identification. By utilizing a regulatory requirement, dairy producers can increase their profitability by correctly identifying cows and by culling the right cows!

California Extension veterinarian retires

University of California Cooperative Extension veterinarian John Kirk retired June 1 to return to his Texas roots, a fitting end to a career that saw him criss-cross the nation in a series of academic and professional positions at distinguished universities and agencies.

In 1996, he was named dairy Extension veterinarian at the U.C. Davis School of Veterinary Medicine located at the Veterinary Medicine Teaching and Research Center (VMTRC) in Tulare. Working closely with U.C. Cooperative Extension dairy advisors across the state, Kirk was called on to address a wide variety of health and production issues related to dairy cows at the behest of local dairy operators.

"We responded to whatever concerns dairymen may have had," he said.

Mastitis was one of his main areas of



Dr. John Kirk

focus. Kirk studied the use of fly ash, a byproduct of cogeneration, as cow bedding. Fly ash was found to inhibit bacterial growth longer than commonly used lime and limestone.

He also studied the use of commercially processed chicken litter for dairy feed and the possible connection between wild birds and salmonella found on dairies. Chicken

litter was found to be free of pathogens and wild birds were found to have little to do with carrying salmonella onto dairies.

Recently, Kirk and his colleagues had been studying cow carcass composting as a practical and environmentally sound method of on-site disposal. Although it is currently illegal to compost mammals in California, the information will be vitally important if California

experiences a catastrophic disease problem such as the 2001 foot-and-mouth disease outbreak in the United Kingdom.

Dr Kirk is a strong supporter of and primary contributor to *Western Dairy News*, a cooperative effort by Western dairy specialists. The success of this newsletter rests

very much with him.

During retirement, Kirk will spend time with his family in Texas and continue his six years of volunteer involvement with the Christian Veterinary Mission. In particular, he plans to work with Brazilian dairy farmers on preventing mastitis and improving milk quality.

Western Dairy News is published as a service to people interested in the health and welfare of the Western dairy industry. Archives of this publication may be found at:

<http://animalscience-extension.tamu.edu/dairy/wdn.html>

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