

LIVESTOCK TRACEABILITY

LENGTH: 60 Minutes

OBJECTIVES: Students will:

- Understand concepts related to livestock animal traceability
- Discover current animal traceability technologies
- Explore uses for traceability in consumption and disease prevention

STANDARDS:

AFNR Standards Addressed

AS.07 - Apply principles of effective animal health care

AS.07.01 - Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare

AS.07.01 - Identify and summarize specific tools and technology used in animal health management

RECOMMENDED MATERIALS:

- PowerPoint/Google Slides (Provided)
- Laptops/Tablets
- Instructional Worksheet
- Writing Utensils
- RFID Ear Tags (Optional)*
- RFID Reader (Optional)

* You may also show students traditional style ear tags in substitution of an RFID style tag, explaining that the main difference between the two products is the Radio Frequency Identification (RFID) chip inside the plastic of the tag.

SUGGESTED VIDEOS AND SITES:

“RFID Cattle Tags and Their Usage On Your Operation” by U.S. CattleTrace (3:47)
<https://www.youtube.com/watch?v=QDfT2b-w-Qg>

“RFID Process” by Auburn RFID Lab (2:55)
https://www.youtube.com/watch?v=ic_D_kDzQO4&t=97s

“WLIC Traceability Video 2020” by Wisconsin Livestock Identification Consortium (11:38)
<https://www.youtube.com/watch?v=34h38yw6rRE&t=31s>

USDA APHIS Animal Identification

<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/NVAP-Reference-Guide/Animal-Identification/>

INSTRUCTOR CONTEXT:

RECOMMENDED AGE GROUP: 9-12th Graders

This lesson focuses on animal traceability and current ways that it is used with livestock animals in the United States. Designed to allow you to address all livestock animals, including cattle, swine, sheep and goats. Less focused on content mastery, we encourage you to explore the technology alongside students with the understanding that technology is and will continue to change.

The instructor notes are detailed in a way that should allow for you to answer questions from students about the technology if they arise, but we expect that you may like to facilitate activities in a different manner than suggested.

This particular lesson pairs well with a more traditional animal identification lesson in your animal science curriculum.



Instructor Directions & Notes	Lesson Set Induction
Interest Approach:	<p>Though I know a few faces in this group, I think it's important that I know with 100 percent certainty 1) Who you are, and 2) Where you've been in the past week. We need to verify those details before we get started. So, let's think about how you could verify those details for me. What are examples of ways we could verify that info?</p> <p>Examples could include: Driver's license or passport (paper), Google Maps/Apple Maps (digital), Birth Certificate (paper), Vouching for each other (verbal), photos (digital)</p> <p>I think it's safe to say that using these methods I could verify who you are and where you've been in the past. It may sound odd to have to verify these details about yourself, but these details are exactly what both consumers and animal health officials are searching for when it comes to production livestock animals.</p>
Context:	<p>Today we'll be discussing the concepts of Animal Traceability, what technology is used to make it happen, and how it is utilized by both verified programs and animal health officials.</p>
Objectives:	<p>Understand concepts related to livestock animal traceability Discover current animal traceability technologies Explore uses for traceability in consumption and disease prevention</p>



Instructor Directions & Notes	Content Outline and/or Procedures
<p>Objective #1: <i>Understand concepts related to livestock animal traceability</i></p>	<p>Traceability is a concept that can cause a bit of confusion and apprehension. What is traceability in relation to livestock and how are responsibly using it without restricting livestock producers' ability to operate?</p> <p>Before we go into how we use traceability, let's discuss definitions for traceability concepts that we will be going over today:</p> <p>Traceability: the ability to discover information about where and how a product was made, or the ability to find or follow something.</p> <p>These two definitions for traceability fit nicely with our next two definitions:</p> <p>Animal Disease Traceability: knowing WHERE diseased and at-risk animals are, where they HAVE been, and WHEN they were at those locations.</p> <p>Verified Programs: tracing verified attributes of livestock animals from birth to slaughter.</p> <p>So, as we can see, there are two main components of traceability usage in livestock animals today: Animal Disease Traceability and Verified Programs. While they both are a part of traceability, they have different goals. We'll continue to explore these goals today.</p>
<p>Objective #2: <i>Discover current animal traceability technologies</i></p>	<p>But what does it take for traceability to happen in the animal livestock industry? It all starts with something you likely are familiar with; an ear tag.</p> <p>HAND OUT EAR TAGS (IF AVAILABLE)</p> <p>When you consider traceability from birth to plate, you must have an item that can live in the animal for the entire duration of its life. Currently, ear tags are the best way to accomplish that longevity. If made correctly, the durability of the plastic, along with the latching mechanism of the back of the tag, can lead to....</p>

**Objective #2 cont.:**

Discover current animal traceability technologies

..... a secure way to track livestock. You can even try to bend the tags yourself (if using visual tags and not button tags).

