IMPLEMENTATION & ECONOMIC IMPACTS OF A TRACEABILITY PROGRAM ON BEEF INDUSTRY STAKEHOLDERS

EXTENSION PROPOSAL

Hannah Shear | July 21-23 2019

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Department of Agricultural Economics
Kansas State University
**Problem Overview**

- Disease traceability
- Estimated loss due to reduction of exports during outbreak of FMD

**GEOGRAPHICALLY DISPERSED & COMMINGLED CATTLE PRODUCTION**

- Ranchers
- Livestock markets
- Stockers
- Backgrounders
- Processors
- Shippers
- Cattle feeders
PILOT PROGRAM: CATTLETRACE

CATTLETRACE

THE INDUSTRY-DRIVEN PILOT PROJECT FOR ANIMAL DISEASE TRACEABILITY

1. Develop a purpose-built infrastructure for an animal disease traceability system
2. Evaluate the efficiency & capabilities of the animal disease traceability system & infrastructure
3. And determine the value proposition of an animal disease traceability system
PILOT PROGRAM: CATTLETRACE
WHAT ARE THE ECONOMIC IMPACTS OF A TRACEABILITY PROGRAM ON BEEF INDUSTRY STAKEHOLDERS?
What is the economic impact of traceability on producers?

What is the industry impact of traceability given an outbreak occurs?
## Comprehensive Budget

