

White Paper

Strategy Forum on Livestock Traceability

Information synthesized from the National Institute for Animal Agriculture's Forum, "Strategy Forum on Livestock Traceability" conducted September 25-26, 2018, in Kansas City, Missouri. Full presentations are available online at www.animalagriculture.org.

DISCLAIMER: The information provided in this White Paper is strictly the perspectives and opinions of individual speakers and discussions at the 2018 Strategy Forum on Livestock Traceability

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Background

The forum, “Strategy Forum on Livestock Traceability”, conducted September 25-26, 2018, in Kansas City, MO, was the third livestock disease traceability forum hosted by the National Institute of Animal Agriculture (NIAA). The forum brought together one hundred forty (140) livestock industry professionals, and included producers, producer organizations and other industry leaders; representatives of livestock markets; veterinarians; representatives of identification and data technology companies; and United States and Canadian regulatory animal health officials. The goals were to review the current state of livestock traceability and obtain stakeholder input regarding the its continuing advancement; discuss implementation of livestock identification, database management and data sharing; review recommendations for advancing livestock traceability and electronic health records; and discuss traceability and global trade.

Over the last decade, livestock traceability has been the focus of numerous discussions. In 2012, the Animal Disease Traceability Rule became law. In 2017, the USDA undertook a comprehensive assessment of the ADT program. In 2018, several traceability projects and initiatives are in place around the United States, and the discussion has begun to yield tangible solutions. There continue to be many questions and challenges, and this Forum provided an opportunity for stakeholders to review the initial successes and obstacles encountered in traceability pilot projects, explore the experience of incorporation of technology into traceability, evaluate the future direction of traceability both nationally and internationally, and discuss the ongoing evolution of traceability.

The NIAA is a non-profit, membership-driven organization that unites and advances animal agriculture for the challenges facing animal agriculture industries (aquatic, beef, dairy, equine, goat, poultry, sheep and swine). NIAA is dedicated to furthering programs for the eradication of diseases that pose risk to the health of animals, wildlife and humans; promoting the efficient production of a safe and wholesome food supply for our nation and abroad; and promoting best practices in environmental stewardship and animal health and well-being.

The 2018 Strategy Forum on Livestock Traceability was funded in part by the USDA, Allflex USA, Inc., American Angus Association, Animal Health International, Beef InfoXchange System (BIXSCo, Inc.), Datamars, Inc., Fort Supply Technologies, IMI Global (A Division of Where Food Comes From, Inc.), ITS Global, Livestock Lens, Micro Technologies, PowerCalf Mobile, and Y-TEX Corporation.

Purpose and Design of the Forum

The purpose of the forum was to bring together livestock industry leaders and animal health officials to discuss the current state of animal disease traceability, the progress of traceability initiatives, and the future advancement of traceability. The objectives were to provide details on current livestock traceability initiatives and projects; offer the perspective of dairy and beef industry officials, state veterinarians, and data management professionals on the current and future directions of livestock traceability; provide progress updates from Cattle Traceability Working Group subgroups and discuss future steps; and discuss the implications of livestock traceability around the world. Forum participants gained an understanding of current collaborations for advancement of identification and traceability, as well as unique insight into the views and initiatives of the various segments of the industry and government.

Forum Planning Committee Members

Mr. Glenn Fischer, Allflex USA, Inc.

Mr. Chuck Adami, Equity Cooperative Livestock Association

Mr. Adam Brock, Dairy Farmers of Wisconsin

Mr. Joe Leathers, 6666 Ranch

Dr. Justin Smith, Kansas Department of Agriculture

Forum Topics and Speakers

(in order given at the forum)

Welcome and Opening Remarks, Mr. Garrett Hawkins, Deputy Director, Missouri Department of Agriculture and Mr. Gregory Ibach, Undersecretary of Agriculture for Marketing and Regulatory Programs

Traceability Advancement Updates, Jack Shere, PhD, Deputy Administrator and Chief Veterinary Officer, USDA-APHIS-VS

Panel Discussion: Livestock Traceability Initiatives and Projects, moderated by Nevil Speer, PhD, NIAA Board Chair

Panelists:

Justin Smith, DVM, State Veterinarian, Kansas Department of Agriculture

Mr. Ross Wilson, President & CEO, Texas Cattle Feeders Association

James Averill, DVM, Director of Agriculture, Michigan Department of Agriculture & Rural Development

Data Collection: Coercion of Collaboration, Mr. Chip Kemp, Director, International Genetic Solutions

Panel Discussion: Producers, moderated by Mr. Joe Leathers, General Manager, 6666 Ranch

Beef Industry Perspective, Mr. Matt Teagarden, Chief Executive Officer, Kansas Livestock Association

Beef Producer Perspective, Mr. Brian Bell, Owner, Square B Ranch & Cattle Company

Dairy Industry Perspective, Mr. William Avila, Pocket CowCard Product Lead, Valley Ag Software

Panel Discussion: State Veterinarians, moderated by Justin Smith, DVM, State Veterinarian, Kansas Department of Agriculture

Florida Animal Disease Traceability, Diane Kitchen, DVM, PhD, Veterinarian Manager, Bovine Programs, Florida Department of Agriculture and Consumer Services

Oklahoma Animal Disease Traceability, Rod Hall, DVM, State Veterinarian, Oklahoma Department of Agriculture

Animal Disease Traceability in Colorado, Keith Roehr, DVM, State Veterinarian, Colorado Department of Agriculture

Panel Discussion: Data Management, moderated by Mr. Glenn Fischer, President, Allflex USA, Inc.

IMI Global and Data Management, Ms. Leann Saunders, President, IMI Global (A Division of Where Food Comes From, Inc.)

MFA Health Track and PowerCalf: Making Data Valuable, Mr. Mike John, Director, Health Track Operations, MFA Incorporated

Data Management in the Dairy Industry, Mr. William Avila, Pocket CowCard Product Lead, Valley Ag Software

Data Management and the American Angus Association, Ms. Ginette Gottswiller, Director of Commercial Programs and AngusSource, American Angus Association

Making Standards and Technology Work, Mr. Paul Laronde, Tag & Technology Manager, Canadian Cattle Identification Agency

Cattle Traceability Working Group Updates, moderated by Mr. Glenn Fischer, President, Allflex USA, Inc.

Responsibilities and Opportunities Subgroup, Co-Chair Mr. Chuck Adami, President & CE, Equity Cooperative Livestock Association

Collection Technology Subgroup, Co-Chair Ms. Shannon Wharton, Research Manager, Hy-Plains Feedyard, LLC

Information Liability Subgroup, Co-Chair Mr. Ross Wilson, President & CEO, Texas Cattle Feeders Association

Data Storage and Access Subgroup, Co-Chair Chelsea Good, JD, Vice President of Government and Industry Affairs, Livestock Marketing Association

Global Market Traceability Dynamics, Ms. Leann Saunders, President, IMI Global (A Division of Where Food Comes From, Inc.)

Wrap Up, Nevil Speer, PhD, NIAA Board Chair and Forum Moderator

Executive Summary

Traceability is fundamental to many key aspects of the food industry. Primarily, it helps facilitate transparency and consumer trust, both domestically and internationally. This trust is critical as consumers increasingly desire more information about where their food comes from. At the same time as consumers are demanding more information, the cattle industry is growing to accept a major platform that can provide that information: electronic identification (EID). Incorporation of EID is increasing among both beef and dairy cattle, and additionally, as indicated by the Beef Industry Long Range Plan¹, the beef industry has begun to acknowledge the important role of birth-to-slaughter animal traceability in rapid disease mitigation and response.

The Animal Disease Traceability (ADT) rule is designed as a basic bookend system, with the goal of identifying animals at the birth herd and at slaughter. The system was set up as a basic foundation framework to be expanded over time. The two basic requirements are the identification of livestock with 'official identification', and the documentation of livestock when traveling across state lines. In 2017, using feedback from a series of listening sessions around the country, the ADT State/Federal Working Group developed a list of fourteen points² to address the key issues with the ADT rule and its implementation (Appendix 1).

Just one year later, two statewide traceability pilot projects have been developed in Kansas and Texas which incorporate input and cattle not only from their home states, but also Florida and Kentucky. Michigan continues to support traceability with an animal identification requirement that has been in place for eleven years. While each of these states is in a different stage of progress with their traceability initiatives, all have experienced both successes and challenges as they develop their approaches. Key to the success of every project is industry involvement, communication and education.

As the producers that comprise industry consider traceability, cost and data confidentiality are significant concerns, and education is crucial to addressing these concerns. Three main educational points include: the insurance provided by a traceback absolves a well-managed farm of suspicion; value-added capabilities of EID and traceability; and the knowledge available through the traceability system which can be used to improve management, enhance genetics, and ultimately generate profit and increased marketability. For a state like Kansas that has undertaken an extensive animal identification initiative, the real value-addition for producers is the infrastructure that is being implemented to read tags and facilitate information transfer between producers, markets, and slaughter.

Tracebacks and animal disease investigations are activities undertaken by state veterinarians on a daily basis. The availability of traceability data increases the speed of these investigations from weeks or months to just minutes, and access to this data by State Animal Health Officials (SAHOs) is paramount to the effective control of livestock disease. Sharing of basic traceability information between privately held databases and SAHOs is critical to the success of animal disease control. Current data-sharing capabilities are limited, and more research and development is needed in this area. One promising research focus is the development of applications (apps) that provide tools for whole herd data management as well as the collection of basic traceability information. Breed associations, producer

organizations, and several large private producers have recognized the utility and potential for significant increase in market value provided by such apps. As this area of traceability development grows and gains acceptance, standardization of data platforms must also be considered, in order to best facilitate communication and data-sharing.

The Cattle Traceability Working Group was initiated in 2017, at the conclusion of the second Strategy Forum on Livestock Traceability. The Cattle Traceability Working Group is an independent group of producers, producer organizations, livestock marketing associations, electronic identification manufacturers, breed associations, state animal health officials, and others, coming together for the following purpose:

“to work collaboratively across the various segments of the cattle industry to enhance the traceability of animals for the purposes of protecting animal health and market access. The overarching goal ... is to enhance cattle identification and traceability to a level that serves the needs of producers, marketers, exporters, and animal health officials.”³

The Cattle Traceability Working Group (CTWG) is composed of five subgroups: Communications & Transparency, Collection Technology, Responsibilities & Opportunities, Information Liability, and Data Storage & Access. Over the past year, these subgroups have focused on issues related to the cattle population covered by the ADT rule, including: official identification of beef feeders; electronic identification for beef cattle; data confidentiality and liability; and the use and integration of public and private systems to store traceability and other animal data. The CTWG uses the fourteen points² of the USDA as a guide to address these issues. They will continue elicit stakeholder feedback while working to answer the questions surrounding each of these issues, in order to make recommendations to the USDA and all involved stakeholders regarding how to continue to move animal disease traceability forward.

Finally, full traceability offers the promise of access to lucrative global export markets. The state of animal disease traceability in the United States is currently adequate to meet international traceability requirements, but will not maintain international markets in the face a significant domestic disease event. Expansion to a comprehensive traceability system which maximizes individual EID of cattle will require continued building of domestic support through education of producers regarding the insurance, value-added capabilities, and knowledge that can be provided through that system. Including this comprehensive traceability as a significant part of the United States export program will keep United States competitive in this world market.

There has been a shift in United States traceability. Early innovators and adopters have accepted traceability and electronic animal identification. Polls indicate that the majority of producers are moving towards cautious general acceptance.⁴ There is a need for education and communication in order to emphasize the ‘why’ to support and expand this move towards acceptance. In the process, we must address data-sharing and confidentiality, cost, and infrastructure. We are making this happen, but we need to ensure that we maintain the momentum. Through continued communication, education, and innovation, we can realize the robust traceability system envisioned to keep the threat of animal disease at bay.

Presentation Highlights

Opening Remarks

Garrett Hawkins, *Deputy Director, Missouri Department of Agriculture*

Gregory Ibach, *Under Secretary of Agriculture for Marketing and Regulatory Programs, USDA*

Missouri Department of Agriculture

Garrett Hawkins, *Deputy Director, Missouri Department of Agriculture*

Agriculture is the largest economic driver in the state of Missouri. It's an \$88.4 billion industry, employing approximately 400,000 people. There are 100,000 farms in the state, representing all aspects of agriculture, with livestock operations accounting for approximately half of those farms.

The Missouri state government has two significant priorities that affect agriculture: infrastructure and workforce development. The focus is on the big picture, and much energy is directed toward how to take the 'best crop' – Missouri's young people – and develop and market the training needed to involve the rising generation in agriculture.

United States Department of Agriculture (USDA)

Gregory Ibach, *Under Secretary of Agriculture for Marketing and Regulatory Programs, USDA*

One of the goals of the USDA is to move the beef industry forward in a way the industry can support. We must work to bring federal government, state government and industry together. The Animal Disease Traceability Working Group has been a very important part of that process

USDA believes that the agriculture industry in America wants a government that works for them and listens to them. The three main governing tenants of the USDA are to be efficient, effective, and customer friendly. Animal Disease Traceability (ADT) plays a key role in being able to deliver on the expectations of producers and meet these three tenants.

Although the Farm Bill has not yet passed, there are aspects within in that refer to Animal Disease Traceability and the issues and concerns that the livestock industry has raised regarding managing disease. Although this legislation is not yet confirmed it is important to continue moving forward, and USDA looks forward to working with industry on how to best strengthen ADT capabilities and framework.

Momentum seems to be building within the cattle industry to move forward with a better system for ADT – a system that, among other things enhances emergency preparedness and response. In the event that we do have an animal disease outbreak, finding sick and diseased animals is the key. Our current system, often based on paper, can lead to traceouts that take weeks to months to complete. This delay has the potential for dire consequences. We need to move forward with an electronic system that works with industry – both to maintain existing markets, and as a prerequisite for access to export markets.

Four focus goals of the USDA mirror the goals of the Animal Disease Traceability Working Group. These goals represent a condensed version of the 14 points² published by the Animal Disease Traceability Working Group in 2017.

- 1) Advance electronic sharing of data as needed to protect animal health
- 2) Encourage industry to adopt standard practices of electronic identification for animals that need to be moved with individual identification
- 3) Enhance the overall ability to track animals from birth to slaughter
- 4) Elevate the discussion with states and industry to move to a system where animal health certificates are electronically transmitted from veterinarians to government

The USDA's philosophy is not to define the technology need to attain these goals. It is the role of the agriculture industry to define the technology that works for them, at the speed of commerce. Technology needs are diverse across the country, and the technology that works may take multiple forms. As long as information is able to be shared in the event of an animal disease outbreak, the technology can take as many forms as needed to satisfy the needs of the industry.

As we move forward, USDA will continue to focus on the core responsibilities of prevention, surveillance and outreach infrastructure, and rapid response. Traceability is a key component of these responsibilities – especially rapid response.

Partnerships are essential to USDA's approach. USDA is working with the Kansas Department of Agriculture and agriculture industry partners on the Cattle Trace project – a project that models what traceability might look nationally. The USDA is looking to implement additional traceability projects with other states and agriculture industry partners, building on the lessons learned from the Cattle Trace project. Additional partners include the NIAA, breed associations, and partners throughout the beef supply chain and different segments of the livestock industry. Participation in collaboration with diverse partners is crucial to building consumer confidence nationally and internationally, and continuing to grow the industry in the United States and the world.

Traceability Advancement Updates

Jack Shere, PhD, *Deputy Administrator and Chief Veterinary Officer, USDA-APHIS-Veterinary Services (VS)*

We all work for the betterment of the agriculture that we oversee. State veterinarians work to protect the agriculture within their state. Federal agriculture officials work to protect the country. No one writes regulations to hurt the industry – we are all working to advance the industry.

All sectors of the agriculture industry have different needs when it comes to traceability, and the USDA recognizes the need to develop a multi-faceted approach that supports each sector's needs. To that end, the USDA has developed a multi-part strategy to achieve the four focus goals delineated by Undersecretary Ibach. We must be able to integrate data and develop data standards, fortify the ability to issue and retire electronic identification tags, enhance communication and outreach efforts, provide for financial accountability, and make the regulatory changes necessary to support these goals.

Federal, state, and industry partners all have different ways of managing data. Industry should only be required to share information that is needed during a disease outbreak, but when they do, both federal and state government databases need to have access to this data and the ability to communicate between each other. Currently, states have a range of databases, ranging from the SCS database, to USA Herds, to private individually developed databases. The information needed for animal disease traceability exists, but right now it's difficult to know where to look for it. The USDA is working to identify ways to connect different information systems to access key critical data and addressing the four focus goals is vital to the success of this information sharing.

