

# Different animal identification methods and application in disease outbreaks

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## Abstract

Individual animal identification can be useful for veterinarians to assist in management and prevention of disease outbreaks in cattle herds. Multiple methods exist for individually identifying cattle and the primary consideration matching the utility and expense of the tag with the desired goal for identifying the animal. Animal disease traceability is an important aspect of regulatory veterinary medicine, and each practitioner plays a role in maintaining a consistent, safe supply of U.S. beef. Individual animal identification can be useful in managing a production-level disease outbreak to more rapidly identify commonality among affected cattle. One example of using data to make decisions is visualizing pregnancy distribution data to narrow differential diagnoses. Multiple methods of individual animal identification are available and veterinarians have an opportunity to work with their clients to capture value from a system to collect data.

**Keywords:** cattle identification, disease outbreak

## Introduction

Multiple methods exist to provide individual animal identification. These methods have evolved from a visual identification to forms of electronic identification including low frequency and ultra-high-frequency tags. There are benefits and challenges with each type of system and consideration should be given to the utility in a specific operation before selecting a specific technology. Animal identification may be important in a variety of areas related to disease management including regulatory work, disease diagnostics, production improvement, assessment of therapeutic interventions, transfer of information between segments of the industry, and automated data collection. While a variety of mechanisms exist to collect and manage data, veterinarians can often provide significant value by using data from collected information to improve overall decision-making. The goal of this presentation is to provide two examples of using individual animal identification to add value to beef cow-calf operations: animal disease traceability and reproductive profile evaluations.

## Animal disease traceability: U.S. CattleTrace

Animal disease traceability is an important aspect of veterinary regulatory medicine. Many reportable diseases are investigated across the country annually. Currently, the animal disease traceability requirements are focused on mature animals and do not include young beef animals. A foreign animal disease could have large impacts on the ability to sell cattle, market prices, access to export markets, and the ability to move cattle between operations. A rapid, easily accessible, cost effective national animal disease traceability system could be a good insurance policy to limit losses in the event of a disease outbreak.

Data privacy and security are important to many cattle industry participants. The U.S. CattleTrace program ([www.uscattletrace.org](http://www.uscattletrace.org)) is a non-profit, producer-led organization promoting animal disease traceability in the cattle industry. This program involves providing a system moving at the speed of commerce allowing tracking minimal data (animal ID, date, time and location of sighting) to facilitate rapid response in the case of a disease outbreak. The U.S. CattleTrace program involves all segments of the beef supply chain and participation of veterinarians in this program is important for long-term success.

## Identification to promote reproductive success

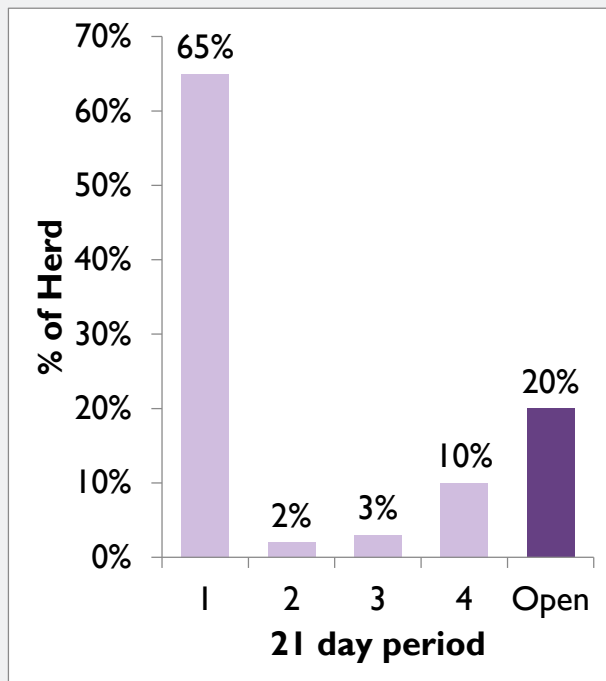
Individual identification in the mature cow herd is beneficial to facilitate data collection and analysis to evaluate reproductive success. Several key reproductive parameters (pregnancy rate, length of breeding season) can be collected at the herd level; however, utilization of individual identification allows the cows to be sorted to relevant subgroups. These groupings can be based on age at breeding, pasture, sire group or other parameters to more easily identify potential reproductive issues.

The herd reproductive profile consists of the total percent pregnant, the percent pregnant in the first 21 days of the breeding season, and the length of the breeding season. The goal for pregnancy rate after a 60-day breeding season is 95% or greater with 60-65% of the cows calving in the first 21 days of the calving season. Another 25% of the herd should calve in the second 21-day period followed by 10% of the herd calving in the last 21-day period. Evaluation of this calving pattern can provide a diagnostic tool, especially if the herd data are filtered to evaluate potential differences in pattern by sire group, cow age or body condition.

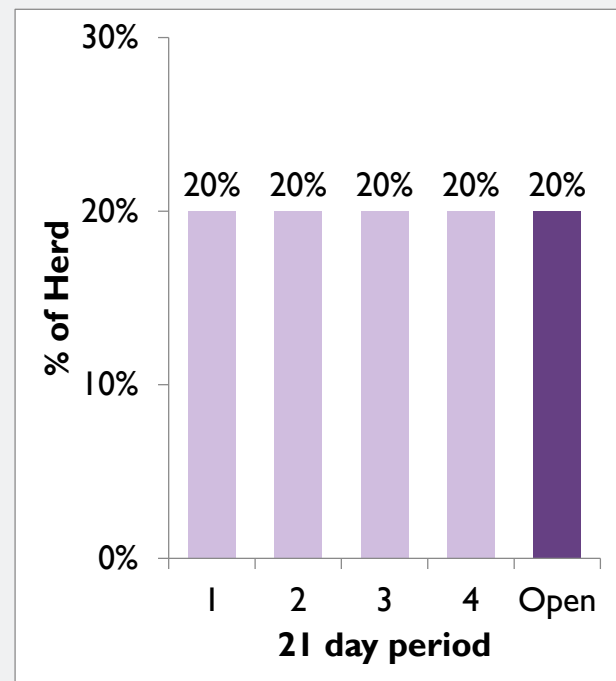
Modifications to this ideal calving pattern (either increases in length or changes in distribution) may result from changes in management or disease problems. Figure 1 represents a dramatic drop off in breeding rates and is primarily associated with an acute bull injury in a single sire paddock. This may occur in multi-sire situations if the injured bull is dominant over the fertile bull. Infectious disease rarely causes a pattern like this; however, it is possible if an animal carrying a venereally-transmitted disease is introduced after breeding season initiation.

Figure 2 represents a slow and steady pattern that may be due to infectious reproductive loss. This pattern may also be observed as a long-term consequence of not actively front-end loading the breeding season. The patterns displayed are examples of how herds with similar percentages of open cows may actually have much different problems and require specific interventions. Using the pregnancy histogram as a diagnostic tool provides the practitioner a cost-efficient method of generating a prioritized differential diagnosis list.

**Figure 1:** Example pregnancy histogram in a cow-calf herd.



**Figure 2:** Example pregnancy histogram in a cow-calf herd.



## Conclusions

Individual animal identification is valuable when used in appropriate mechanisms. Animal disease traceability can be an important facet of many operations to provide business continuity in the event of a disease outbreak. Production data can be used at the cow-calf level to assist with narrowing the differential list when reproductive costs occur. Veterinarians have the opportunity to both provide and capture value by providing producers with an individual animal identification system that fits specific operational needs.

