Teaching and Education Commentary

A Commentary on Extension Education Programming: An Overview of the CattleTrace Extension Program and Graduate Extension Education

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Abstract
This commentary reviews the development of an extension education program within the context of the Agricultural and Applied Economics Association's Extension Competition. The competition gives graduate students the opportunity to develop extension education skills through the development of an extension education program that focuses on CattleTrace, one of the largest beef-cattle disease tracing programs in the United States. The extension program's main objective is to identify industry participants and provide them with economic analysis and potential policy impacts relating to CattleTrace. The main outputs of the program include in-person workshops and conferences, informational factsheets, and economic decision tools.

1 Introduction

Extension services and programming have a track record of adapting not only to new developments in knowledge, technologies, and policies, but also to changes in consumer demand, producer demographics, and other factors to provide critical, researched-based information to producers and consumers. Training the next generation of extension economists is therefore of the utmost importance. But that task has become ever-more challenging. Given reduced funding, declining rural populations, increasing competition from private outlets, and demand for information on a wider and wider variety of topics, Taylor and Zhang (2019) suggest the development of skills-building workshops and seminars that will allow undergraduate and graduate students to prepare to pursue extension services careers.

One training opportunity is provided by the Agricultural and Applied Economics Association's (AAEA) Extension Competition, which helps graduate students develop extension education skills. This commentary highlights the need for similar training opportunities, provides an overview of the analysis on which an extension program is built, and illustrates the comprehensive nature of extension service delivery for a multi-stakeholder program using a case study: establishment of an extension program for CattleTrace, a disease traceability program designed to (1) educate beef stakeholders in Kansas about the expected impact of the program, (2) provide information and resources to help producers make informed decisions in relation to the program, and (3) provide an industry-wide analysis of the program's expected economic impact. This commentary conveys and reflects on highlights of a presentation on the CattleTrace Extension Program—a presentation that received first place in the 2019 AAEA Extension Graduate Student Competition.

Design and delivery of extension education programs are often overlooked in the academic training of extension students. In the United States, North Carolina State University is the only bachelor's program specifically focused on extension education, and few agricultural economists' course requirements include extension education training. As more students look to enter industry or extension, rather than academia, improved training related to extension programming in graduate programs is needed.

Cole (1981) referenced the use of "tried-and-true" methods of extension teaching and divided them into three main categories: individual contact, group contact, and mass media. Office visits, farm visits, or phone calls fall under individual contact. Workshops, illustrated lectures, and symposiums are considered group contact. Mass media includes news stories, radio, and publications. A report compiled by the Federal Extension Service in 1954 outlined the same broad categories and their relative effectiveness at the time. These historical reports suggest that utilizing methods from all three broad teaching method categories is important to information dissemination.

Researchers with the University of Tennessee Extension Service examined preferred methods of information delivery in the digital age. Their study found that traditional methods, face-to-face delivery and factsheet publication, were still the most effective tools. Relatively young study participants, mostly consisting of producers, did not necessarily have a preference for technology-based delivery (Sneed and Franck 2019). A commentary provided by Rader (2011) suggested that to be successful, online extension programs should structure their websites to meet stakeholder needs, allow collaboration among stakeholders, and present material that is specifically designed for web-based delivery. Each of these observations were taken into consideration in developing the CattleTrace Extension Program.

2. Cattle Traceability

Traceability has increasingly become a focus for beef industry stakeholders, including the United States Department of Agriculture (USDA), the National Cattlemen's Beef Association (NCBA), and high-volume beef-exporting states (NCBA 2017). The focus on traceability within the United States began after several international animal disease outbreaks. Additionally, increased globalization and imports and exports of both live animals and meat, has made disease monitoring increasingly important. In April 2019, the USDA announced that by January 1, 2023, all beef and dairy animals moving interstate will be required to have radio frequency identification. A lack of confidence about the viability of industry-wide implementation of such a regulation resulted in the regulation's redaction (USDA APHIS 2019). The uncertainty and concern surrounding traceability policy emphasizes the timeliness of an extension program.

Market segmentation, production variability, geographical disbursement of production, and strong global demand makes traceability difficult to implement. Despite the lack of a national traceability program, U.S. beef has remained internationally competitive. The positive international perception of domestic beef, along with a fear of increased cost and other long-term implications, has led some industry stakeholders to oppose a potential government-mandated traceability program (Golan et al. 2004).

Several studies, including Coffey et al. (2005), support the positive impact that a traceability program could have on the U.S. beef industry by avoiding loses from reduced exports and inventory in the event of a disease outbreak. However, all current studies suggest a significant economic impact to the industry due to implementation—so much so, that the NCBA included traceability in its 2016–2020 Long-Range Plan (NCBA 2017). Determining the costs and economic impacts of a traceability program within the United States is difficult due to the nature of the supply chain, but it is crucial to allow the potentially affected industry segments to mitigate any potential adverse impacts.