The first focus goal is data sharing. The data required for regulatory purposes includes only basic traceability data: electronic identification (EID) tag number, date, event type, premises identification number (PIN), state, and which data system holds the data. The goal is to integrate these key elements from state and industry databases with the Animal Health Event Repository (AHER) system, in order to increase the access by the federal government without any need for the federal government to own the data or move records out of their original databases. This arrangement provides rapidly available, detailed data needed for animal disease traceability while allowing the maintenance of stakeholder privacy.

Currently, the USDA is partnering with Michigan and Colorado to share data with the AHER system. Both states use USA Herds but have very different data management models. The collaboration between these states and USDA enables the identification of diverse data sharing challenges and the development of solutions. Other states that utilize USA Herds for data management have expressed interest in participating, offering the opportunity for continued improvement and expansion of state-federal data-sharing capabilities.

The second focus goal is increasing the use of electronic identification (EID). Broad adoption by the cattle industry is critical to the success of animal disease traceability. With the constant movement of animals in commerce, EID is the only solution that can keep pace with the speed of commerce at sales, markets, and ports. The adoption of EID by producers is dependent on the ease of use of the ID and the comfort level of the producer with this new tag. Different segments of the industry are likely to prefer different tag types, and in the end, it is the producers that will decide what works best for their sector. The USDA will not dictate tag technology – their role will be to define the information required for animal disease traceability and the standards for sharing that information. One major change to animal identification that will be dictated by USDA is the phase-out of NUES tags, which will begin in 2019, with the goal of phasing all NUES tags out of circulation.

One major obstacle to the adoption of EID by producers is cost. To address this, the USDA proposes a three-way cost share with producers and states to offset the cost of transitioning to EID. The USDA would offer one third of the tag price. The average cost to producers taking advantage of this arrangement would be approximately 50 cents per tag. Implementation details of this arrangement remain to be determined, but the USDA would like to work this cost-sharing into state-federal cooperative agreements. The bottom line is that the USDA wants to remove barriers and dramatically improve the ease of acquiring EID.

The third focus goal is development of the ability to track animals from birth to slaughter. Kansas is currently participating in a pilot project whose goal is to demonstrate that there is value in voluntary collection of birth herd data. Information gleaned from the pilot project will be used to develop a model that can be used nationally. A key feature of the pilot is to hold birth herd data at either the state or private level, and share with regulatory officials only in the event of a disease trace

Tag retirement is an area in which the USDA has struggled, and is part of the reason for phasing out NUES tags. Between 2012 and 2018, 3.7 million tags have been retired from circulation. APHIS is currently negotiating with 14 slaughter plants to share tag retirement data. Six plants have verbally agreed to share, in addition to the plants that currently share data for veterinary services (VS) program testing. The USDA plans eventually to work tag retirement into state-federal cooperative agreements.

The fourth and last focus goal is to increase the use of electronic health certificates. Use of electronic health certificates ensures the ability of the system holding these records to share data and thus increase traceability. The USAHA leads a group responsible for developing initial data standards which will allow diverse databases to send and receive information via electronic health certificates. Additionally, this group is working to incorporate a better user interface, making electronic health certificates easier and more efficient for use by veterinarians. The USDA and USAHA anticipate the domestic data standards will be used as a baseline for development of international standards, expected to be published in 2021.

In addition to the four focus goals, USDA has identified three key focus areas to advance Animal Disease Traceability: information technology (IT) modernization, standards, and communication and outreach. The USDA has funded a two priority IT projects to support various aspects of traceability. The first is the animal identification management system (AIMS) which enables tag retirement and integrates that data into AHER. The second is the modernization of mobile information management (MIM) which develops a path to share data between diverse databases in the field.

A second key focus area is standards for EID and electronic health certificates. These standards will integrate key data elements, ensuring EID readability, retention, performance in various environmental conditions and consistency with existing standards. The USDA and USAHA have developed initial data standards for electronic health certificates, and an international group is currently working on developing international standards of similar scope.

The third and final key focus area is communication and outreach. In order to achieve set ADT goals, widespread collaboration is needed among all levels of government, regulatory groups, and industry groups. Several pilot traceability projects are currently underway and more are lined up. We need to use the lessons learned from these pilots to identify successes and areas where we need to improve. We need to create common understanding among the industry of the benefits of ADT; communicate expectations of accountability; and find those incentives that will motivate each stakeholder involved.

DISCUSSION

Data Privacy

One forum attendee asked if it would be acceptable for USDA to request data from state animal health officials to request data, then have state animal health officials work with private sector databases to collect that data? Mr. Ibach responded that this description summarizes USDA's vision of how data sharing for traceability would work. Individual producers trust and like working with state officials, and that trust is the basis for success. Dr. Shere also pointed out that holding data costs money, thus having federal access to data without federal holding of data is cost effective, in addition to assuaging privacy concerns.

Les Aldrich with Zia Ag Consultants asked how USDA plans to address producers that have privacy concerns? Mr. Ibach reiterated that USDA is not going to house the data, but will only access the data during an animal disease event. Mr. Aldrich expressed concern that the federal government's ability to access privately held data creates a door through which others may be able to access the data. Mr. Ibach noted that there are ways to be able to lock that door. Dr. Shere added that concerns regarding the holding of data are minor compared to the ramifications of a large scale animal disease event. Mr. Ibach indicated that the focus of USDA is to work with the industry, partner with ranchers and small towns, and provide education so that those concerned about their privacy understand how this sharing of data helps and supports them. Many producers are terrified of an animal disease event, and the USDA is working through the industry to explain how ADT functions as insurance – protecting the producers and their regions from the spread of an animal disease outbreak. The message is that the ability to trace quickly, pinpoint the farm of origin, and shut it down is critical to avoiding unnecessary involvement of unaffected operations. Mr. Ibach conceded that the education approach will not convince all producers. To address those unconvinced producers, the USDA wants to ensure 900 series tags have the same tamper-proof features and unique number featured in the 840 tags, which would offer an alternative EID for producers who are reluctant to fully embrace the federal tag.

One conference attendee asked if there is a timeline for going to all 840 tags and phasing out any others? Mr. Ibach explained that the USDA is currently avoiding timelines, but rather focusing on helping the industry understand what a traceability system offers for them. The timeline will be industry-driven and will progress as the industry comes to understand the threat posed by animal disease and the need for traceability.

Mr. Ernie Birchmeier of the Michigan Farm Bureau pointed out that Michigan has had EID for a long time and has had no issues with data breaches. Michigan has FOIA protections protecting the data at the state level, and he encourages all states to look into putting those in place for agricultural producers. Mr. Birchmeier suggested that we could move to a point where required health certificate information can be provided by the producer instead of the veterinarian. Dr. Shere commented that the difficulty with allowing producers to provide this information is a lack of accountability – there are no consequences to the producer for mis-entering information in health certificates. He did note that some

states allow movement on owner-shipper statements. Mr. Ibach was open to the possibility of accepting two general documents for movement: either a health certificate or a movement affidavit.

Technology and Data Standards

Glenn Fischer of Allflex, Inc. commented that his experience with global venues without data standards is that they tend to collapse. He asked where we are on publishing United States tag standards? Dr. Shere forwarded the question to Dr. Sarah Tomlinson and Dr. Aaron Scott of USDA, who are attending the conference and who have been working on US data standards. Dr. Scott explained that there is an existing set of domestic criteria for eartags regarding attributes such as retention and readability. A team from USDA has been working to update that criteria to reflect current technology and tag needs, and the hope is that these updated standards will be coming in the next month or two. Additionally, the USDA has been participating in an international committee to develop international tag standards. It is difficult to gain consensus across countries, but Dr. Scott is hopeful that these international standards will be published in the next 12 to 18 months.

Dr. Keith Roehr, Colorado State Veterinarian, expressed concern with e-authentication in the event of being in a rural area locked out of the electronic system. Dr. Shere agreed that security is a significant concern. The USDA would like to go to a web-based system, but that hasn't happened yet as protecting information in a web-based system has proved exceedingly difficult. IT and security support are looking into this question.

Chelsea Good with the Livestock Marketing Association remarked that she appreciates the USDA position that industry is best suited to choosing the technology. However, from a marketing perspective, she is concerned about the difficulties in markets of maintaining multiple readers to read multiple types of technologies. Will industry coalesce to choose a single technology? Mr. Ibach explained that we don't know how this will evolve. Answering that question is part of the reason for the pilot projects. Different technologies may become prominent in different sectors of the industry, and the markets will likely support the system that works best with their clientele. Dr. Shere pointed out that the reason USDA is reluctant to identify specifics is that technology changes quickly, and collaboration with industry and flexible in general is the most likely solution to yield results that work within the system.

Renee Strickland of the Livestock Exporters Association asked what happens to EID numbers when dairy or beef cattle leave the US? Dr. Shere explained that when an animal leaves the United States the USDA receives a statement that indicating the tag left the United States, which is the equivalent of a tag retirement.

Rob Jennings of BeefChain (Blockchain Verified Craft Beef) suggested we could bring in a group of people that is not in the agriculture industry who may have solutions on some of the technology problems we have discussed. He encourages USDA to participate in hackathons, presenting a problem and giving participants 48 hours to work through a solution. This focus on nontraditional voices could bring innovative solutions. Mr. Ibach agrees completely.

What if disease is traced back to me?

Shannon Wharton of the Hy-Plains Feedyard voiced a big fear among producers, which is, “What if they trace something back to me?” Mr. Ibach suggested the use of a third party auditor as a way for producers to prove they have a responsible system and management practices in place to protect themselves. He also noted that even without an electronic traceability system, problems at the producer’s operation would still be traced back to them – it would just take longer. Dr. Shere pointed out that without electronic traceability, disease investigations must cast a wider net, and 25 to 30 farms might be investigated instead of just one farm, increasing the amount of time needed for investigation thus increasing the chances of disease spread and the number of operations affected. Electronic traceability offers protection by its ability to rapidly pinpoint disease, as well as provide for a rapid response that stops disease before it has the chance to affect multiple operations. Tracebacks that pinpoint a single farm often don’t locate a specific disease on that farm, but in the event disease is identified on a producer’s operation indemnity is often available for diseases of consequence. Mr. Ibach added that in the future indemnity will be contingent upon the operation having a biosecurity plan in place.

Panel Discussion: Livestock Traceability Initiatives and Projects

Moderator: Nevil Speer, PhD, *NIAA Board Chair and Forum Moderator*

Panel: Justin Smith, DVM, *Kansas Department of Agriculture and Consumer Services*, Ross Wilson, *Texas Cattle Feeders Association*, James Averill, DVM, *Michigan Department of Agriculture and Rural Development*

Kansas Perspective

Justin Smith, DVM, *State Veterinarian, Kansas Department of Agriculture*

The Kansas Department of Agriculture is participating in the CattleTrace⁵ traceability pilot project with USDA. The development of this project began with the 2018 World Perspectives, Inc. study: “*Comprehensive Feasibility Study: U.S. Beef Cattle Identification and Traceability Systems.*”⁶ Kansas took that study and identified seven necessary attributes of a successful traceability system: industry driven, private and public oversight; maintenance of data privacy; equitable to all industry sectors; compatibility with common industry practices; operation at the speed of commerce; and both domestic and international credibility. This review and a supportive climate led to the creation of CattleTrace.

CattleTrace is a collaborative partnership between the Kansas Livestock Association, the Beef Cattle Institute, Innovative Livestock Services (ILS), USDA, and the Kansas Department of Agriculture. The objective is to develop a purpose-built infrastructure, evaluate the efficiency and capabilities of that system and infrastructure, and determine the value of the system and infrastructure throughout the supply chain. CattleTrace is compatible with industry practices, utilizing UHF technology in hands-free operations. Four data points are routinely collected: official ID, GPS location, date, and time.

Currently, CattleTrace is in the process of recruiting participants. Three major beef processors with a Kansas presence are installing readers, with eye toward tag retirement. Fourteen feedyards and seven livestock markets have also agreed to participate. CattleTrace is heavily recruiting cow-calf producers, with a goal of tagging at least 55,000 head of Kansas-based calves. They are working with direct marketing, livestock markets and others, trying to reach all phases of the production system. Readers will be installed at all identified 'pinch-points' where it might be advantageous to gather EID information.

CattleTrace was created as a private entity, partly to address security concerns. As a private entity, CattleTrace is not subject to the same level of FOIA scrutiny as that of a government entity. CattleTrace operates as a not-for-profit organization, with a board of directors composed of producers from throughout the state. The board of directors has signed a data-sharing MOU with USDA and will be signing an MOU with the state animal health department, but the control of the CattleTrace program and all data gathered lies strictly with the board. This arrangement ensures that data will be held securely in a third party database but will still be accessible to regulatory officials in the event of an animal disease event.

The CattleTrace project timeline is detailed in Figure 1.

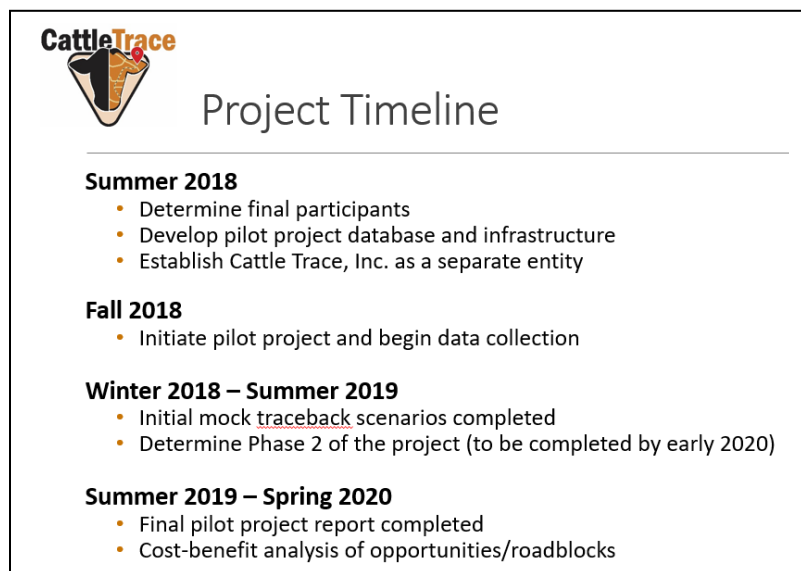


Figure 1. CattleTrace Pilot Project Timeline

There have been three main lessons learned in the process of developing the CattleTrace project: maintain focus, industry is key, and address technology. During pilot project development, Kansas determined that the focus needed to remain on traceability. Value-added options are enticing but distract from the main objective and spread resources too thin. Industry involvement is key, particularly that of cow-calf producers. The biggest question from these producers is, 'What's in it for me?' The answer, and message of this program, is that traceability provides insurance. It's how we know you're

not involved. Additionally, there are management benefits afforded by the infrastructure of traceability. Finally, Kansas elected to limit technology, accepting only the 840 tag and UHF technology, assessing that those were the best fit to allow cattle to move at the speed of commerce.

The first calves tagged through CattleTrace have entered the production system, and Kansas is enthusiastic to start collecting data and determine what the CattleTrace pilot project holds.

Texas Perspective

Ross Wilson, *President & CEO, Texas Cattle Feeders Association*

The Texas Cattle Feeders Association (TCFA) represents the cattle feeding industry in Texas, Oklahoma, and New Mexico. This area is the largest cattle feeding region in the United States, and annually markets approximately 28% of fed cattle in the United States.⁷ TCFA has documented policies supporting animal disease traceability, although there is a significant amount of disagreement within the organization regarding how to accomplish traceability.

TCFA is also participating in a Cattle Traceability Pilot Project with USDA. The details of the project are still being finalized, but like Kansas, the primary goal is disease traceability. Unlike Kansas, however, the TCFA pilot project has an additional goal of exchanging value-added information up and down the processing chain to incentivize producers to participate.

The TCFA pilot project is a multi-agency effort⁸, which started with their association and the southwest association that represents cow-calf and stocker operations, as well as auction markets, feedyards, and retail and packer representatives. The Kentucky Beef Network and Florida Cattlemen's Association both reached out and elected to participate in the pilot project, as major suppliers in the Texas cattle feeding supply chain. IMI Global is the database manager for the project.

