

## **Managing Precision Dairy Farming Technologies**

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**P**recision dairy farming is the use of technologies to measure physiological, behavioral, and production indicators of individual animals to improve management strategies and farm performance. These systems have the potential to detect disease and estrus and to evaluate cow comfort by monitoring activity, feeding time, lying time, mounting activity, real-time location, reticulorumen pH, rumination time, and body temperature.

The data provided by a precision dairy farming device is only valuable if it records the data properly for the right cow and is used by the producer. This factsheet will describe problems that researchers at the University of Kentucky have experienced and ways to avoid and manage them.

### **Device management**

Keeping track of which device belongs to each cow will ensure that the data recorded is linked to the correct animal. One way to keep track is to use a paper copy like the one shown in Table 1. The information from the paper copy can then be entered into the computer software program that logs the device's data. Retain the paper copy so that corrections can be made in the case of a data entry mistake.

To prevent problems, double check the cow number and the device number and make sure all handwriting is legible. If a cow is assigned a device different from the one she is wearing, breeding may be done or injections given to the wrong cow. If an incorrect number for a reticulorumen bolus is recorded, it is impossible to find out the correct device number because the bolus is not accessible. When placing devices on cows, have a few people assist to reduce the chance of a mistake. In addition to records of devices, excess activity events (hoof trimming, vet checks, regrouping, etc.) should be noted to allow producers to correctly interpret data and decide whether the data is showing true events for the cow (i.e. is a cow really in heat or did she show excessive activity from another event?).

#### Table 1. Sample recording sheet

Date	Cow Number	Device Number	Assigned or Removed	Entered in Software	Initials



#### **Device placement**

Many devices are designed to attach to a specific area of a cow's body (i.e. the leg). The placement varies between companies and device purposes. A consistent area of attachment across the herd will make it easier to ensure that the devices remain attached.

In rare situations, swelling may occur where the device is attached to the cow, either from the device rubbing against the animal or because the cow gained weight and the device was not loosened. Tightness can be painful for the cow and affect production, so remove the device as soon as swelling is noticed. In some cases the device may be moved to the opposite side of the body (i.e. from the right to the left leg) during the time of healing. If moving the device is not feasible, remove it completely until the swelling is gone.



# Reassigning lost and broken devices

Because producers rely on the devices to make important decisions, when one is lost or not working, it must be replaced as soon as possible to ensure that data continues to be recorded. Take the following steps to change a device.

- Record the information regarding the replacement device on paper in a format similar to the data sheet example shown in Table 1.
- Remove the old device from the cow and attach the new one.
- Enter the information from the data sheet into the software.

If a device is changed on the cow but is never recorded in the software, the producer will never receive data from that particular cow. Unfortunately, it may not always be immediately obvious that a device is not recording. Some software programs create a list of devices that are no longer working. If the software does not have this option, each cow in the herd should be looked up individually every month to ensure that all devices are working.

Devices sometimes fall off of a cow. Missing devices must be noticed quickly to help ensure that data is continuously recorded. With many cows on one farm, it can be hard to see that a particular cow has lost her device. Have a lost and found box where employees can put loose devices. Checking for devices in the whole herd can be incorporated into the milking routine once a month.

Look for devices not recording complete data. The best way to check is to look at the cow's previous record for any empty spaces or blanks in the data. Assign another device if this is the case. If missing information is common in the records of numerous cows, contact a company representative to help you correct the situation. Damaged devices are less likely to work efficiently, so evaluate the exterior condition of devices also.

Reassigning devices can be simple as long as standard procedures are in place. Managing reassigned devices can most commonly be done through management systems, specifically dairy management software (i.e. PCDART or Dairy Comp 305), or an Excel spreadsheet. Some of the precision dairy farming device manufacturers are able to receive data from the dairy management software. Systems that communicate with the dairy management software allow for device numbers to be easily changed through the dairy management software and automatically updated to each system.

Keeping track of devices changing between animals is important for future reference in case systems fail to communicate properly or if a device number is entered incorrectly in the software. Track devices by keeping a handwritten notebook, exporting reports from the software, or recording the data in an Excel spreadsheet.

#### Conclusions

The data precision dairy farming devices provide can be extremely valuable, but only if they are managed properly. Seemingly easy tasks such as making sure device numbers correspond to the correct cow are often complicated by other farm tasks and are sometimes overlooked or forgotten. Improperly managed devices will be a source of frustration rather than a source of information. Keeping the potential problem areas in mind when dealing with precision dairy farming devices and making them a priority in a daily management routine will lessen the risk of mistakes.

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