Extension programs are often provided in an effort to disseminate information or to aid producers in understanding the impact of production decisions. The proposed CattleTrace Extension Program is preemptive, allowing cattle producers and industry stakeholders to directly shape the development and implementation of a national disease traceability program by disseminating traceability research and pilot program information directly to producers and other industry stakeholders.

3. CattleTrace Extension Program Overview

In 2018, a pilot program called CattleTrace (uscattletrace.org) was launched in Kansas with the support of industry stakeholders to begin directing the beef industry toward a cohesive, birth-to-slaughter disease traceability program. In January 2020, a new initiative, U.S. CattleTrace, combined the efforts of

CattleTrace with pilot projects underway in Florida and Texas. The CattleTrace program includes participants from all segments of beef cattle production.

The extension program described in this commentary is based on an economic analysis of the cost of implementing the pilot CattleTrace program in Kansas. The analysis included estimated cost budgets for each industry segment and scaled economic analyses based on head of cattle and capacity, allowing for economies-of-scale considerations.[1] The analysis showed that cow-calf producers would bear more than 80 percent of the total economic cost for the industry.[2] Each industry segment received a factsheet describing the expected impacts for that segment as well as expected benefits to the industry as a whole (Figure 1).

The target audience for the CattleTrace Extension Program is Kansas beef-industry stakeholders. Because the beef industry is highly segmented, the extension program prepares segment-specific presentations and workshops. These events include an overview of the CattleTrace Pilot Program, its segment-specific impact, and its budget as well as first-hand accounts of program implementation on the operations of CattleTrace participants. Additionally, these events include time for questions and roundtable discussions to garner reactions and address producers' concerns. By providing economic analysis and estimating budgets for each segment, the extension program aids producers in making decisions and managing costs when implementing the traceability program.

3.1. Extension Program Delivery and Communication Methods

To maximize information dissemination and retention, the CattleTrace Extension Program makes use of existing events for Kansas beef producers, including Kansas State University's (KSU) Cattlemen's Day,