The first goal of the TCFA pilot project is disease traceability. EID tags will be applied at the ranch of origin or the first location to which an animal moves, and tag number, location, and date of application will be entered into the database managed by IMI Global. The ability to tag at an alternate tagging site and tie back to the ranch of origin is extremely important. If traceability is to work in the future, a system of alternate tagging sites will need to be in place to ensure the ability to identify all tagged animals to the ranch of origin. As the animal moves through the system, each movement will be recorded via premises ID, physical address, or GPS coordinates, and associated with owner name, phone, and email. This data will be held in a private database but will be available to state animal health officials upon request. The TCFA pilot project has decided to accept both 840 and 900 series tags because many producers have expressed concern about obtaining the premises ID needed for 840 tags. Low frequency tags are the predominant technology currently in use, but the pilot project is exploring the use of UHF backtags to facilitate traceability transactions at the speed of commerce.

The second goal of the TCFA pilot project is the inclusion of value-added incentives, in the form of information provided to producers. Different data will be collected from cow-calf and stockers, feeders, and packers, to be provided throughout the supply chain (Table 1). The project will offer a \$5 per head subsidy to feedyards to provide information on approximately thirty different data points. These collected data points will then be used to provide information back to the producer and throughout the segments of the beef supply chain. The database will also have the ability to accommodate additional data agreed upon between seller and buyer. All will be overseen by 3rd party audit and verification programs.

Table 1: Selected Data to be collected in the TCFA Cattle Traceability Pilot Project

Cow-Calf and Stocker	Feeder	Packer
EID number	EID number	Quality grade
Animal origin	Animal origin	Yield grade
DOB, breed, pasture type, supplemental feed	Animal health & performance products, date	Hot carcass weight
Animal health & performance products, date	ADG, F/G conversion	Slaughter date
Weaning weight	BQA program information	
BQA program information		

These different data points will have different value for producers, to be established by the marketplace.

This pilot project is still in the final steps of development. TCFA and the rest of the pilot project partners are eager to see how the project plays out. Once cattle have entered into the system and data has begun to be collected, the group will decide on which direction to go with Phase Two. Participation in traceability under this project is voluntary, but Dr. Ross thinks that once it is in place a transition to mandatory traceability requirements will be relatively easy.

Michigan Perspective

James Averill, DVM, *State Veterinarian, Michigan Department of Agriculture and Rural Affairs*

Michigan has the dubious distinction of being the only state in the country where bovine tuberculosis is endemic in wildlife – particularly in the white-tailed deer population. The presence of endemic bovine tuberculosis in wildlife puts Michigan’s cattle industry at risk.^{9,10} Since 1998, 73 beef herds in Michigan have been diagnosed with tuberculosis.¹¹ Due to this state of affairs, Michigan has been forced to develop methods for identifying, containing, and managing bovine tuberculosis. A key tool in this management is EID and livestock traceability, which has been in place for eleven years.

Interaction between cattle and deer leads to transmission of bovine tuberculosis in the beef herd. Tuberculosis is a well-known public health risk, and its presence in the state threatens the agriculture industry and could lead to significant economic losses. In the course of designing a management plan, it became obvious that adequate tuberculosis management required a much faster method of animal tracking. At the early stages of disease management, 1.8 million cattle with metal eartags were being tested. There were substantial unintentional human error rates at reading visual tags, and a much more efficient, effective, and accurate system was needed if bovine tuberculosis was to be controlled. In

addition to using EID to address logistical difficulties in tag tracking, the USDA required EID for moving any TB zone in the state to a higher status. Finally, EID serves as a management tool for producers, particularly dairy producers. Over the past 11 years, the dairy industry has seen tremendous value in using EID for management.

Supporters of EID represent multiple segments across the Michigan agriculture industry and state government, including the Michigan Cattlemen's Association, Michigan Farm Bureau, Michigan Milk Producers Association, Michigan Pork Producers Association, Michigan Department of Agriculture and Rural Development (MDARD) TB Advisory Committee, and MDARD Livestock Identification Advisory Committee. These supporters created a workgroup to address EID, stood up a tracking system to monitor EID, and placed a significant focus on communication. The tracking system developed for EID includes panel readers in all markets – two in each alleyway. These readers capture all EIDs monitored during the day, and the data is imported into USAHerd. The panel reading system requires little human input, and EID tag capture occurs at the speed of commerce. Thirteen markets currently have panel readers, as do slaughter facilities both within and outside the state

Communication was key to implementing an EID based traceability system. Michigan developed an extensive communication plan including brochures, signs for markets, check stuffers, letters, and other publications. Educational meetings were conducted by Michigan State University (MSU) Extension, at Livestock Auction Markets, and by various segments of the industry. EID was phased into requirement, starting in 2000 with an update to Michigan regulations. By June 2004, all cattle in the Modified Accredited Zone (MAZ) were required to be identified with Radio Frequency Identification (RFID). In January 2006, a statewide RFID implementation plan was presented to the Michigan Commission of Agriculture. Finally, in March 2007, all cattle of all ages were required to be identified with RFID prior to movement. An exception was included allowing cattle to be tagged at livestock markets under certain conditions.

The current Michigan cattle population is 1.2 million cattle, including 423,000 dairy cows. Since 2007, over 5 million RFID tags have been purchased by producers. Initially, Michigan offered a cost share solution for tag replacement, but the funding was depleted quickly and producers assumed the full cost. In markets and slaughter plants there have been almost 6 million reads. And currently, 95% of the Michigan cattle herd is TB free.

Challenges have included technology, infrastructure, communication, mandatory requirements, and dealing with the unknown. Technology is an ongoing issue, as is the maintenance of the infrastructure to read that technology. Communication was a challenge particularly in the beginning, as there was significant pushback from groups such as Amish and others. However, the mandatory nature of the requirements was dealt with by using a phased approach, and eventually everyone has gotten on board. Finally, Michigan has learned that you can't anticipate all issues, and the system must be adaptable, flexible, and willing to change, if it is to work at all. There have been many challenges, but also significant success. The primary goal of the EID system, animal health, has been achieved and is

continuing to be achieved, with 95% of the Michigan cattle herd TB free. Additionally, food safety has improved, as animal products can routinely and quickly traced back to the herd of origin.

DISCUSSION

Discussion of livestock traceability initiatives centered on four themes: cost and value-added opportunity; data; tag logistics; and liability

Cost and Value-Added Opportunity

Michigan has had traceability in place for 11 years. Dr. Averill noted that the most common complaint they still get is cost. Dr. Smith and Ross Wilson noted that there is a cost for producers in their pilot projects. In Kansas, there is a participation fee. Texas requires the investment in tags, technology, and the time to implement them, but no participation fee. Both Kansas and Texas have been able to provide some subsidy to producers to offset their costs. Michigan provided a subsidy at the beginning of their traceability program but the funding was quickly exhausted, and producers there now assume the full costs of tagging. Ernie Birchmeier of Michigan Farm Bureau noted a conversation with a seed stock producer in Michigan who pointed out that the tag cost does sound like a lot to many producers, but tag cost is not the question we should be asking. The important question is, 'What is the cost to the industry if we have a disease outbreak without tags and the ability to trace?' The investment in EID is a pretty cheap investment compared to that of a disease outbreak.

The discussion shifted from the cost of implementing traceable eartags and the infrastructure to read them to the value-added opportunities for producers. Dr. Averill noted that the value-added part has been really hard for Michigan cow-calf producers. The average herd size is only 20 cows, and Michigan has not been very involved in source verification programs, where much of the added value of traceability comes in. However, for dairy the added value is in their management systems. RFID is a way to trigger parlor readers, monitor mobility, and has been incorporated into other management activities and easily integrated into record-keeping systems on-farm. One goal of the Texas traceability pilot is to build a model, put the cattle in it, and let the system determine the value. Different information has different value to different producers, and the value is often different from what animal health officials anticipate. For instance, Mr. Wilson thought that animal health product treatment would be very important to producers, but many are not interested in that data. Dr. Smith noted that the pilot project in Kansas is strictly for traceability. The infrastructure is being developed for the producers to leverage, but at the moment there is no value-added capability to the system.

Data

Paul Laronde from the Canadian Cattle Identification Agency (CCIA) asked if actual movement data is collected in the Kansas CattleTrace project. Dr. Smith noted that the CattleTrace system collects data strictly on sited events – thus animal movement data is not collected.

A question was asked about the many data points being collected in the Texas pilot project. Who will that data be shared with? Mr. Wilson noted that, aside from basic traceability data that is shared during an animal disease event, the data being provided into the system is confidential and is shared only between buyer and seller. Any data that has value is negotiable between buyer and seller. Outside the pilot traceability database, that value negotiation must occur with every single transaction. With so many specific negotiations up the supply chain, coordinated information that could inform management choices is simply not available to the producer. The Texas project aims to make it easier for a producer to obtain information, such as carcass information, that provides actionable feedback on the effectiveness of management choices at producing a prime carcass. This sort of data is very difficult to obtain without the data capabilities of the pilot traceability system.

Tag Logistics

Several conference attendees asked questions about tags, ranging from questions about the tags themselves, tag reading, and tag loss to how to tag cattle from other states. One attendee wondered if Michigan has had trouble integrating 840 tags from a variety of tag producers into the system. Dr. Averill notes that all 840 tags are integrated into the system regardless of vendor, and the multitude of vendors hasn't been a problem. Brenda Masek of Nebraska Cattlemen asked in Michigan has eliminated Bangs tags? Dr. Averill allowed that producers are allowed to put in Bangs tags, but must also put in an RFID tag when the animal leaves the farm. The result of this requirement is that fewer and fewer producers are interested in using Bangs tags. Ken Griner of the Florida Cattlemen's Association asked how many cattle in Michigan have lost tags, and what the read rate is on RFID tags? Dr. Averill responded that tag retention and read rates are constantly monitored. Read rates typically range from 90 to 95%. There is usually a learning curve for producers in each operation around tag retention and loss. Many producers have learned to tag in the upper part of the ear so the tag is protected by harder cartilage. There are tags that are lost. One way Michigan addresses lost tags is to have the TB program do inventory reconciliation whenever a whole herd test is done. If any tag is determined lost, that number is retired and put on a watch list, so that compliance action can be taken if the tag number re-enters the system. Dr. Miles Theurer of Veterinary Research and Consulting asked if the use of low frequency tags in Michigan has affected the ability to do tracebacks? Dr. Averill re-iterated that Michigan's read rate is in the 90-95% range, thus the evidence indicates that the use of low frequency tags doesn't affect tracebacks. The only real effects on traceback occur if a reader goes down for a couple of weeks. Dr. Averill was also asked what percentage of cattle go through auction markets and what percentage through cattle sales – but he did not have those numbers. A final question about tagging was posed by Joe Leathers of the 6666 Ranch. He asked Dr. Averill how Michigan handles cattle from other states that are split then comingled? Dr. Averill noted that Michigan can't regulate out-of-state animals, but as soon as an animal arrives in Michigan, it is identified with EID. (There are a few exceptions among feedyards that have agreements to allow the use of Brite tags.)

Liability

Todd Firkins from GrowSafe posed a question to all three states regarding how data collected to address foodborne illness and food safety is protected from liability, especially for cow-calf producers. Mr. Wilson noted that data confidentiality and liability are the greatest concern across producers, and there

is a concern that more data collection means more liability. Mr. Wilson suggested one possibility to address this concern would be a federal level statutory change to minimize liability. He also noted that tracebacks today within Texas haven't gone beyond the packing plant. Were a trace to need to go to the producer level, that trace would happen even without EID or the data collected by the Texas pilot project. Dr. Averill pointed out that liability has not been an issue in the 11 years that Michigan has had traceability data in place. Michigan traces have also always stopped at the packer/processor and have not gone any further. Michigan is aided in its liability protection efforts by the Animal Industry Act, which prevents the State Agriculture Department and the State Veterinarian from disclosing epidemiology information that would tie a disease back to the herd of origin. The act has been challenged, but always held. Dr. Smith echoed the comments of both Mr. Wilson and Dr. Averill and reiterated that the pertinent thing to remember is that we have the ability to trace to the farm of origin even without RFID. Kansas also has the statutory ability to protect information from public use.

Dr. Jack Shere noted that APHIS has an MOU in place that requires them to go to any identified premises to complete an epidemiological investigation. The purpose of this investigation is to correct the problem that led to the traceback – not to 'drop the hammer.' He was initially against this MOU, as he didn't want to penalize the farm of origin. However, he realized that working with an identified premises allows corrective action to be recommended that can keep the operation in commerce, rather than allowing a problem to get out-of-control. Joe Leathers of 6666 Ranch commented that we seem to be discussing the liability of a particular producers. As a cow-calf producer himself, he thinks the data offers him not liability, but instead the ability to prove that he's not the cause of a problem.

Wrap-up

As the discussion wrapped up, a conference attendee from Florida asked Dr. Averill, as the state animal health official for the state with the longest running traceability program, is there anything that he wishes they had done differently? Dr. Averill has no regrets. Michigan has seen a huge value in RFID across the cattle industry. He noted that when they had a dairy herd test positive for TB within the TB zone, they were able to know where 750 cattle were sold within an hour, thanks to their traceability system. A similar herd identified before RFID took 6 to 8 months to locate. This has been a huge value for Michigan taxpayers.

Dr. Averill pointed out that social media was not out there when Michigan rolled out their traceability system. The addition of those entities could have made program institution either more difficult or possibly easier, but it certainly would have affected the conversation. Overall, the only thing he would have done differently is communication. He would have gotten more people out to spread the word and ensured that those spokespeople were all disseminating the same message, and he would have leveraged the early adopters more.

Ernie Birchmeier of Michigan Farm Bureau pointed out that once the law was in place and producers knew they needed to follow it in order to have the ability to market livestock, it was really pretty easy to implement the system. There were initial challenges, but Michigan worked through them. He echoed

Dr. Averill – the bottom line is honest communication. There will be people who really don't want a traceability system, but you have to be creative and find a way to make it work.

Data Collection: Coercion of Collaboration

Chip Kemp, *Director, International Genetic Solutions*

There is a dense cow-calf population in the state of Missouri. The producers of Missouri, and the United States as a whole, will share information, but they want to do it on their own terms. When cattlemen hear the word 'traceability' they hear 'the means to investigate' – even if that is not what the word means. Animal health officials and all of us attending this conference need to be sensitive to that interpretation.

Is data acquisition about accountability, or is it about empowerment and putting people in a position to do better? The producer's question is whether the cost, hassle, and allowing the government the means to investigate is worth the money that will be saved by implementing RFID? Often the answer is no. However, producers will share information if there is value to be captured - they may even pay to participate in the program. The value add will be the incentive needed to drive data capture. If we don't incentivize producers to care about data, it will not happen. Producers don't want unearned money, but they do want leverage in the form of knowledge. Data collected through traceability system collection can provide producers with the tools to make better decisions – data such as feedlot performance, health, carcass merit, and others. The knowledge gained from this data leads to more profit for the producer – and that profit can make the producer care about data.

International Genetic Solutions (IGS) is a collaboration of beef breed associations that understand producers desire and deserve credible science and genetic tools that they can use on their farm or ranch to make more marketable cattle. IGS represents the largest beef genetic evaluation on the planet, providing genetics for a multi-breed population of purebreds, composites, and crossbred cattle.

IGS itself is very interested in data acquisition. They collect good data with the promise of exchange of knowledge in the form of better cattle genetics. This data is collected as billions of individual data points, analyzed, and turned into genetic tools that add value for the producer. IGS has found that voluntary data is more valuable than required data, because those that are providing that data are invested in the process, and thus the data provided tends to be more consistent and accurate, thus more valid.

IGS has seen significant growth in non-IGS seedstock types, as well as in commercial clients. Good data on cattle genetics can improve everything from birth weight to marbling (Figure 2.)

