

# Animal Identification



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## Ruby Ward, Ph. D.

Department of  
Economics and  
Cooperative  
Extension Service  
Utah State University  
Logan, Utah  
rward@econ.usu.edu

## Potential Benefits of Production Information to Cattle Producers

### Overview

With the National Animal Identification System (NAIS) becoming a closer reality, a question many may ask concerns what the direct benefits of the NAIS will be for cattle producers or ranchers. Potential benefits of the NAIS can be categorized in three ways. The first category relates to food safety, a second related category is bioterrorism, and the third category is the potential benefits from increased production information that can be facilitated by animal identification (ID). Food safety and the threat of bioterrorism are the driving forces behind the NAIS. The BSE events in the United States and Canada as well as an increased risk of bioterrorism have brought the need for the NAIS to the forefront. While addressing both food safety and the potential for bioterrorism provide obvious indirect benefits to producers, potential benefits from the NAIS also arise due to the potential for increased production information flowing along the marketing channel.

### The NAIS, Food Safety and Bioterrorism

Food safety is one of the driving forces behind the development of an animal ID system in the United States. The occurrences of BSE in Canada and the United States have heightened the awareness of the need for a national tracking system for animals. The NAIS would allow traceback of an infected animal within 48 hours. This would allow quick isolation of infected animals as well as any herdmates that may have potentially been infected with BSE or other potentially serious animal diseases (such as Foot and Mouth Disease, Brucellosis, etc.). It would also allow for targeting and isolating food products that might have been produced from the animal(s). The benefits to producers are both increased consumer confidence in the safety of their food supply in the event of an outbreak and smaller losses from decreased exports than what would have occurred had an animal ID system not been in place at the time of a food safety event. With a system that can quickly identify infected animals, other countries will probably be slower to close their borders and quicker to open their



borders. This indirectly helps cattle producers by making domestic consumption of beef less sensitive to a BSE event or other major animal disease outbreak such as Foot and Mouth disease.<sup>1</sup>

While exports are still a relatively small part of total beef production (about 8-10%), a loss in export demand will have a significant negative impact on domestic prices. The price elasticity for beef (the percent change in the quantity of beef demanded given a 1% change in price), is approximately -0.62 (Huang, 1996). Taking the inverse of the price elasticity yields a rough estimate of the price flexibility that is the sensitivity of price to changes in quantity.<sup>2</sup> The inverse of the price elasticity yields an estimated price flexibility between 1.5 and 1.6. This suggests that if exports were shut off, the immediate effect would be a 15% drop ( $1.6 * 9\%$ ) in the price of beef.<sup>3</sup> This is indeed similar to the effect experienced in the market after the BSE announcement in December 2003, which resulted in Japan and other major importers of U.S. beef cutting off imports from the United States. Lower wholesale and retail prices for beef will be passed on to the cattle producer. Consequently, a program such as animal ID that will help support both domestic and foreign demand for U.S. beef will also help producers in the event of a food safety or bioterrorism event.

## The Potential Value of Increased Production Information to Producers<sup>4</sup>

Another potential benefit for cattle producers from the NAIS arises from increased production information flowing along the marketing channel. The marketing channel consists of all stages (owners) that a product passes through getting from the earliest producer (cow-calf operator) to the final consumer.

A system that captures relevant information and that helps control and improve quality is an essential element for producing products rather than just selling commodities. The less that is known about the product, the more one undifferentiated product seems as good as another, and low price becomes the chief consideration in buyers' purchasing decisions. Products that are perceived to be high quality because they are differentiated in some way are typically not sold for the same price as undifferentiated low quality products. If additional information can be captured or attached to products, and then used to improve the quality of the products, there is the potential that those products will be perceived as providing high quality. They can then be priced above other products with less information attached to them that are not working to improve the quality of the product.

<sup>1</sup> Foot and Mouth Disease is not communicable to humans.

<sup>2</sup> Using the inverse of the elasticity to estimate the flexibility ignores any cross-price effects with other products and is actually an upper bound for the price flexibility.

<sup>3</sup> It should be noted that the price elasticity used here is an "own price" elasticity. This does not take into account the effect of cross-price elasticities. A cross-price elasticity is the percent change in the quantity demanded of beef when the price of another good (such as a poultry) changes by 1%. The change calculated here is an upper bound.

<sup>4</sup> The information presented here only covers the potential benefits on implementing the NAIS. There are also questions yet to be answered about possible costs incurred, producer liability, and other potential risks. While the total amount of risk in the system may not change, producers worry that risks may be shifted upstream to them since they would no longer be anonymous in the marketing channel following the implementation of animal ID. Please refer to the fact sheets by Roberts and O'Brien (2004a and 2004b) dealing with liability and confidentiality to obtain more information on this issue.



For example, if nothing but the weight of the animal is known when a 500 pound calf is sold, its price is the same as every other 500 pound calf. However, if there is a higher probability that this calf will perform well in the feedlot (would finish faster) and would grade higher than other calves when processed, then the calf will be more valuable to the purchaser, the rancher who could provide this additional expected performance information (information such as breed and other genetic information, health information, etc.) could receive a premium price.

With the NAIS there is the potential for carcass and other productivity information to flow back and forth from the packer, the feedlot, and the rancher. The rancher could then use this information to assist in making breeding and culling decisions. Over time, the genetic performance of the herd would increase. The rancher could cull cows whose calves perform poorly at the feedlot and/or grade below Select. Heifers of cows whose calves performed well in the feedlot and grade above Select would be retained in the herd. Through a selective culling program based upon true performance characteristics (carcass and feedlot performance information), the average performance of the herd and the quality of the end beef products would be more likely to improve.

There is the potential for price premiums for herds whose calves perform above average. Many packers are using a grid system to price cattle where the price is dependent upon the actual characteristics of the carcass and the quality of the final meat products. Conse-

quently, selecting genetics based on carcass or other performance measures should be beneficial to cattle producers.

Only a portion of animals are currently priced based upon performance data flowing along the marketing channel. However, in the future some packers may require an animal ID program and additional information about the animal to be available as a condition for selling to the packer. Then a program where production information is tracked and attached to the animal becomes a market entrance requirement. Consequently, animal ID may have the potential to provide important production information and may be a key element of market access.

Another potential benefit of the NAIS is that any product characteristics requiring verified information could be more easily verified through third party audits. The animal could be tracked and production and process information could either follow the animal electronically directly through the marketing chain or be available from the producer.

Producers must usually pay a fee to obtain information on feedlot performance and carcass quality from both the feedlot and the packer. However, the cost of the obtaining and analyzing the information may be less than the potential benefit of having information to increase the herd quality is worth. Each producer will need to weigh the potential benefits from receiving this information and providing it to others downstream in the marketing channel against the cost of obtaining the information.



## Conclusions

The NAIS could help decrease the market risk to the beef industry from a threat of food safety and bioterrorism. However, questions still need to be answered about the liability producers face from a NAIS. Increased production information may have the potential to increase overall herd quality and generate premium prices for the rancher. Eventually, as the overall quality of beef in the industry increases, ranchers who are slower to increase herd quality may be in a less favorable position than those who have developed the ability to provide this type of information to downstream firms in the marketing channel.

## References

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