Risk reallocation in a whole chain traceability system

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As the beef industry considers implementing whole chain traceability, several challenges need to be addressed in order for it to benefit all participants. One of the biggest challenges from an economic standpoint will be the reallocation of risk. In the current marketing system, if there is an animal disease event, it is unlikely that the outbreak could be traced back to a specific producer. At best the outbreak will be traced to a region or group of producers (Figure 1). This anonymity means that in an event, all producers in that region incur loss. In contrast, the records maintained in a whole chain traceability system would enable the outbreak to be traced back to a single producer (Figure 2). This producer would then bear the entire economic loss, which could lead to the loss of their business. This is a strong disincentive for individual participation in a traceability system.

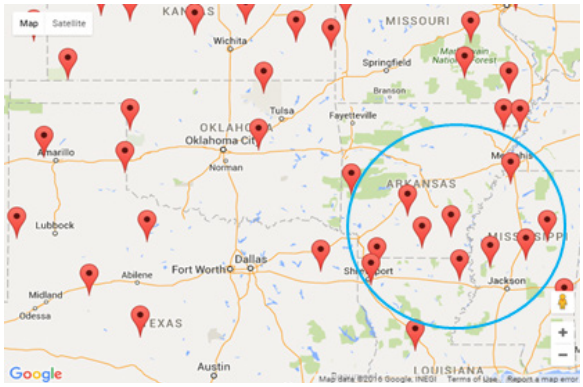

Figure 1. Currently regulators might only be able to trace an animal disease event back to a group of producers; for example, those producers inside of the blue circle above, might bear or share in the consequences of containing and/or resolving the animal disease event.

Although a whole chain traceability system could benefit users by helping them prove their operation was not involved in the outbreak, many are concerned about the allocation of risk. Producers might find it worthwhile to pay a small amount as part of a group rather than risk bankruptcy. This would be something like buying fire insurance for your house.

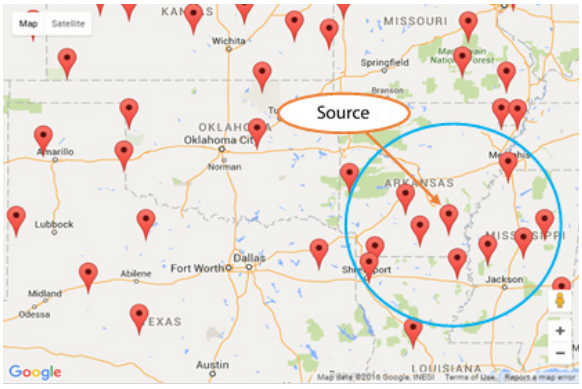

Figure 2. In a whole chain traceability system, the animal disease event could potentially be traced directly back to the source. In this case, the economic cost of containing and/or resolving the animal disease event would not be shared and could put the identified beef operator out of business. This is a critical disincentive to participate in a traceability system.

One potential solution our team is working on is the development of an insurance or indemnification system. This system would compensate those who face a significant loss because an event is traced back to them. Some questions to be answered are:

1) How much is reasonable compensation?
2) How could abuse of the system be prevented?
3) How much subsidy would be needed?
4) Should producers, stockers, and processors be treated differently?

In addition to the value-added and food safety benefits of a whole chain traceability system, the gains to the beef industry from having a traceability system that can limit the effects of animal disease events are potentially very large. Researchers at Kansas State University have estimated that traceability could have substantially limited the $3.2 billion to $4.7 billion losses the industry experienced in 2004 due to export restrictions alone after discovery of an animal with "mad cow" disease. Similarly, Pendell et al. (2010) estimated that that up to 25% of the U.S. beef could be unacceptable in international trade because of a lack of product traceability; a potential loss of $6.65 billion. The challenge is to design a software program that provides the benefits of whole chain traceability for improving food safety and limiting the harmful effects of animal disease events while providing enough protection to producers so that they are not discouraged from participation. A whole chain traceability risk reallocation system will require sustainable input and buy-in from the beef industry and government agencies who would be involved in such events.

While there are significant challenges remaining in implementing a whole chain traceability system in the U.S., there are many potential benefits -- improved food safety, limiting the catastrophic effects of animal disease events, improving cattle management, and increasing value-added opportunities -- that could create a win-win situation for all involved.

For more information about the NWCTI system, contact Dr. Michael Buser using the information below. YouTube videos related to the NWCTI system can be viewed at: https://goo.gl/MwPhoS.

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Pendell, D. L., G. W. Brester, T. C. Schroeder, K. C. Dhuyvetter, and G. T. Tonsor. 2010. Animal Identification and Tracing in the United States. American Journal of Agricultural Economics 92(4): 927-940.

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