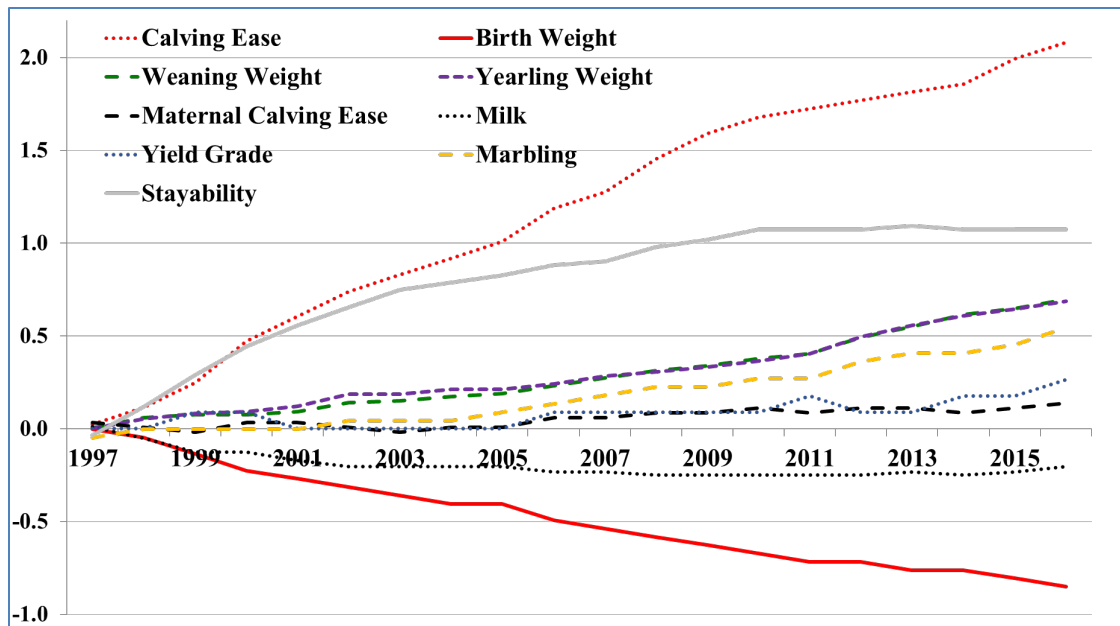


Figure 2. Purebred Simmental Genetic Trends determined by IGS Multi-breed Genetic Evaluation¹²

These trends are identifiable, and the action determined by them sound, because the data that is voluntarily provided is extensive and accurate. Flawed data would provide other results, leading to the selection of incorrect genetic characteristics, and instead of continued improvement would lead to continual decline.

Providing ‘something’ (knowledge of how genetics affects management variables) for ‘something’ (data) works. This approach can work in the traceability conversation as well. However, ADT alone is not enough ‘something’ for most producers. If ADT can be coupled with information provided back to the producer, then industry information transfer can be used to address a whole range of issues and topics, including ADT.

The information provided to producer could include tools to make profit-minded decisions, health information feedback for management, gain and carcass data feedback information for improvement of genetics, and information for price differentiation. If some of this knowledge feedback can be incorporated into the traceability system, producers will see the value and join the system. They will be willing to trade traceability data for the tools to make better management decisions that lead to better quality calves. Traceable calves will make their way to the packer, who will then have the ability to differentiate prices based on traceability. Thus traceability will become a reality.

One note of caution: traceability should not be a ruse for sustainability efforts. Don’t sneak sustainability in through the back door. Producers will start to question motives, even if there is value in the system for them. That said, the data collected via traceability provides metrics that do impact the sustainability conversation, such as efficiency and longevity – and the more collaboration, the more possible metrics.

One conference attendee asked Mr. Kemp to clarify his point about value addition in the form of knowledge – he’s saying that instead of subsidizing the cost of eartags, we should be ‘paying’ the

producer with information on their carcasses? Mr. Kemp confirmed. However, we don't need to limit the knowledge paid to just the producer - the packer is also part of the equation. We need to provide the packer with information to support their bottom line. And we need to have the conversations that enable the packer to provide the appropriate level of targeted knowledge to the producer.

Panel Discussion: Producers

Moderator: Joe Leathers, *General Manager, 6666 Ranch*

Panel: Matt Teagarden, *Kansas Livestock Association*, Brian Bell, *Square B Ranch and Cattle Company*, William Avila, *Valley Ag Software*

Beef Industry Perspective

Matt Teagarden, *Chief Executive Officer, Kansas Livestock Association*

The Kansas Livestock Association (KLA) has been supporting traceability for a number of years but hasn't put much emphasis on it. However, last December KLA members decided to increase that emphasis. They added the words 'mandatory' and 'for all cattle' to traceability documentation. This change is not due to a desire of members to have traceability imposed, but rather a signal to stop talking and start doing traceability, and make some actual progress. Mr. Teagarden is optimistic that the CattleTrace project will remove old barriers and old reasons for why traceability won't work.

He reiterated Dr. Smith's point that the CattleTrace project is very focused on animal disease traceability. KLA sees the current value of traceability as similar to buying insurance. However, the purpose-built infrastructure is where future value will be added, and this infrastructure will be responsible for bringing value back to individual producers. The next steps in the CattleTrace project are to find cattle that can be traced end-to-end in the system; convene a producer board of directors; and develop data access when, but only when, it is needed.

Beef Producer Perspective

Brian Bell, *Owner, Square B Ranch and Cattle Company*

Square B is a ranch with a focus on developing one of the nation's leading seedstock operations. They have invested in top Angus genetics, host a set of prepotent Angus sires, and incorporate the information-sharing Quality Beef program into their supply chain. Everything we've talked about today applies to Square B. Square B requires an EID and blood draw on every cow in their program. That information follows the cow throughout the entire system. Traceability for them has been a huge management tool, from the EID used within their herd and among the cattle they bring in for breeding to the information collected from conception to carcass. Traceability hasn't been a negative issue with their customers because they have been able to demonstrate that incorporating traceability makes

more money. It's a tool to add value, and adding that value takes the tension of traceability concerns away.

Because Square B has been able to use traceability as a tool leading to increased profitability, they have not seen a lot of resistance. The opportunities, however, are endless. Traceability provides information back to the producer so that better management decisions can be made. It creates value within the herd. As the cow base improves, the herd become more profitable.

Dairy Industry Perspective

William Avila, *Pocket CowCard Product Lead, Valley Ag Software*

Mr. Avila comes from a dairy family, from his immigrant grandfather to himself. He noted that there were numerous dairy farms in the 1940s, most of which have eventually been forced to sell out due to a lack of profitability. The current dairy climate consists of many fewer, but far larger, farms, with significantly reduced total numbers of dairy cattle producing at much higher levels than the cattle of the 1940s (Appendix 2).¹³

Traceability helps market products. Changing nutritional ideas and competition from alternative products have hurt the dairy industry. The industry started experimenting with RFID in the mid 1990s, and 10 years later had really started seeing widespread adoption. Production and classification information moved to databases as ISO numbers eliminated tag duplication and dairy producers realized the value of having one unique identifier to keep track of the breadth of production information generated by a single cow. California producers, in particular, have seen ISO RFID help them compete. Farmers can mitigate risk by taking the system to the next level, fractionating products to create commodities such as Fairlife¹⁴, and targeting marketing messages.

DISCUSSION

Joe Leathers asked the views of the panel on including sexually intact heifers and bulls under 18 months in mandatory traceability regulations. Mr. Avila noted that California passed a law in April 2017 that requires all cattle leaving their birth premises to have an ISO ID. He also mentioned that there just isn't much pushback from the dairy industry about animal identification. Mr. Bell thinks inclusion of these classes of cattle would be a great marketing tool, and points out that for those who want to market cattle international, this kind of regulation is coming soon.

Mr. Leathers also asked the panel what the to identify resistance points and how they can be overcome. Mr. Bell of Square B noted that in his operation, tagging calves is the biggest resistance. That was a surprise to him, as he thought it would be the verification and tracking of animals. His solution has been to require that every calf is tagged at birth, and that tag is tied to the mother. That birth EID follows the calf all the way to slaughter, and the packing plant provides information on the carcass back down the chain, which is tied to the breeding cow.

The next question was for the dairy industry, a different environment that is routinely using EID extensively for management. What are some of the value-added things that have come into the dairy industry that the beef industry could use for value addition? Mr. Avila indicated there could be a parallel between milk production numbers tracked via RFID and slaughter profitability information gathered on beef feeders at slaughter. Both sets of information can be used back down the chain in the breeding program, to improve genetics.

Mr. Bell was asked how far down the chain his operation is tracing animals. All the way to individual cuts? The current endpoint of Square B's tracing is to the carcass level, with everything on the carcass recorded (carcass weight, yield, grade, etc). He places significant emphasis on tracking the females, as good quality female cattle are the key to growing and grading superior feed cattle. Tracing to the level of an individual cut could come in the future, while working toward the goal of providing a good eating experience for the consumer.

Finally, a conference attendee and livestock exporter noted that people in other countries will not buy dairy cattle from the US unless they've been genomically tested. We need traceability first and foremost, but factors such as genomic testing are driving international markets. Traceability enables her to sell more cattle internationally.

Panel Discussion: State Veterinarians

Moderator: Justin Smith, DVM, *State Veterinarian, Kansas Department of Agriculture*

Panel: Diane Kitchen, DVM, PhD, *Florida Department of Agriculture and Consumer Services*, Rod Hall, DVM, *Oklahoma Department of Agriculture*, Keith Roehr, DVM, *Colorado Department of Agriculture*

Florida Animal Disease Traceability

Diane Kitchen, DVM, PhD, *Veterinarian Manager, Bovine Programs, Florida Department of Agriculture and Consumer Services*

Florida offers a different perspective than many other states, because of their choice to almost exclusively use federal databases. Federal databases offer significantly more data security than those held by the state. Traceability data is collected using the federal SCS Core One database. Data is accessed through the statevet.com interface, is mostly recorded electronically, and includes data points such as backtag and interstate movement reports from livestock markets and information provided by dairy calf brokers.

The Florida Cattle Identification Rule requires all cattle over 18 months of age be identified, with the exceptions of direct-to-slaughter cattle, cattle moving between two premises of the same owner, and cattle moving to one of 13 approved tagging sites. Livestock markets have two identification options: either all eligible cattle are officially identified or tagged on behalf of the seller prior to sale, or the seller provides a list of all buyers after the sale and buyers are required to apply official ID within seven days

after the sale. As in other states, epidemiology and traces rely on the Florida Animal Identification Rule. However, Florida livestock markets don't capture official ID unless the market itself applies the ID or the animal is moving interstate. Many animals are tagged with NEUS tags, which have high rates of read errors, data entry issues, and are often just unreadable. Tracing under this system takes a long time.

When traceability moves smoothly and quickly, it does so because of electronic documentation and electronic capture of ID. Dr. Kitchen presented two historical traces of dairies, one with 125 required traces, no record management, and mixed cattle identification; and the second with 111 required traces, extensive records, and all cattle with EID. The first dairy required 45 days of time in the herd to conduct the traces, with each day decreasing milk production by approximately 25%. Traces for the second dairy were completed with just 4 days in the herd, and no disruption to milk production.

State animal health officials need industry support if traceability is to function at the speed of commerce. This is more than just putting a tag in a cow – there must be an active partnership. Sharing of databases is a critical component, and the interface to make that happen is key.

Oklahoma Animal Disease Traceability

Rod Hall, DVM, *State Veterinarian, Oklahoma Department of Agriculture*

The traceability system in Oklahoma began 25 years ago with brucellosis. At that time, there were 70 field people involved in the program. The data collected from livestock markets, requirement that all heifers be calthood vaccinated, and frequent required brucellosis testing led to a robust traceability system. Data was entered into a generic database, which was used for later program diseases. In 2006 Oklahoma stopped entering data into the generic database, due to its TB free status. As Oklahoma no longer had current traceability data in the database, it faded to obscurity.

Oklahoma continued first point testing for TB until 2009. Collection of identification information could have stopped at that time, but by 2009 the traceability movement had gained momentum. The state government was able to leverage this traceability momentum in collaboration with the Oklahoma livestock marketing association to ensure continued collection of identification information after 2009. Most official ID has been captured in the USAHerds database since 2010. Identification information is collected for all adult cattle, dairy cattle, and roping cattle that go through Oklahoma livestock markets. Initially CVIs were stored but not searchable, however, increased use of eCVIs is closing that searchability gap.

Approximately 55 auction markets in Oklahoma sell cattle. A veterinarian is required to be on site for each market, and all ID eligible cattle are identified and documented prior to sale. Oklahoma did also make an attempt to require identification of cattle changing ownership by private treaty, but that attempt was unsuccessful. Oklahoma doesn't have the field staff to monitor the markets, but Dr. Hall believes most people will follow the rules, and thus advance traceability.

Dr. Hall presented a recent example of traceability in the tracing of cattle from a TB infected herd in South Dakota that were transported to Oklahoma. The investigation involved five traces from South Dakota. Four traces were fairly straightforward: 450 cattle were tested, four exposed cattle were slaughtered, and no infected cattle were discovered. The fifth trace, identified two years after the cattle had moved into the state, was complicated and convoluted. This fifth trace involved a herd of 66 open two-year-old heifers which included several TB-infected cattle from South Dakota. All involved cattle brought into Oklahoma came with good CVIs, but were brought in by a producer of questionable ethics. In the search for the infected cows, 450 cows in fourteen herds were tested, but out of 66 head government officials were only able to locate fourteen of the original 66 head. Three known infected cows from South Dakota were never found. The final theory was that the producer removed tags from ears to sell them as feeder heifers. Once we prove we can do traceability in adult cattle, Dr. Hall thinks we should move to requiring official identification for all classes of cattle.

Finally, Dr. Hall addressed the problem of traceability with small producers. He grew up on a small beef and dairy farm, and he went into mixed practice about 45 miles from where he grew up in southeast Oklahoma. In that area of the state, the average herd size is very small, and small farms tend to fall through the cracks. Small producers are not in the cattle business to make money. Often their parents had cattle and it's easy to for them have cattle on the land they already own. Most have other jobs, and the cattle herd is 3rd, 4th, or 5th on their list of priorities. Many small producers are probably members of Farm Bureau because of the good insurance, but they're not members of the Oklahoma Cattlemen's Association. They are unlikely to go to meetings to learn about anything, let alone traceability. We are in danger of forgetting these small producers in the traceability discussion. In his opinion, for small producers, traceability needs to be mandatory. They don't see the big picture, and it is very unlikely that they will sign up for voluntary traceability.

Animal Disease Traceability in Colorado

Keith Roehr, DVM, *State Veterinarian, Colorado Department of Agriculture*

Data needed for livestock tracing is not extensive, but it is critical to a successful trace. This data includes premises ID or location information; certificate of veterinary inspection; brand inspection information; and diagnostic testing results. Brand inspection and diagnostic testing information are often overlooked, but both are extremely important for accurate and timely tracing.

While a complete collection of the data above is important, equally important is having that data in an electronic version. Paper or image-based epidemiology tracing isn't able to be searched, and traces using paper data can take months. Electronically searchable records are crucial simply due to the sheer volume and number of movements undertaken by livestock in commerce in the United States. The movement of livestock associated with the 2016 National Western Stock Show illustrates the scope of livestock movement for a single national event (Figure 3.) The ability to trace quickly is essential for containment of fast-moving highly contagious animal diseases.

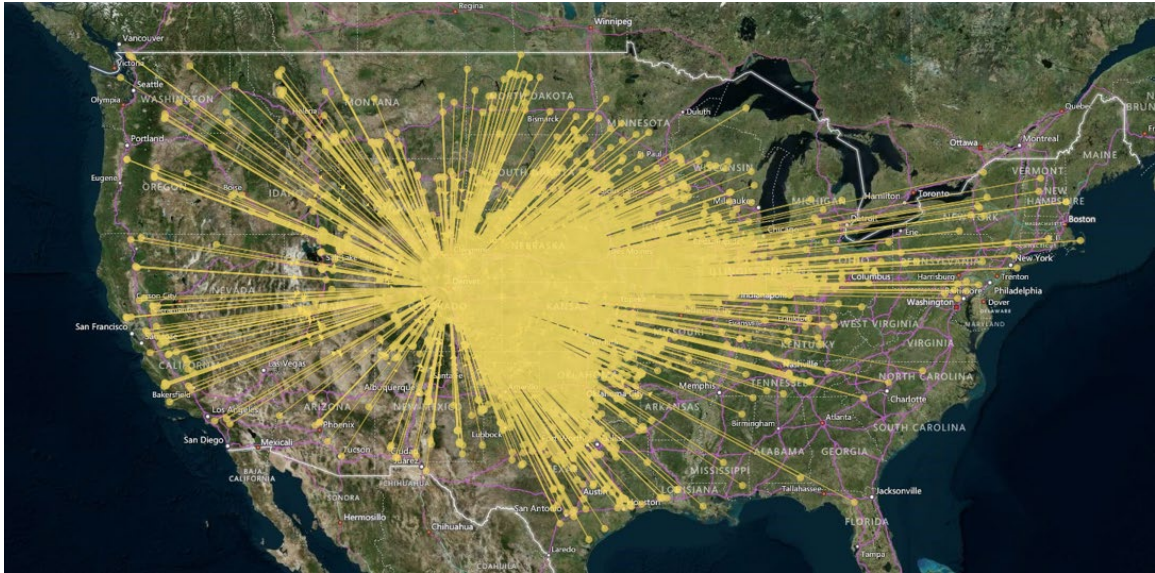


Figure 3. Livestock movements into Colorado for the 2016 National Western Stock Show.¹⁵ Each dot and line represents one livestock movement.