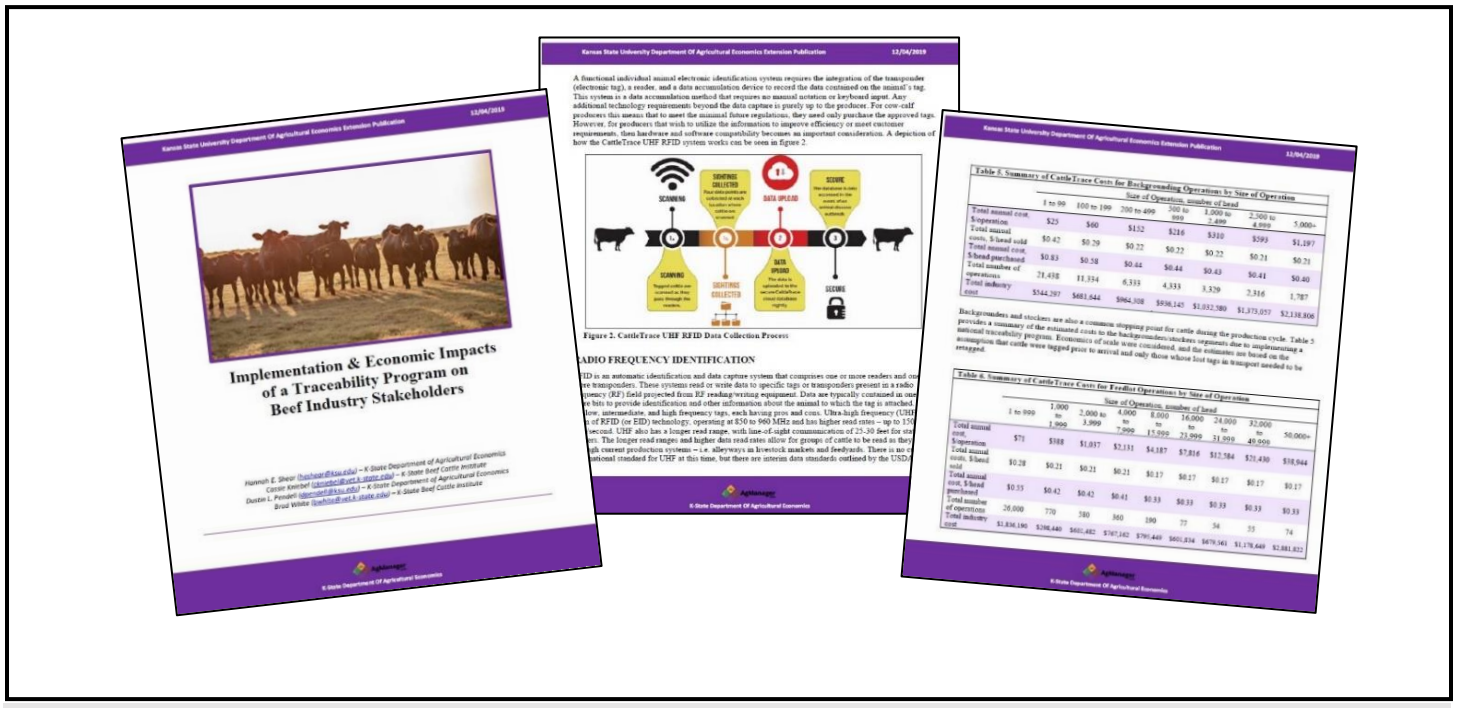

Figure 1. CattleTrace Extension Program factsheet (Available in print and online on Agmanager.info).

[1] See http://www.agmanager.info/livestock-meat/cross-subject-areas/implementation-and-economic-impacts-traceability-program-beef. The beef industry is segmented into cow-calf producers who sell calves for their main source of income, backgrounders and stockers who feed calves to a particular weight before selling, sale barns that assist in the selling of livestock, feedlots where cattle are fed for a short period of time on grain, and packers.

[2] See http://www.agmanager.info/making-%C2%A2ents-cattletrace-costs-and-economic-impacts.

Figure 2. CattleTrace Extension Program Summary Diagram (Including program outputs, resources, and events)

Kansas State Stocker Field Days, and the Ranching Summit.[1,3]

The program provides several types of print and online publications. It issues press releases to announce workshops, point users to program resources, and provide contact information.[4] One release summarized the impact of the traceability system on the beef industry in Kansas. Several established newsletters serve as outlets for program advertisement, providing links to program resources such as factsheets. CattleTrace's active social media pages, including Twitter and Facebook, are used to post event information and provide links to program resources. All extension program materials, including segment-specific factsheets, are made available through the CattleTrace and AgManager.info websites.

The primary extension program leaders make appearances to communicate program information. They participate in radio interviews with Agricultural Today, Kansas State University's Radio Network.[5] On the Beef Cattle Institute's Cattle Chat podcast, they advertise workshops and discuss the economic impact of the traceability program in Kansas.[6]

3.2. Programmatic Impact Assessment

The 1954 federal report on extension teaching found that program enrollment, participation, and publications measure program reach but not necessarily program outcomes such as behavior change (Wilson and Gallup 1954). A report by Smith and Straugh (1983) identified the main challenges facing extension program evaluation as difficulty in identifying both program goals and qualitative ways of measuring impacts.

To address these challenges, the CattleTrace Extension Program at the outset identified explicit objectives and quantifiable measures of program reach and effectiveness. The measures are pre- and

[3] See https://www.asi.k-state.edu/events/cattlemens-day/, https://www.asi.k-state.edu/news/News_stockerfieldday.html, and https://www.asi.k-state.edu/events/ranchingsummit/index.html.
[4] See https://www.uscattletrace.org/blog.
[5] See https://www.ksre.k-state.edu/news/radio-network/ag-today.html.
[6] See https://ksubci.org/2019/12/06/cattletrace-industry-impacts-cattle-cycle-cow-depreciation-top-3-tips-for-managing-cow-depreciation-dollar-cost-averaging-approach/.

post-workshop surveys, which elicit the information gained from program participation as well as feedback on information delivery. Most critical are questions on the post-workshop survey, administered about six months after the event, about how likely participants are to participate in the CattleTrace program or to implement their own traceability program. These questions help workshop organizers determine whether the workshop will directly lead to any changes by beef producers. These organizers also track downloads of workshop materials, such as budgets and factsheets, and unique visits to program information sites.

4. Conclusion

Providing timely information and decision tools to producers is a key mission of extension and of the extension program for the pilot CattleTrace program in Kansas. By providing segment-specific economic analyses of, and information about, the expected impact of the pilot traceability program on AgManger.info and through workshops, this extension program offers Kansas beef producers the opportunity not only to make optimal decisions but also to help shape the policy and design of a national disease traceability program.

Extension program development, assessment, and delivery are not typically included in graduate extension education. Notably, the extension program for the pilot CattleTrace program in Kansas was developed by a KSU graduate student under the guidance of extension professionals. The presentation on the program received first place in an AAEA Extension Graduate Student Competition, which allows graduate students to deliver an outline of their program to extension specialists for feedback and suggestions for improvement. This competition helps prepare students for a successful career in extension and outreach.

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