### Operation Breakpoints (head)

<table>
<thead>
<tr>
<th>Operation Size</th>
<th>1-49</th>
<th>50-99</th>
<th>100-499</th>
<th>500-999</th>
<th>1000-1999</th>
<th>2000-4999</th>
<th>5000+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of operations</td>
<td>239,000</td>
<td>88,400</td>
<td>51,029</td>
<td>2,999</td>
<td>974</td>
<td>193</td>
<td>39</td>
</tr>
<tr>
<td>Average herd size 1. Day 1, Feedlot 1</td>
<td>14.9</td>
<td>63</td>
<td>188</td>
<td>611</td>
<td>1,141</td>
<td>2,349</td>
<td>7,494</td>
</tr>
<tr>
<td>Bulls in herd, 500+</td>
<td>2.6</td>
<td>2.5</td>
<td>6.6</td>
<td>24.2</td>
<td>45.1</td>
<td>92.8</td>
<td>269.2</td>
</tr>
<tr>
<td>Calves/animal (adjusted for twinning)</td>
<td>93.06%</td>
<td>93.06%</td>
<td>93.06%</td>
<td>93.06%</td>
<td>93.06%</td>
<td>93.06%</td>
<td>93.06%</td>
</tr>
<tr>
<td>Calving rate, Day 1</td>
<td>92.06%</td>
<td>92.06%</td>
<td>92.06%</td>
<td>92.06%</td>
<td>92.06%</td>
<td>92.06%</td>
<td>92.06%</td>
</tr>
<tr>
<td>Calf death loss before 24/48 hours</td>
<td>1.35%</td>
<td>1.35%</td>
<td>1.35%</td>
<td>1.35%</td>
<td>1.35%</td>
<td>1.35%</td>
<td>1.35%</td>
</tr>
<tr>
<td>Calf death loss after 24/48 hours</td>
<td>4.35%</td>
<td>4.35%</td>
<td>4.35%</td>
<td>4.35%</td>
<td>4.35%</td>
<td>4.35%</td>
<td>4.35%</td>
</tr>
<tr>
<td>Replacement % retained, Day 2</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
</tr>
<tr>
<td>Replacement animals</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
<td>17.32%</td>
</tr>
<tr>
<td>Animal death (disappearance) loss, Day 2, Feedlot 1</td>
<td>4.12%</td>
<td>4.12%</td>
<td>4.12%</td>
<td>4.12%</td>
<td>4.12%</td>
<td>4.12%</td>
<td>4.12%</td>
</tr>
<tr>
<td>Cull rate</td>
<td>13.20%</td>
<td>13.20%</td>
<td>13.20%</td>
<td>13.20%</td>
<td>13.20%</td>
<td>13.20%</td>
<td>13.20%</td>
</tr>
<tr>
<td>Cows culled</td>
<td>2.0</td>
<td>9.2</td>
<td>22.2</td>
<td>88.7</td>
<td>150.7</td>
<td>310.0</td>
<td>989.2</td>
</tr>
<tr>
<td>Cows lost due to other causes</td>
<td>0.7</td>
<td>0.6</td>
<td>1.7</td>
<td>6.0</td>
<td>11.3</td>
<td>23.2</td>
<td>74.1</td>
</tr>
<tr>
<td>Total animals sold</td>
<td>12.6</td>
<td>53.1</td>
<td>141.8</td>
<td>516.4</td>
<td>904.0</td>
<td>1,983.6</td>
<td>6,329.2</td>
</tr>
<tr>
<td>Total calves died at birth</td>
<td>0.2</td>
<td>0.2</td>
<td>2.1</td>
<td>7.7</td>
<td>14.4</td>
<td>29.6</td>
<td>94.2</td>
</tr>
<tr>
<td>Total calves born - alive 24/48 hrs</td>
<td>13.7</td>
<td>57.7</td>
<td>164.2</td>
<td>501.4</td>
<td>1,047.2</td>
<td>2,195.1</td>
<td>6,889.0</td>
</tr>
<tr>
<td>Total calves died after 24/48 hours</td>
<td>0.6</td>
<td>2.7</td>
<td>28.1</td>
<td>98.0</td>
<td>297</td>
<td>510.8</td>
<td>1,544.1</td>
</tr>
<tr>
<td>Total calves available for sale</td>
<td>13.0</td>
<td>55.1</td>
<td>147.1</td>
<td>535.6</td>
<td>999.7</td>
<td>2,057.1</td>
<td>6,564.0</td>
</tr>
<tr>
<td>Number of calves to re-tag</td>
<td>0.3</td>
<td>1.4</td>
<td>3.7</td>
<td>13.4</td>
<td>25.0</td>
<td>51.4</td>
<td>184.1</td>
</tr>
<tr>
<td>Total cows and bulls re-tagged/tagged</td>
<td>0.4</td>
<td>1.6</td>
<td>4.4</td>
<td>15.9</td>
<td>29.7</td>
<td>51.0</td>
<td>194.8</td>
</tr>
<tr>
<td>Total Tags Purchased</td>
<td>14.4</td>
<td>60.8</td>
<td>162.2</td>
<td>500.5</td>
<td>992.8</td>
<td>2,268.8</td>
<td>7,238.9</td>
</tr>
<tr>
<td>Tag loss rate 4</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>UHF RFID tag cost, $/unit</td>
<td>$3.20</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
</tr>
<tr>
<td>RFID Tag Cost, Total $</td>
<td>$37</td>
<td>$144</td>
<td>$368</td>
<td>$2,217</td>
<td>$4,271</td>
<td>$4,673</td>
<td>$14,912</td>
</tr>
</tbody>
</table>
Partial Equilibrium Model
Equilibrium Displacement Model

Figure 1. Cumulative present value of 10-year total consumer and producer surplus changes with varying adoption rates and no change in demand.

Figure 2. Change in beef domestic demand needed so that no sector (wholesale beef, slaughter cattle, and feeder cattle) loses any cumulative present value 10-year surplus by adoption rates.
PROJECT GOALS & OBJECTIVES

Educate Kansas beef stakeholders on the expected impact of a traceability program

Provide information and resources to help producers make optimal, informed decisions

Provide an industry wide analysis of the expected economic impact of a traceability program
From end-to-end, each step of the beef cattle supply-chain exists in Kansas.
FACTSHEETS

In an effort to share information with our audience, a factsheet was developed to include important traceability information as well as condensed versions of the budgets.