Two TB traces in Colorado illustrate the difference in tracing speed of paper versus electronic records. In 2015, a TB trace in a large dairy herd with cattle imported from Texas, identified with RFID and using Global Vet Link, took 12 minutes. In 2017, a TB trace in 105 beef cattle imported from South Dakota, identified with NEUS tags, brands, and one paper CVI, took six months. The map of the cattle movements in that 2017 trace is represented in Figure 4. There were no serious disease ramifications in the slower beef TB trace, as TB is not a fast-moving disease. However, this delay could have led to extreme disease ramifications had it been a highly contagious disease such as Foot and Mouth Disease.

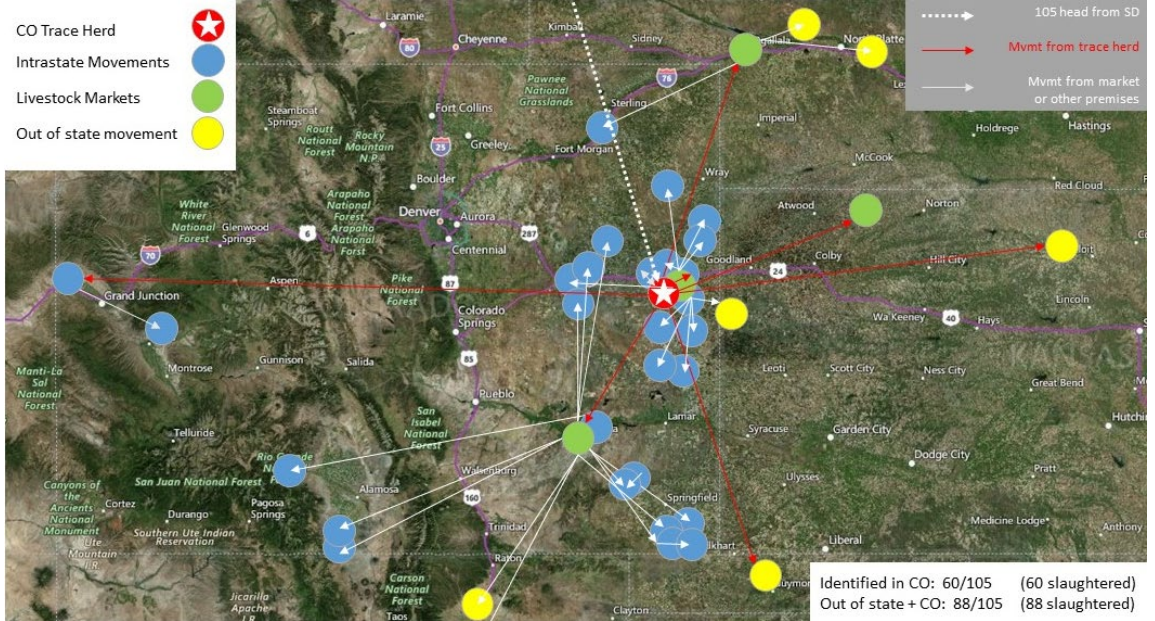


Figure 4. Livestock movements in the 2017 South Dakota/Colorado TB trace.¹⁶ This map took 6 months to develop due to lack of electronically searchable records and RFID.

One additional Colorado example demonstrates the value of electronic data – in this case an Equine Infectious Anemia investigation. The case involved a horse dealer with many internet followers. The Coggins test for the infected horse was completed by the veterinarian electronically, including three photos of the horse, and was uploaded into USALIMS. There was confusion about the movement and identification of this horse due to misrepresentation of the horse in a photo posted by the rescue buyer on her Go Fund Me page. Fortunately, the electronic photos of the animal on the Coggins test offered a positive identification and the ability to pinpoint the location of the animal. Whether data comes through document with a photo or a test chart that includes data, electronic records are extremely valuable in disease outbreaks.

Producers do traceability every day, through their routine management with health papers, bills of sale, lot loads, brand inspections, and herd tags. We need to move beyond ear tags and talk about traceability in terms of accurate disease tracebacks, effective recordkeeping, and efficient and affordable technology. We need to connect producers to the *why* of traceability. Hurdles still remain - using individual ID for management and for official traceability, transitioning away from paper and pen and NEUS tags, official ID at birth premises and tag retirement, and access to searchable electronic documents - but we can get there. Having documents that move data is incredibly important, and electronic transmission and sharing of that data is essential for real-time traceability and ultimately, disease control.

DISCUSSION

Brief discussion after the panel centered in unlawful movement of livestock. Dr. Hall conceded that it is difficult to catch the bad actors, as lack of personnel and financial challenges preclude state animal health officials from being able to force compliance in individuals who are determined to evade the system. Traceability is like all regulatory programs in its staffing and financial needs. The hope is that catching some individuals in unlawful acts, and following up with prosecution, serves as an educational example to others who might be tempted to be dishonest. Jim Reynolds with the National Livestock Commission Association reiterated the impossibility of stopping unlawful movement of livestock – states just have to do the best they can. Mr. Reynolds used this example to promote caution in making any traceability rules mandatory, as that designation may come back as a negative for state animal health officials who enforce the rules.

Panel Discussion: Data Management

Moderator: Mr. Glenn Fischer, *President, Allflex USA, Inc.*

Panel: Leann Saunders, *IMI Global (A division of Where Food Comes From, Inc.)*, Mike John, *MFA, Inc.*, William Avila, *Valley Ag Software*, Ginette Gottswiller, *American Angus Association*

IMI Global and Data Management

Leann Saunders, *President, IMI Global (A division of Where Food Comes From, Inc.)*

The traceability discussion has been evolving in the United States since at least 1996, and that history is very important. In 1996 there was great momentum and interest in a National Animal Identification and Traceability Program. As part of that national interest, many companies developed to address identification and traceability needs. When interest in traceability waned, many of those companies went out of business. Those that remained had to figure out how to survive, and one of those survival tactics was to focus on the value-added market. The BSE case of 2003 changed things. All access to international markets was lost. IMI global started working with packers to build export verification programs. It became evident that supply chains had to improve, and IMI Global added feedlots and cow-calf operations to the verification process. All of this came together in a standardized verification platform that allowed each component of the beef supply chain to meet individual market requirements. IMI Global had to develop great precision to manage conforming cattle, as there is no mandatory system. Precision is critical to avoid cattle disqualification.

Today the program is all about data capture, share, and focus. IMI Global facilitates a private, third party database, for which data is voluntarily provided. The program is focused on market animals and captures varying degrees of data, depending on the specific program. All data is 100% confidential, and qualification information is shared by producer number. The beef industry uses this system for USDA Process Verified Program. Data requirements and standards are established by the USDA, and the government layer with private industry partnership has been very successful, working very well for export market access and supply chain programs.

Program requirements are different for each category of cattle. IMI Global has tried to simplify as much as possible, and modify based on the China market as that market is the most restrictive. If the producer wants things added to the program verifications, those can be bundled in.

Identity preservation is key to verification, and standardized animal identification and technology of readers is key. Animals in the program all bear low frequency RFID 840 tags. For IMI Global's programs to standardize verification, all RFID tags must be applied at the source of origin (this is a China base requirement), and must be 840 tags, as these are internally recognized official identification. All programs require book-end at minimum, and most require reads at each location. Accuracy at the time of tag reading is extremely important. A public on-line tag lookup allows producers at each stage of movement to verify the animals. The value-add provided by these source verification programs is driving uptake, and producer participation is growing.

IMI Global's source verification programs can be used to aid US animal traceback. IMI Global maintains an interface¹⁷ that allows state animal health officials to access the database to determine if an animal in the program has a premID. If so, state animal health officials can submit an inquiry to IMI global for more information, and in that manner can trace official ID and obtain contact information to follow-up on that official ID tag. The inquiry submission step allows the producers in the system to authorize release of their data.

MFA Health Track and PowerCalf: Making Data Valuable

Mike John, *Director of Health Track Operations, MFA, Inc.*

MFA Incorporated is a cooperative business, established in 1914, built and run by farmers, which manufacturers livestock feed, supplies and markets plant food and crop protection products and animal health products, and provides a variety of services ranging from cow-calf health programs to precision agronomy. MFA Health Track is a Vac 45 preconditioning verification program for beef calves administered by MFA Incorporated for cow-calf producers.¹⁸ Vac-45 Program calves are kept on the ranch after weaning and before being sold. The program bundles management practices so producers can sell healthier, heavier calves and buyers can purchase higher-performing calves.^{19,20} MFA Incorporated is uniquely qualified for the Health Track role due to their ability to supply and verify the purchase and proper administration of all of the products and services required to qualify calves for Health Track ear tags.

MFA Health Track focuses on documenting processes that have value. The Vac 45 program provides hands-on verification of calf health. MFA likes to build partnerships, and one of the reasons they have been so successful is because of the hands-on coverage they offer their producers. Ranch or farm of origin identification is required through the program. RFID tags are provided as Allflex nested pairs – panel and EID. Post-wean health data is maintained in a database that contains information for 660,000 head. There is huge value for MFA in having the data from that many animals to evaluate.

Process verification through Health Track drives value, translating into increased prices for the calves in the Health Track program. One sale barn, JRS Sale, has provided extensive cooperation with the program, and regularly uploads entire days of data into the system. At JRS, in June 2017, a range of increase was seen in prices for sale calves, from \$5.68 to \$16.48 per CWT (Figure 5).²¹

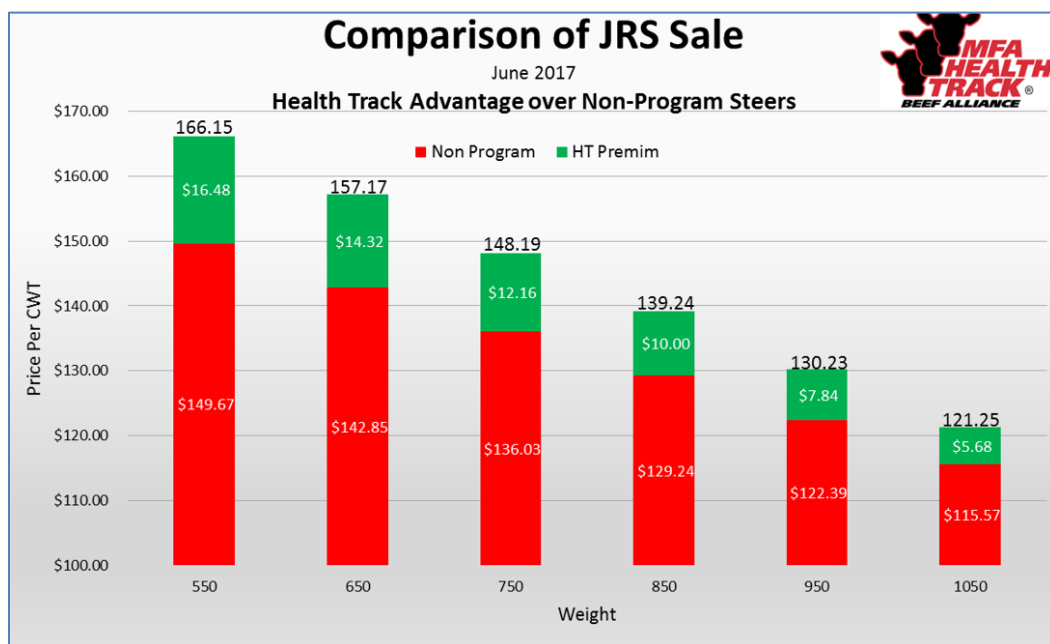


Figure 5. Comparison of Prices of Health Track and non-Health Track program calves at JRS Sale.

MFA PowerCalf is a strategy to empower beef cattle producers to improve their sustainability by providing the latest and most accurate data-enabled tools designed to maximize both the value of their genetics and their overall production.¹⁸ The mobile app is a tool to enhance data collection and thus whole herd data management. Data can be collected chute-side or in the field, with no service required and no user limit per operation. The app interfaces with a cloud-based portal, and is designed so that 20 cowhands working cattle can all enter data into the system simultaneously, with all data synched with the app. The cloud portal has the capability to build custom reports and downloads. The design of reports is exceptionally flexible, and data can be downloaded to Excel or as a pdf, individually or as a group. Program tag distribution pre-loads user accounts and collects verification data – data which can be shared as required.

Data Management in the Dairy Industry

William Avila, *Pocket CowCard Product Lead, Valley Ag Software*

Three pillars of traceability are premises ID, animal ID, and event ID. The dairy industry's first experience with RFID was in the early 1990s – 900 series ID tags were used in the milking parlor for identification to collect milk weights. There is a significant case to be made for dairy management via RFID. It offers compliance is on many levels, from that of the producer with the government to the workers with the producer. Compliance drives accountability. All of this is made possible because of the speed and efficiency afforded by RFID – compliance and accountability are enhanced, rather than limited, by the tools at hand. Productivity is improved, and the use of money and resources are enhanced and streamlined. Dairy farms eventually acknowledged the need to use matched pair tag sets. These sets solve a plethora of issues, ranging from state and federal government needs to milk meter systems to calf weight recording, as those numbers are imported automatically into the data management program.

To be competitive in the global marketplace, we all need to do more to stay competitive. RFID management and traceability are a significant part of that 'more'. California has initiated new legislation requiring any animal leaving a premises to have identification with an ISO number. Canada is tracking event history for traceability purposes. In 5 to 10 years the bookends are going to be solved – and the future will mean paying attention to what happens in between.

Data Management and the American Angus Association

Ginette Gottswiller, *Director of Commercial Programs and AngusSource, American Angus Association*

The American Angus Association (AAA) is the world's largest beef breed association. The organization represents more than 25,000 members across the United States and holds records for more than 20 million animals.

In 1999 the American Angus Association started ArcNet, which listed locations of black-hided calves for sale and had the ability to document sires. American Angus Association issued an eartag to show those calves were part of the angus program. In 2003, ArcNet changed its name to AngusSource. Producers continued to document sires online, but the program evolved into a USDA documented program which included agent source verification and genetic verification.

In 2016, the board of directors of the American Angus Association developed a new long-range strategic plan. The five areas of focus of this long-range plan include genetics, commercial programs, leadership, product and research. The commercial programs goal was to create more value for the feeder calves of commercial producers. One strategy employed to address this goal was to remove the genetic component from AngusSource and use it as the basis to create AngusLink, which was launched in August 2018. Producers were concerned that, without a way to prove a calf came from superior bull genetics, the calf would be undervalued. The AngusLink program addresses this concern by systematically tying calves back to their registered Angus sires. AngusLink cattle are identified with a neon green tag. 50% of sires must be registered Angus, while 25% can be other breeds and 25% can be commercial. Those percentages are compiled into a total score within the AngusLink program. With calves tied back to superior Angus genetics, the next step is to propagate this increase in value all along the chain, from producers to feedyards. AngusSource offers a variety of value-added programs that dovetail with AngusLink genetic verification to provide that value increase along the chain.

A second strategy to create more value for the feeder calves of commercial producers was to create an easy-to-use mobile platform record keeping system that can utilized by both members and non-members. Angus Black Book mobile app will facilitate data collection and expedite enrollment in AAA programs, but more importantly the app will provide a platform to producers to collect valuable data points in their operation to make the best possible management decisions.

For all producers enrolled in American Angus Association programs, the AAA chose to use 840 tags. Use of these official identification tags provides the maximum in value-add to producers, because each entity involved in the supply chain has the opportunity to use the 840 tag information to maximize value. The American Angus Association has not really seen any pushback from producers regarding this tag choice.

DISCUSSION

A conference attendee from Florida noted that from a traceability standpoint, the value of the tag comes with state animal health officials having access to that data for disease traceability. Are the databases discussed in the panel available to state animal health or other regulatory officials in the event of animal disease traceability? Mr. John remarked that his organization has never had any regulatory body ask for access to the 840 tags. Ms. Saunders explained that IMI Global encourages their producers to use 840 tags. Their organization created an overlay so that regulatory officials can search their database to see if a number comes up. If that search yields a number, IMI Global will work collaboratively with the regulatory officials and producers to share the needed traceability information.

If that information is not contained on an 840 tag with a premises ID, IMI Global will ask the producer for permission to share contact information. Mr. Avila focused on varied legislation in different states. As different states require different things, his organization works with producers in each state to determine what will work best for their specific state. Education on specific state regulations in this manner has been working for them. Finally, Ms. Gottswiller pointed out that all of their tags are marked as from American Angus Association, so any regulatory official would know the animal traced to American Angus Association, and AAA will work with regulatory officials as needed.

One conference attendee asked Ms. Saunders about the requirement that all animals in their programs be tagged with low frequency RFID tags. Ms. Saunders explained that IMI Global's database can accommodate any identifier, but in order to minimize tag loss and read rates, they've standardized how they allocate tags and the ability to manage individual animals. As part of the standardization they've restricted tags to low frequency. The restriction allows them to standardize readers and read distances throughout the system as well. Ms. Saunders is looking forward to analysis of results from the traceability pilot projects, as this data could lead to allowing more technologies to enter the system.

Making Standards and Technology Work

Paul Laronde, *Tag and Technology Manager, Canadian Cattle Identification Agency*

The Canadian Cattle Identification Agency (CCIA) is an industry-initiated, industry-led, not-for-profit organization incorporated to establish a national livestock identification program to support efficient trace back and containment of serious animal health and food safety concerns in the Canadian livestock industry. A Memorandum of Understanding (MOU) with the Canadian Food Inspection Agency (CFIA) outlines the duties and responsibilities of the CCIA. CCIA is the Responsible Administrator of the Canadian Animal Identification Program and traceability initiatives for beef and dairy cattle, bison, sheep and goats. As the responsible administrator, CCIA wholly owns and manages the Canadian Livestock Tracking System (CLTS) database.

The CFIA definition of traceability is the ability to follow an item from one point in the supply chain to another, either backwards or forwards. Integral to this ability is data. In the realm of data management and collection, Canadian producers continually remind regulators that privacy is the ultimate goal. The data in the traceability system belongs to producers – CCIA is only the keeper of that database. Core traceability data as well as value-added data is collected and stored in CCIA's database. The Tag and Technology Program approves all official ID tags in Canada as well as runs a tag store where tags are sold directly to producer. In addition, the Tag and Technology program tests and ensures that all tag readers meet minimum specifications. The Tag and Technology Manager is effectively the gatekeeper of the Canadian National System.

Standards, such as those for ATMs, card dashboard symbols, or MPEG videos, allow for seamless international functionality and convenience. The ISO/IEC definition of standard is "a document

established by consensus and approved by a recognized body that provides, for common and repeated use, rules, guidelines, or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.”²² In general terms, standards are voluntary agreements developed in an open process that give all stakeholders the opportunity to express their view and have those views considered.

Standards for Canadian tags and technology mean that all tags (also known as identifiers) and technology must be approved. Approved identifiers in Canada for cattle, sheep, and bison are RFID, and for goats and cervids both RFID and visual ID. All Canadian approved identifiers are based on ISO standards. These standards ensure that all tags can be read by all readers in the system, and additionally define the testing procedures for conformance to tag standards. CCIA currently approves eight RFID tags from five manufacturers. All the tags are different but the data transferred through the reader is uniform across tags.

The National Identification Device Methodology Advisory Committee (NIDMAC) is a joint government & industry committee that advises the government on all issues related to tags. This committee sets the approval framework for animal identifier approval and revocation, setting the basis for approval of all tags used in Canada. This committee effectively safeguards tags and technology, testing all tags in the system every year to year and a half to ensure tag viability and stability. The Technical Advisory Committee, a standing committee of the CCIA Board of Directors, administers RFID transceiver testing and approval. Transceivers must meet internal standards and be tested in a competent testing lab. Main points in testing transceivers include that they work with all approved tags, comply with Canadian electrical safety code, meet Industry Canada (IC) certification, and meet safety standards.

Canada has no UHF standard for livestock identification. Standards exist, but they are not specific to livestock identification. An international Project Team has been convened to develop these standards, starting with numbering schemes for UHF. CCIA anticipates 1 to 3 years for completion.

Canadian standards provide a single platform for animal identification (e.g. a small animal veterinarian can read a calf tag with her pet tag reader). Standardization assures consistency of essential features such as quality, reliability, compatibility, and others, and makes the development, manufacture, and supply of all devices more efficient. Devices that meet these standards are supplied more quickly and at lower cost than if no standards for their manufacture were in place. Standardization sets minimum expectations for operation of both tags and readers, and allows development of a process to test conformance and performance of tags. Finally, as standards keep inferior and non-performing products out of the system, strong producer confidence is maintained in these products and the system that uses them.

DISCUSSION

William Avila of Pocket CowCard inquired regarding follow-up if an animal loses her tag: do you put the same tag number in her, or just put in a new number to speed up commerce? Mr. Laronde answered

that if the producer knows the number on the tag that was lost, CCIA can cross reference that number to new tag number. If the producer does not have the old tag number, then the tag is replaced with a new number and data is measured from when the new tag goes in. The dairy industry uses both an RFID tag and a matched visual tag in dairy cattle. The association also has a relationship with the tag manufacturer. So, if a dairy cow loses an RFID tag the producer can call the association, and association can order a new tag from the manufacturer with the exact same number. That tag is marked as replacement tag, both electronically and visually. Ginette Gottswiller of the American Angus Association asked what the retention is in the matched RFID-visual tag pairs. Mr. Laronde did not have that information, but noted that the paired option is very popular.

A conference attendee from Minnesota asked what happens with U.S. origin cattle that enter the Canadian marketplace. Those cattle are currently marked in the system as an 'import', but no change is made to their tag, as Canada recognized US 840 tags. (The United States also respects Canada 124 tags). However, if that US import lost its tag, it would be replaced with a 124 tag.

Stu Marsh of Y-Tex Corporation asked what Canada's tag retirement project consists of? The Canadian system is currently a bookend system. However, new regulations are coming that will enforce movement recording, moving to a full traceability system. By law, processors have five days after slaughter to input the tag number into the database with a 'retired event' flag. If an animal dies on farm or goes to dead stock, those tags must also be flagged with 'retired event.' Early in the Canadian traceability program, programmers flagged retired tag numbers in the system, but there was no warning if that tag number was reused. Some people would go to slaughter plants and collect used tags, which would then end up back at the slaughterhouse for multiple retirements. It took CCIA awhile to figure out what was happening, but once they did, the system was amended, and now tags can be retired only once, with any subsequent retirement generating an alarm. Numbers remain in the system after retirement, with alarmed flags.

Cattle Traceability Working Group Updates

Moderator: Glenn Fischer, *President, Allflex USA, Inc.*

Subgroup Co-Chairs: Chuck Adami, *Equity Cooperative Livestock Association*, Shannon Wharton, *Hy-Plains Feedyard, LLC*, Ross Wilson, *Texas Cattle Feeders Association*, Chelsea Good, J.D., *Livestock Marketing Association*

The purpose of the Cattle Traceability Working Group (CTWG) is to work collaboratively across the various segments of the cattle industry to enhance the traceability of animals for the purposes of protecting animal health and market access. The CTWG will strive to create consensus among stakeholders on key components of the system so there is an equitable sharing of costs, benefits, and responsibilities across industry segments

The overarching goal of the CTWG is to enhance cattle identification and traceability to a level that serves the needs of producers, marketers, exporters, and animal health officials.

The CTWG was initiated at the animal disease traceability forum in Oct 2017 and is composed of entirely volunteer members. These members represent a range of diverse subject group expertise, and offer many different perspectives, therefore at the initial meeting of this group it was decided to split the working group into five subgroups, to better align expertise and perspective with CWTG objectives.

The five CWTG subgroups are:

- 1) Communication and transparency
- 2) Collection technology
- 3) Responsibility and opportunity
- 4) Information liability
- 5) Data storage and access

Co-chairs for each subgroup will present their perspective in this panel, except for the Communication and Transparency subgroup, which has tabled further action until the other four subgroups reach consensus regarding what information will be put forward how that information will be distributed. Much of the content addressed by the subgroups address is provided by the 14 points of USDA published in April 2018.² Subgroups meet weekly via conference call.

The CTWG is in independent entity, not associated with NIAA or with any specific group or association. The CWTG maintains a good working relationship with the USDA, which maintains constructive dialogue and helps the working group avoid overcommitment, which has allowed the development of a well-synchronized team. The CWTG development of traceability guidelines is a work in process, and the working group welcomes all input.

Responsibilities and Opportunities Subgroup

Co-Chair: Chuck Adami, *President & CEO, Equity Cooperative Livestock Association (presenting)*

Co-Chair: Joe Leathers, *General Manager, 6666 Ranch*

Objective:

Fully identify and understand the responsibilities at the various levels of the industry regarding identification application, maintenance and reporting in order to evaluate the true costs and benefits of an enhanced traceability system. Provide guidance to all industry segments on implementation of components of an enhanced traceability system and identifying cost-sharing opportunities to minimize impacts on all levels.

The Responsibilities and Opportunities Subgroup comprises 14 members, ranging from producers to breed and farm organizations, as well as livestock marketing members. At the first meeting, this subgroup developed a structure utilizing the 14 points of the USDA² to move forward. The subgroup identified which of these points required discussion and input from this subcommittee, and then prioritized which should be addressed first.

The first of the 14 points identified as needing attention from this subgroup was 'Cattle populations covered in the official identification regulations.' The second is 'Official identification of beef feeders,'

and the third will be ‘Electronic identification system for cattle.’ A process was developed for discussion of each of these three points. First, discussion will be pushed out to the entire working group for 28 days, at which point a conference call will be scheduled to review the discussion. Seven days after that, a vote on ensuing action will be taken by all members. The conference call for the point ‘Cattle populations covered in the official identification regulations’ was scheduled for the day after the NIAA Livestock Strategy Forum concluded. The subgroup is in the process of discussing the ‘Official identification of beef feeders.’ Discussion points include when and how will it happen, and who will be responsible for making sure it happens. This discussion has not yet concluded.

Collection Technology Subgroup

Co-Chair: Shannon Wharton, *Research Manager, Hy-Plains Feedyard, LLC (presenting)*

Co-Chair: Glenn Fischer, *President, Allflex USA, Inc.*

Objective:

Identify and evaluate technologies that have the greatest ability to enhance collection and processing of animal identification data at the speed of commerce.

The Collection Technology Subgroup began their work by identifying all segments of the cattle industry, from cow-calf to packer, and the technology they are currently using, then discussed the pros and cons of each technology in use. The subgroup then moved on to identifying which of the 14 proposals of the USDA² required discussion and input from this subcommittee, and then prioritized which should be addressed first.

The primary point discussed by this subgroup is ‘electronic identification for cattle.’ The consensus of this subcommittee is that the technology adopted for traceability must be RFID. Subcommittee members also feel that the agricultural industry also appears to be approaching a similar consensus technology decision. This group does not feel that it is the job of regulators, advisors, the Cattle Traceability Working Group, or any other officials to determine whether the RFID is low frequency or UHF, because they believe the marker will drive that choice. Additionally, they postulate that technology companies may possibly accommodate both technologies by providing dual UHF/low frequency readers. The subcommittee is watching the pilot projects in Kansas, Kentucky, and Florida to see what conclusions and issues arise in their wake.

When discussing technology solutions, the Collection Technology subcommittee feels that the focus should be on growth of infrastructure when discussing technology solutions. Is the technology under review supported? Will the technology be outgrown too quickly by the industry?

When considering a timeline for the implementation of a technology solution for traceability, this subcommittee set a final date of 2023, but believes that there should be a number of interim steps met as we move toward the final implementation date. Interim steps to consider are a staging period as producers prepare to phase in new tags; an associated sunset period for brite tags, perhaps in the next

year or two; and steps addressing the logistics involved in the implementation of new technology. Funding is a significant issue in the implementation of any new technology. Brite tags are currently provided, so how do we transition to producers incurring the cost of switching to RFID. One solution is to provide funding for the tag switch up front, to get people involved in the EID system, and then decrease that support over time. The key to that particular solution is infrastructure, as we will need to identify where the funding will come from.

The subcommittee is still in the process of collecting examples of different technologies, and one of their goals at this meeting is to collect attendee input on the technology that will provide the best fit for traceability. The subcommittee is also actively working on securing industry consensus on the same question.

In addition to 'electronic identification for cattle,' the Collection Technology plans to address: collection of ID and its correlation to the carcass at slaughter plants; uniform official identification eartags; official EID tag for imported cattle; and official identification of beef feeders.

Information Liability Subgroup

Co-Chair: Ross Wilson, *President & CEO, Texas Cattle Feeders Association (presenting)*

Co-Chair: Kathryn Britton, *Senior Director of IMI Global Operations, Where Food Comes From, Inc.*

Objective:

Fully identify and understand all potential liabilities (legal and financial) either created or diminished as a result of an enhanced traceability system so that information may be used to protect all levels of industry.

Like the other subcommittees of the CWTG, the Information Liability Subgroup began by identifying which of the 14 points of the USDA² required discussion and input from their subcommittee, and then prioritized which should be addressed first. The primary point addressed by this subgroup is 'official identification of beef feeders.'

Implementation of cattle traceability brings with it potential legal implications. Two attorneys, Elizabeth Rumley of the National Agricultural Law Center and Tiffany Dowell Lashmet of Texas A&M Agrilife Extension Service, have performed extensive research and writing to create a white paper addressing these legal implications.²³ Mr. Wilson provided a summary of their findings for this subcommittee presentation.

Two primary legal issues in the implementation of cattle traceability are confidentiality and liability. A federally mandated traceability system will enjoy protection under the Privacy Act, which protects against the unnecessary exchange of personal information. It would also protect against Freedom of Information Act (FOIA) requests, as a federally mandated system would enjoy statutory exemptions

from requests for agency records. One example of a FOIA statutory exemption is provided by the 2008 Farm Bill:

Section 1619 (7 U.S.C. 8791) restricts public access under FOIA (5 U.S.C. 552) to “information provided by an agricultural producer or owner of agricultural land concerning the agricultural operation, farming or conservation practices, or the land itself, in order to participate in programs of the Department.”²⁴

This statutory exemption has been legally challenged in relation to a media request for National Animal Information System (NAIS) information, and survived as USDA denied the request and the courts supported the USDA.

An industry-led traceability system would entail a private sector database. Due to its private nature, this database is not subject to federal or state FOIA requests, but only to private contractual agreements. The information in the database would be independent, and not typically available to the public unless desired by the owners of the database. There is no example of a public traceability information release from a private database.

Traceability on its own will not expand producer liability; producer liability has always existed. However, identification increases producer accountability. Traceback capabilities exist today without a national traceability system. Liability issues are governed by tort law, which addresses areas such as warranty, strict liability, and negligence. State commercial codes see producers as merchants, and as such they are subject to an implied warranty of merchantability. However, in a number of states livestock producers fall in a different category than other merchants, due to different experience, degree of business skill and other intangible attributes. There are statutory limitations on warranties in several states. The courts are divided on the implied warranty of livestock products, and tend to be very fact specific. One example was a *e. coli* traceback in Wisconsin that went all the way to the Wisconsin supreme court, and ultimately damages were awarded primarily against the packer (80%) with some against the restaurant (20%). Express warranties involve contractual language specific to the particular warranty.

Products liability often doesn't apply to livestock, as livestock are either not treated like other products or not considered as products at all in many states. Negligence or failure to exercise reasonable care is the most likely liability issue to be faced by producers. The standard for negligence or care is what a reasonably prudent person would do. These types of cases are very fact specific, and usually decided by a jury.

The conclusion of Ms. Rumley and Ms. Lashmet's research is that the laws that surrounding an animal traceability system are not entirely clear. As we move forward developing cattle traceability, we must remain mindful of confidentiality and liability. Serious consideration of federal or state statutory changes should be undertaken as we think about protecting producers.

Data Storage and Access Subgroup

Co-Chair: Chelsea Good, J.D., *Vice President of Government and Industry Affairs, Livestock Marketing Association (presenting)*

Co-Chair: Terry Fankhauser, *Executive Vice President, Colorado Cattlemen's Association*

Objective:

Identify data storage and access requirements that have the highest potential to ensure all traceability data is stored and made accessible to authorized users in a secured manner to protect all industry levels.

Like the other subcommittees of the CWTG, the Data Storage and Access Subgroup began by identifying which of the 14 points of the USDA² required discussion and input from their subcommittee, and then prioritized which should be addressed first. The primary point addressed by this subgroup is 'Public/Private Information System.'