BUDGETS

Industry interviews, data collection, and more were used to develop budgets for each segment of the beef industry.
Workshop Events & Presentations

CATTLETRACE EVENTS
- Field Days
- Participant Meetings

KANSAS STATE EVENTS
- Cattlemen's Day
- Stocker Field Days
- Ranching Summit
- Risk & Profit Conference
- Vet Med Conference
- Ag Lenders Conference

STATE LIVESTOCK EVENTS
- KDA Agriculture Summit
- Kansas State Fair
- Kansas Livestock Association Conference
Communication Outlets

**TWITTER**
Beef Cattle Institute
Agricultural Economics
KSU Extension & Research

**AGMANAGER.INFO**
Managed by KSU
Agricultural Economics

**PODCAST & RADIO**
Podcast managed by
Beef Cattle Institute and Agriculture Today radio managed by KSU Research and Extension

**NEWSLETTERS**
Beef Tips, The Grazier, Focus on Feedlots are managed by Animal Science Dept

Communicate event announcements, links to AgManager.info, podcasts, and newsletters

Host factsheets, budgets, and reports

Discussions, producer interviews, and event announcements

Communicate event announcements, links to AgManager.info, articles, and summary information
News & Events feed managed by CattleTrace program coordinator.

Regular updates and event announcements are scheduled to be delivered around planned events.

Articles written in industry magazines and local sources (newspapers, magazines) are shared on this page.
AgManager.info hosts agricultural research and extension reports and decision tools.

Also provides upcoming events and links to additional resources.

Provides access to Kansas Farm Management Database and listserv.
Program Summary

1. Timely & Applied Research on Traceability
2. Workshops & Presentations
3. Articles & Press Releases

- Share Information with Industry Stakeholders
- Share Information with Kansas Beef Stakeholders
- Producers use tools to make management decisions & adopt traceability program
Extension Program Timeline

ROADMAP TO TRACEABILITY IN KANSAS

AUGUST 2018
Pilot Program is launched

SEPTEMBER 2018
Begin participation recruitment

JULY 2019
Complete economic analysis across industry and each production segment, and continue recruitment

AUGUST 2019
Begin "testing" the system and sharing results with industry stakeholders and participants

BEYOND 2020
Continue expansion and recruitment, extend program outputs with other states
OUR PARTNERS

industry stakeholders
THE TEAM

HANNAH SHEAR  
PhD Student  
Kansas State University

DUSTIN PENDELL  
Professor  
Kansas State University
Team Responsibilities

- **FACTSHEETS & BUDGETS**
  Hannah Shear & Dustin Pendell from KSU Department of Agricultural Economics

- **PODCASTS & RADIO**
  Hannah Shear, Dustin Pendell, and CattleTrace Representative

- **ARTICLES & PRESS RELEASES**
  CattleTrace Coordinator will provide these opportunities and will facilitate article distribution across all outlets (listservs, newsletters, social media)

- **TWITTER & SOCIAL MEDIA**
  All social media sites will be managed separately by their respective institutions, but a coordinated plan and approach is utilized between partners.

- **WORKSHOPS**
  Workshop material is provided by Hannah Shear and Dustin Pendell from KSU Department of Agricultural Economics, but workshop organization is coordinated by CattleTrace
Program Evaluation

PRE WORKSHOP SURVEY
Used to garner the participant’s current level of understanding of traceability, what system they currently utilize, their level of awareness of a national program, and what impacts they expect to experience due to implementing a national program.

POST WORKSHOP SURVEY
Used to determine what was gained by attending the workshop, identify useful resources and tools the participant learned about, to determine if participants plan to make changes or utilize information to implement traceability on their operation.

6-MONTH SURVEY
Used to determine what actions or changes participants have or have not made due to attending workshops.

WEBSITE VISITS & RESOURCE DOWNLOADS
Used to determine usefulness and reach of resources such as factsheets and budgets.
CONTACT US
FOR QUESTIONS AND CLARIFICATIONS

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DUSTIN PENDELL
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Thank you.