The main consensus point reached within the subgroup was support of the confidentiality and security of the data. Data should not be shared except for two specific scenarios: when state or federal official request data as part of official duties, e.g. during a traceback; and for private profit purposes only when permission has been received from each person providing information. Two other consensus subpoints discussed by the subgroup were the bookend system and harvest tag retirement. The subgroup does believe we should work toward a full traceability system, but at the beginning, we must focus on a bookend system, with more consensus regarding initial identification locations. Finally, the Data Storage and Access subgroup supports standardization of traceability data, with specific standardization of the fields of data discussed by Dr. Jack Shere: electronic identification tag number, date, event type, state or location premises identification number (PIN), state, and which data system holds the data.

Communications & Transparency Subgroup

Objective:

Communicate complete and effective messages about the work of the CTWG to all producers, marketers, exporters and animal health officials so that a full understanding of traceability needs, responsibilities, costs, benefits and liabilities is ensured.

The CTWG decided this subgroup will go dormant until other subgroups reach consensus points regarding the information that is being put together and how that's going to go out.

DISCUSSION

The goal of the CWTG for this discussion is to actively solicit questions, concerns, and input, centered around the 14 points of the USDA². Session moderator Glenn Fischer noted that the ultimate goal is a 2023 implementation date for changes to Animal Disease Traceability, and to get there, we all need to

work together to enhance the current ADT system. Glenn invited Jack Shere from USDA to join the CWTG subgroup co-chairs in answering questions during the discussion. Discussion coalesced around tag technology, from designated frequency to tag retention and retirement, the specifics of the bookend system, timing of implementation and follow-up enforcement, and premises ID.

Tag Technology

Thach Winsow of the Wyoming Livestock Board commented that it is refreshing to hear the CWTG subgroup address the 14 points and know that there's progress being made. He's happy to head the focus back on Animal Disease Traceability and the ADT Rule. Mr. Wilson asked about the state of development and potential implementation of dual frequency tags and readers. He is concerned about the different tag technologies limiting the speed of commerce. As far as he is aware, two different tag companies have been working on these dual tags. Shannon Wharton from the Collection Technology Subgroup noted that the CWTG feels that the consensus point on tags and reader technology needs to be industry driven. They are looking at the technology that emerges, watching the pilot projects in Kansas and around the country, and they are generally aware of the different constraints. Glenn Fisher commented that the CWTG doesn't want to move so fast that they get out ahead of the pilot projects. They are concerned about minimizing what works at the expense of creating hybrid technology. The pilot projects will help the agriculture industry and regulators understand what specifically works where. He notes that the dairy industry has really embraced UHF, and UHF has a lot of promise for what it may be able to create at concentration points, but we want the market to go through the process and ultimately dictate the technology needs. Mr. Wilson voiced the concern that animals may move between locations where different systems are in place. Mr. Fischer agreed on the point – that is a distinct possibility. Jack Shere pointed out that the USDA has rollover funds they can use to look at a dual frequency backtag. They will likely look at that in the near future, although he stresses that the objective with this tag is not to dictate the technology, but rather incorporate the dual frequency backtag function into pilot projects similar to Kansas and Florida's projects, to see if it can be successfully incorporated.

Paul Laronde of the Canadian Cattle Identification Agency added one point regarding technology: tag retention. Retention is one of the biggest issues he faces daily, because if the tag is not in the animal, it doesn't matter what the technology is. Following up on this comment, William Avila of Valley Ag Software asked about tag retirement. There are about a trillion numbers in the 840 system, used across species. Are we thinking about reusing ISO numbers in the future? Glenn Fischer answered that reuse of ISO numbers will need to be addressed by the ISO group. Jack Shere commented that USDA hasn't really looked at that, but at the moment, there is no plan to use retired tag numbers. However, there is a database that maintains retired tag information. Mr. Laronde noted that some countries are running out of numbers, largely because they are using the number improperly. He simply urges the group to have something in place to allow for reuse or expansion in the future. Mr. Fisher agreed, and stressed the importance of the optimal management of tag numbers. Joe Leathers, co-chair of the Responsibilities and Opportunities Subgroup, offered a simple fix to the retirement problem: take tag numbers from very old cows and move them to newly registered very young cows. If you move a tag

from an 18 year old cow to an 18 month old cow, it ought to be easy to tell the difference? Glenn Fisher commented that the dairy industry has multi-generational information history, so even after a cow has left the system, the information attached to her still has value to the industry. If her number was duplicated, that information would be removed from the system. Mr. Avila noted that there are certainly more beef than dairy animals, but we still need to bear in mind Mr. Fischer's point.

Bookend System

Mr. Wilson voiced a second question for the Data Storage and Access subgroup. The support of a bookend approach implies identification at the birth premises, and further implies that feeder cattle would be included in the initial bookend identification. However, he doesn't think that feeder cattle will actually be included? Chelsea Good agreed that feeder cattle is a big pinch point when considering ADT. As a group, the Data Storage and Access Subgroup has agreed that they are not talking about mandatory feeder cattle identification, but rather voluntary aspects of the feeder system that may be added to the system. The initial bookend, rather than identification at birth premises, could be an adult animal the first tie it crosses state lines. With that definition, feeder cattle that do not cross state borders are not included.

Ken Griner of the Florida Cattlemen's Association noted that we all have different challenges. Florida is primarily a cow-calf state, and almost all of their animals leave the state. To have a bookend system that works, all animals need a tag when they enter commerce. Florida's pilot program is voluntary, and focuses on adult animals.

Renee Strickland is a member of the Responsibilities and Opportunities Subgroup, and noted that their subgroup has had a lot of discussion about feeder cattle. The majority of cattle in transit in the US are feeder cattle, and if we had a disease outbreak they are the main target. She feels like we're playing Russian Roulette with feeder cattle, and the sooner we get a tag in every cow's ear, the better. Glenn Fisher commended that the ADT law give us the ability to build on the system, and work toward feeder cattle identification.

Rob Jennings of BeefChain in Wyoming notes that Wyoming has a voluntary program in with multiple ranches. In this program every rancher bought their own tags. We need to talk about financial motives for traceability, but their group in Wyoming is also promoting the social good associated with traceability. His thought is that we should start including people outside the agriculture industry in traceability discussions. The voluntary program in Wyoming is part of the IBM FoodTrust network, and IBM has assigned two engineers to work with them to solve the problem of how to get an active tag into the ear of every cow. There is a lot of work happening with traceability in non-agricultural sectors – in digital signatures, cryptography, and BlockChain – and we need to start engaging these sectors in animal disease traceability discussions. He believes this should come from the grassroots up.

Implementation Date

Tom Jones of Arkansas Farm Bureau commented that in Arkansas, they are still trying to get producers to say they're either for or against animal ID. What if 2023 isn't early enough? Ms. Good agreed that this could be an issue – many other countries with active animal disease traceability systems got pushed into it by an animal disease event. However, even if progress is slow, the CWTG supports the current progress and pace, because that we need to know what the ideal system would look like. She acknowledges that we could get pushed into a system earlier and quickly due to animal disease event. Ross Wilson noted that he's equally as impatient to get traceability moving, but 2023 gives us a goal and keeps us moving forward. There is an idea floating around to create a national board of producers that will come together to make the tough decisions to move us forward.

Shannon Wharton asked how many millions of EID tags are sold and currently being use? There is a lot of the industry that is already doing this, so we know it can be done. Glenn Fischer answered that there are about 10 million animals currently with EID. Some of are 900 series, but there are a lot of animals already started in the system. The CWTG is looking at all the elements to find out what can be streamlined and standardized, but we do have a good framework in place that has been well vetted. What we need to do is enhance that framework and create stair-step opportunities.

Jack Shere noted that when he goes up on the hill to speak with Congress about ag initiatives – he always gets asked when the ADT system is going to be working and when it's going to be made mandatory. It's a luxury that we haven't had a disease event that's forced us into a system that doesn't work optimally. In taking our time and working through pilot projects and other questions, we can develop a system that is flexible for people to use, and has options. It's better to have a system that works for people that they're going to utilize, and that's what we're working towards. IF we have a disease event tomorrow, that system becomes mandatory – but mandatory comes with enforcement issues and we don't have the workforce to do all of that enforcement. As we develop the system, it gets pulled in two different directions, between government and producer needs. Congress is also impatient, but we're working to try to get both producers and government there together.

Chelsea Good followed up noting that enforcement piece is something we really need to be looking at. We haven't gotten great answers when try to work together to determine how to get consistency in compliance for livestock not going through concentration points. That is yet another point that needs work prior to adding additional classes of cattle to system.

Premises ID

Todd Firkins from GrowSafe offered his assessment that a lot of the hang-ups from the producer perspective are relative to the 840 tags and Premesis ID. We are seeing new momentum gaining at the producer level in the states with pilot initiatives and other positive advances, but many of the producers who had problems with the premises ID system years ago still have the same problem. The old

challenge to selling the premID system to the producers who are wary of it still exist. When will these issues be ironed out?

In Jack Shere's opinion, there has been resistance to PremID because it is difficult to obtain, and some of the old wariness has been retained even though USDA has tried to make it easier to obtain. We can and we must continue to improve the ease of obtaining PremID. The goal of the USDA is to phase out the 900 series eventually, after the phase out of the Brite tags is concluded. And producers need to realize that, even without PremID, if they have disease on their operation the government will officially find them eventually – how far does the producer want a problem to go before it is found? Ernie Birchmeier of the Michigan Farm Bureau commented that if we wait until we have a disease outbreak then it's too late. It took him five minutes to get his PremID – he thinks the key is having someone in the state who can answer phone calls from producers looking for PremIDs. Ginette Gottswiller agreed. She's worked with producers who don't even know they have a PremID. It's extremely to have someone in state government who can help, Mr. Birchmeier noted that there is much concern among producers about the government knowing their address, but he echoed Dr. Shere in saying they need to understand that the government will find that information if they need it even without Premises ID. At this point, as we develop traceability, producers have the chance to 'drive the bus'. He's convinced most of them would rather drive than ride. Premises ID is necessary, and if we don't tie tags to it, then we're not doing it right. Finally, William Avila with Valley Ag Software gave an example of the ease of transition the 840 tag system offers. He knows of one producer that went bankrupt and sold his dairy, which was using 840 tags. All the new owner had to do to maintain Premises ID was change the contact information – it was already in the system for a seamless transferral.

Global Market Traceability Dynamics

Leann Saunders, *President, IMI Global (A division of Where Food Comes From, Inc.)*

Where Food Comes From, Inc. (WFCF) is an organization with 23 years in livestock identification and traceability, as well as the food verification and certification business. WFCF has four primary verification divisions, and currently verifies or certifies against 35 different standards.

Erin Borrer, economist the United States Meat Export Federation (USMEF), provided Ms. Saunders with a number of charts and statistics to offer a current global market snapshot. In 2018, U.S. beef and variety meat exports have set new records, both in metric tons (7% growth) and in billions of dollars (15% growth) (Figure 6).²⁵

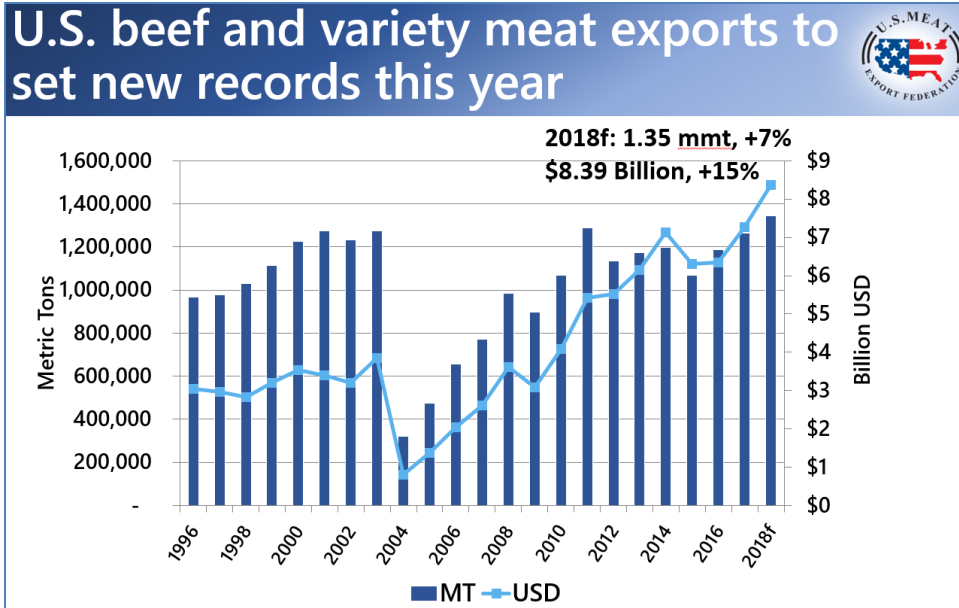


Figure 6. U.S. beef and variety meat exports show record increases in 2018.

That 15% growth in value is the number to which we really need to pay attention. These numbers demonstrate the United States continues to gain market share and consumer confidence. Pork export numbers had been expected to set similar records in 2018, but talk of tariffs has impacted growth in that sector (Figure 7).²⁶

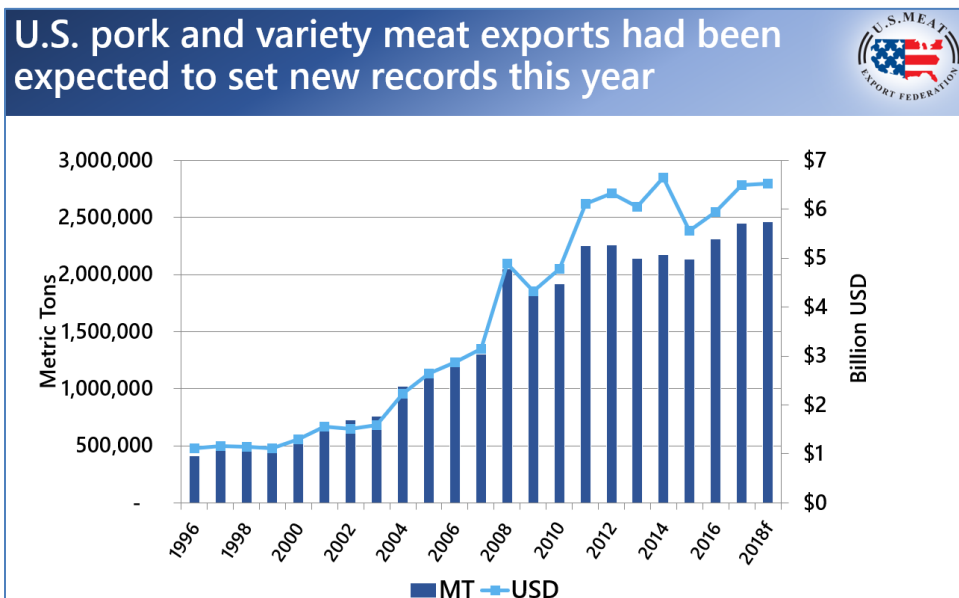


Figure 7. U.S. pork and variety meat exports were expected to set records in 2018, but have been flat from 2017 to 2018.

Why do these export markets matter? They matter because they bring up the price per head for everyone. Price per head for fed cattle increased 16% from 2017 to 2018.²⁷ Price per head for hogs

stayed flat. It is likely the talk of pork tariffs, which significantly affect export markets, held that hog price steady while the beef prices set records. The export market is critical for everyone in the industry today. Tagging at the ranch of origin helps protect these markets. One example of how exports add carcass value is how they allow packers to optimize carcass utilization. Prices for items like tongues and short plate are negligible in the United States, but have significant value in countries like Japan and Korea. The US is the #1 beef exporter on a value basis, but the world has seen growth in all top exporters.²⁸ We all continue to compete around the world for important markets.

Does traceability matter in the global marketplace? Exports are driven by a large number of interrelated factors, such as export prices (both U.S. and competing countries), exchange rates, consumer preferences, trade barriers, and political relations. The need for traceability is only clear when it becomes a necessary condition for imported products. But even then, export requirements are complicated due to different market access requirements. These don't usually affect livestock producers past the packing plant, but they can go back and impact the supply chain. Requirements such as Japan and China's source verifications, the EU's hormone-free program, and Saudi Arabia's feedyard identification all affect the supply chain at various levels. IMI Global has tried to set a base level that meets the highest bar for countries around the world for source verification, which is currently China. This process is 100% market driven, as it is based on the buyers U.S. exporters want to attract.

Different trade agreements and subsequent technical agreements between countries are the reality. According to a 2011 K-state study on cattle identification and traceability, "The world has recognized significant value in animal identification (ID) and traceability systems... In response, major beef exporters and importers have developed mandatory animal ID and traceability systems."²⁹ The world has demonstrated four patterns of traceability adoption

- 1) Mandatory traceability in response to consumer concerns (EU and Japan)
- 2) Mandatory traceability to maintain or enhance export markets (Australia, Brazil, Argentina)
- 3) Industry-managed mandatory programs for animal identification (Canada)
- 4) Mix of mandatory government programs and industry-managed voluntary programs (United States)

There are many different ways to approach the same end. No set of systems around the world are identical. The United States gets the chance to review the different systems around the world, and evaluate the pros and cons as we put together our own system. By taking the lessons that others have learned globally into account, we have the chance to develop a system that works optimally within the U.S. and as it exports to the world.

The January 2018 Comprehensive Feasibility Study of US Beef Cattle Identification and Traceability Systems³⁰ identified a global trend for top beef exporting nations to be reactionary, with national traceability systems developed in response to a disease event. The United State has the opportunity to be proactive and develop an industry-driven approach. Since 2003, the US has developed process verified program data service providers, which has implemented standards which allow different

segments to meet export verification requirements. Multiple export market verifications, including China, are now built off this base model. The one-time use, Program Compliant Tag is a foundation for these verification programs and serves as a unique animal identifier. The uniqueness is paramount, as it ties data back to the individual animal, and has basically become the license for an animal to move forward through export systems. The other major US accomplishment since 2003 is the mandatory ADT ruling. This ruling, combined with voluntary export verification programs, had taken us a long way toward global traceability.

Returning to the Comprehensive Feasibility Study, it notes that traceability systems are becoming the global norm. There are many reasons, but one of the most important is for their uses as a talking point tool in global access negotiations. The only key important market today that requires traceability is China, but that is likely to change. Speed of commerce is also a crucial aspect.

Information from the World Perspective Study³¹ offers an understanding of what people are thinking in industry. Opinions of many people throughout the industry were compiled, including 8% in mandatory traceability systems and 21% in voluntary systems, to generate significant data points. Takeaways from the study were numerous. The main reason people participate in voluntary programs is the value-added potential. Adoption of traceability is much higher in larger herd operations. Producers are overall lukewarm in support of integrating the system in which they participate to a national system. However, 30% of producers surveyed strongly support providing information to government authorities in the event of animal disease. 30% also strongly support ID of animals at the ranch of origin, although there is strong opposition to collecting that information at every animal movement, perhaps due to the difficulty in reading the information. Producer opinion is slowly turning toward support of traceability.

The global food industry involves complex supply chains that sell products around the world. These supply chains require standardization so that suppliers can make similar claims in similar markets, and have assurance that these supply chains are sustainable. The sustainability of supply chains to a global food system is really important. It means that ranching and agricultural production will be preserved for future generations. Traceability is key to the global marketplace, standardization, and ultimately the critical sustainability of the agriculture industry.

The Comprehensive Feasibility Study concludes with a number of recommended tenants for traceability, including:

- 1) industry driven
- 2) managed by an entity overseen by both government and private interests
- 3) maintains data privacy
- 4) equitable to all industry sectors
- 5) compatible with common industry practices
- 6) operates at the speed of commerce
- 7) credible both at home and abroad.

World markets are becoming accustomed to the current mix of mandatory ADT program and voluntary export verification process. We are adequately meeting specific country requirements. This is all good

but does not address the greater population of US producers or disease traceability. IF we had an animal disease issue, the markets would plummet overnight. WE need to consider the best of all systems as we move forward. Value added capability and tracking cattle for disease traceback are both important to traceability. We need to build upon the successes we've already had and keep moving forward.

One conference attendee from Arkansas expanded on the discussion of sustainability. Talking about sustainable agriculture is great, but we have to remember that making a living for the producer is part of sustainability. At the most basic level, without a profit there is no sustainability as the operation won't survive. Ms. Saunders responded that the conversation at the national level is working to define sustainability, with an effort to define metrics for each segment of the industry. Making a living, optimizing natural resources, and how traceability ties in are just some of the aspects to be considered. And once we've defined it, the most important aspect is how that sustainability is communicated to consumers.

Wrap Up

Nevil Speer, PhD, *NIAA Board Chair and Forum Moderator*

We've come a long way since the NAIS was first introduced in 2003, and Mr. Speer's assessment is that we're right on target. The tenets of the Traceability feasibility study, described by Ms. Saunders previously, are what we need to follow.

Possibly the most significant change in stakeholder opinion since the establishment of the current ADT framework in 2013 is the increased support for electronic animal identification (EID) for cattle. Brite tags are being phased out, and we are going to replace these with some sort of EID. The major issue is the expense. When we talk about the cost, we tend to only look at the direct cost. The conversation needs to be shifted to the indirect cost incurred through the inexpensive, but difficult to read and accurately trace, Brite tags. Dr. Shere mentioned a 1 in 6 failure rate due to human error in reading Brite tags. We're spending a lot of time, which translates into a lot of money, using a tool that works poorly.

Traceability is an old part of the beef industry long range plan. National beef quality audits began in 1991. Initially these audits involved very tangible factors, but they have evolved to encompass the intangible of traceability. Where cattle and food come from has become hugely important to beef quality, and consumers care about this. And what the consumer wants is how we increase beef demand.³² Consumer confidence in quality translates to greater economic share.

When discussing domestic versus export markets, in 2018 22% of fed cattle price per cwt is directly attributable to the export market (Figure 8).³³

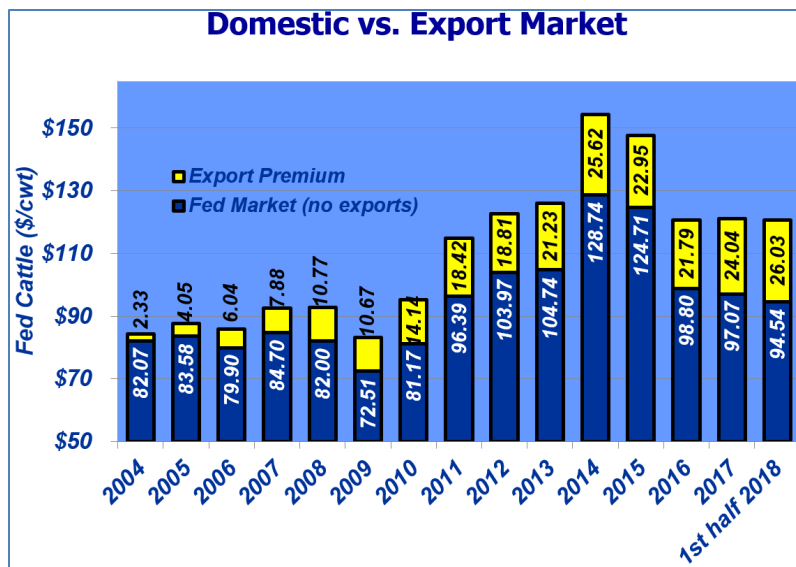


Figure 8. Fed cattle \$/cwt attributable to domestic and export markets

The producer wants to know if traceability will make that \$/cwt number bigger? The answer is not necessarily, but it will put a floor under it and keep it from falling. Traceability is insurance against an animal disease event that would significantly affect the bottom line.

One big question is where traceability, as it exists in the United States right now, is meaningful. Adult animal represent only 20% of the weekly kill, and those animals are currently the only ones officially identified. Are we leaving ourselves vulnerable by not identifying feeder cattle?

The World Perspectives Study³² polled attitudes of cow-calf producers to beef industry traceability, and found 10% opposed, but more importantly, 90% either resigned, cautiously supporting or wholesale supporting of traceability. There are always innovators and early adopters. The hardest part is getting through the chasm from early adopters to general adopters. The data from the World Perspectives Study tells him we've crossed that chasm. We need to continue the education and communication, and emphasize the why to continue to bring producers along. Ernie Birchmeier said it perfectly, "It's not an emergency until it's an emergency." The most dangerous situations emerge where the threat is ambiguous. Continued education and communication is incredibly important, and lights the path forward.

Appendix

Appendix 1. Summary of Feedback on the ADT Program (i.e. 'Fourteen points')²

1. Interstate movements that do not apply to the traceability regulations
2. Cattle population covered in the official identification regulations
3. Limiting official identification requirement to interstate movements
4. Electronic identification system for cattle
5. Administration of electronic records
6. Enforcement of ADT regulations
7. Collection of ID and its correlation to the carcass at slaughter plants
8. Public/private information system
9. Exemptions for official identification requirements
10. iCVI exemptions and movement documents
11. Uniformity of state import regulations
12. Uniform official identification eartags
13. Official EID tag for imported cattle
14. Official identification of beef feeders

Appendix 2: Data (selected) to be collected in the TCFA Pilot Project

Cow-Calf and Stocker data includes:

- EID number
- Animal origin
- DOB, breed, pasture type, supplemental feed
- Animal health & performance products, dates
- Weaning weight
- BQA program info

Feeder data includes:

- EID number
- Animal origin
- DOB, breed, pasture type, supplemental feed
- Animal health & performance products, dates
- Feedyard performance:
 - Weaning weight
 - BQA program info

Packer data includes:

- Quality grade
- Yield grade
- Hot carcass weight
- Slaughter date

Appendix 3: Selected Data from the USDA ERS Report “The Changing Landscape of U.S. Milk Production.”¹³

Table 1—U.S. milk production, selected years

Year	Average cow numbers	Production per cow	Total production	Change in average cow numbers	Change in production per cow	Change in total production
	<i>1,000</i>	<i>Pounds</i>	<i>Millions</i>	<i>Date-to-date percent</i>		
1950	21,994	5,314	116,602			
1955	21,044	5,842	122,945	-4.32	9.94	5.44
1960	17,515	7,029	123,109	-16.77	20.32	0.13
1950-60				-20.36	32.27	5.58
1965	14,953	8,305	124,180	-14.63	18.15	0.87
1970	12,000	9,751	117,007	-19.75	17.41	-5.78
1960-70				-31.49	38.73	-4.96
1975	11,139	10,360	115,398	-7.18	6.25	-1.38
1980	10,799	11,891	128,406	-3.05	14.78	11.27
1970-80				-10.01	21.95	9.74
1985	10,981	13,024	143,012	1.69	9.53	11.37
1990	9,993	14,782	147,721	-9.00	13.50	3.29
1980-90				-7.46	24.31	15.04
1995	9,466	16,405	155,292	-5.27	10.98	5.13
1996	9,372	16,433	154,006	-0.99	0.17	-0.83
1997	9,252	16,871	156,091	-1.28	2.67	1.35
1998	9,154	17,189	157,348	-1.06	1.88	0.81
1999	9,156	17,772	162,716	0.02	3.39	3.41
2000	9,210	18,204	167,658	0.59	2.43	3.04
1990-2000				-7.84	23.15	13.50

Sources: U.S. Department of Agriculture, National Agricultural Statistics Service, *Milk Final Estimates*, various years; *Milk Production, Distribution, and Income, 1999 Summary*, April 2000; and *Milk Production*, February 2001.

Table 3—Farms and farms with milk cows, selected years¹

Year	Total farms	Farms with milk cows ²	Share of farms with milk cows
	<i>Number</i>		<i>Percent</i>
1940	6,102,417	4,663,413	76.4
1945	5,859,169	4,481,384	76.5
1950	5,388,437	3,681,627	68.3
1954	4,782,416	2,956,900	61.8
1959	3,710,503	1,836,785	49.5
1964	3,157,857	1,133,912	35.9
1969	2,730,250	568,237	20.8
1974	2,310,581	403,754	17.5
1978	2,257,775	312,095	13.8
1982	2,240,976	277,762	12.4
1987	2,087,759	202,068	9.7
1992	1,925,300	155,339	8.1
1997	1,911,859	116,874	6.1

¹The definition of what constitutes a farm has changed through time.

²Farms reporting milk cow inventories at the end of the census year.

Source: U.S. Census of Agriculture, U.S. Summary and State Data, Volume 1, part 51, various years.

Footnotes

- ¹ <https://www.beefboard.org/producer/150605Long-Range-Planning-Landing-Page.asp>
- ² USDA-APHIS-VS. (2018). *Animal Disease Traceability - Summary of Program Reviews and Proposed Directions from State-Federal Working Group*. Retrieved from https://www.aphis.usda.gov/publications/animal_health/adt-summary-program-review.pdf
- ³ <https://www.animalagriculture.org/Cattle-Traceability-Working-Group>
- ⁴ Poll data provided by Nevil Speer, PhD
- ⁵ www.cattletrace.org
- ⁶ <http://www.beefusa.org/traceabilitystudy1.aspx>
- ⁷ <https://www.tcfa.org/about-tcfa/>
- ⁸ Participants in the Texas Cattle Feeders Association Cattle Traceability Pilot Project: TCFA, Texas & Southwestern Cattle Raisers Association, Texas Animal Health Commission, Kentucky Beef Network, Florida Cattlemen's Association, Cargill, Tyson, IMI Global, Allflex, Datamars, Y-Tex, Fort Supply, and Microtraks
- ⁹ <https://www.micattlemen.org/bovinetuberculosis.aspx>
- ¹⁰ <https://www.michigan.gov/emergingdiseases/>
- ¹¹ <https://www.usatoday.com/story/news/nation-now/2018/10/11/deer-hunters-warned-bovine-tuberculosis/1598478002/>
- ¹² Figure provided by Mr. Chip Kemp, International Genetic Solutions
- ¹³ Blayney, D. P. (2002). *The changing landscape of US milk production*. US Department of Agriculture, Economic Research Service. Retrieved from <https://www.ers.usda.gov/>
- ¹⁴ <https://fairlife.com/>
- ¹⁵ Figure provided by Dr. Keith Roehr, Colorado Department of Agriculture
- ¹⁶ Figure provided by Dr. Keith Roehr, Colorado Department of Agriculture
- ¹⁷ <http://usanimaltraceback.com/>
- ¹⁸ <https://mfa-inc.com/>
- ¹⁹ <http://www.superiorlivestock.com/value-added-programs/superior-vaccination-programs/vac45>
- ²⁰ http://oqbn.okstate.edu/pdf/oqbn_brochure_draft160413.pdf
- ²¹ Data provided by Mr. Michael John, MFA Health Track Operations
- ²² https://www.iso.org/sites/ConsumersStandards/1_standards.html

²³ Rumley, E. & T.D. Lashmet. (2018). *Cattle Traceability: Potential Legal Implications*. National Agricultural Law Center, Fayetteville, AR. Retrieved from <http://nationalaglawcenter.org/center-publications/#cattletraceability>

²⁴ USDA-FSA. (2010). *Notice INFO-41: Section 1619 of the Food, Conservation, and Energy Act of 2008 (Section 1619) and Payment Information Under FOIA*. Retrieved from https://www.fsa.usda.gov/Internet/FSA_Notice/info_41.pdf

²⁵ Data provided by Erin Borrer, USMEF. Source: USDA/FAS & USMEF

²⁶ Data provided by Erin Borrer, USMEF. Source: USDA/FAS & USMEF

²⁷ Data provided by Erin Borrer, USMEF. Source: USDA/USMEF, Fed slaughter for cattle; commercial for hogs Jan-July 2018

²⁸ Data provided by Erin Borrer, USMEF. Source: GTF and USMEF estimates; includes variety meats but not HS0504

²⁹ Schroeder, T.C. and G.T. Tonsor. 2011. *Cattle Identification and Traceability: Implications for United States Beef Exports*. Kansas State Department of Agricultural Economics Publication AM-GTT-2011.3, August.

³⁰ January 2018 Comprehensive Feasibility Study of US Beef Cattle Identification and Traceability Systems

³¹ Source: Aspen Media and World Perspectives, Inc.

³² John Gerber, Tyson Foods, CAB Feeding Quality Forum, 8/28/18

³³ Data provided by Dr Nevil Speer, NIAA Forum Moderator

CONTACT INFORMATION

National Institute for Animal Agriculture

13570 Meadowgrass Drive, Suite 201

Colorado Springs, CO 80921

Phone: 719-538-8843

www.animalagriculture.org



THE FORUM WAS FUNDED IN PART BY:

USDA

Allflex USA, Inc.

Animal Health International

American Angus Association

BIX Systems

Datamars Inc.

Fort Supply Technologies

IMI Global (a division of Where Food Comes From, Inc.)

ITS Global

Livestock Lens

Micro Technologies

PowerCalf Mobile

Y-TEX Corporation