But it's not just the plastic of the tag that makes ear tags able to track information throughout the duration of the life and along the supply chain. Like your phones, computers, and other electronic devices, the tags you are holding each contain an electronic chip. This chip allows them to be read via radio frequencies. This type of technology is used in everything from packing and shipping, inventory, to contactless toll road payment stickers (example www.myktag.com) Once read, the tag information is then put into an online system, like an Excel document or searchable database.

Info that can read from the tag is:

- Date, time and location of the read
- Identification Number

OPTIONAL RFID VIDEO: https://www.youtube.com/watch?v=ic_D_kDzQO4&t=98s

OPTIONAL: If you have access to a wand reader via your local livestock extension agent or other RFID reader, you can demonstrate the scanning of a tag.

These Radio Frequency Identification, or RFID tags make all aspects of traceability possible. Let's hear more about the different styles of RFID tags and how livestock owners can use them in their production animals. During this video, we will capture the three bullet points shown during UHF and LF tags.

<https://www.youtube.com/watch?v=QDfT2b-w-Qg> (3:47 long)

What were the aspects we heard about Ultra-High Frequency Tags and Low Frequency Tags?

Thanks for your participation. To recap, these RFID tags allow us to not only electronically track the past and current locations of livestock, but also verify aspects like age, origin and animal welfare.

**Objective #3:**

Explore uses for traceability in consumption and disease prevention

We're now going to do a brief activity simulating how someone like an animal health official, like a veterinarian, would use traceability for in their work.

On the back of your paper, you should see four squares, labeled Cow/Calf Operation, Livestock Market, Feedyard & Processor. 3 of these pens have 10 cows in them. It will be our job to track how many cattle end up in each pen based on the information given to us.

But someone has reported an animal with a disease, meaning we have to have a number quickly. I will flash each report (Slide) on the screen for 5 seconds before moving to the next one.

At the end of the activity, we'll see who came closest to having the correct number of cattle in each pen. What questions are there? Alright let's begin with our first slide.

GIVE 5 TO 7 SECONDS PER SLIDE, WITH NO REPEATING OF INFORMATION. The goal of this activity is to show how difficult it can be to track animals via paper if given a time limit, like how disease officials would act.

Now that we're through all slides, let's reveal who was closest to our actual numbers.

- What was difficult about this activity?
- Would it have been easier if you had a longer amount of time to track?
- How could technology help us with this process?

Both animal health officials and those who track animals for verified programs can use technology that we discussed earlier to make the process you all just went through more efficient with less room for second guessing.

In fact, organizations like U.S. CattleTrace are using technology to ensure that if an animal disease outbreak were to happen, that cattle producers could quarantine the effected animals, and the rest of the industry could continue to operate like normal.



<p>Objective #3 cont.: <i>Explore uses for traceability in consumption and disease prevention</i></p>	<p>Let's watch the following video from the Wisconsin Livestock Identification Consortium (WLIC) to learn more about how farmers and ranchers are using this technology today:</p> <p>https://www.youtube.com/watch?v=34h38yw6rRE&t=3s</p> <p>We could essentially avoid something like we all had to do in 2020 as a part of the COVID-19 Pandemic in the cattle industry.</p>
<p>Closure:</p>	<p>To finish today's discussion about animal traceability, we are going to explore in groups the federal guidelines for animal identification. Just like there are many species of livestock (cattle, swine, sheep and goat, equine) there are many standards for how to identify those animals.</p> <p>We will be splitting into groups and creating an informational slide about our chosen species. This slide will contain the species we are assigned, all the ways that species can be officially identified, such as an ear tag or tattoo, and any additional information you find interesting. You can find all the information you need at:</p> <p>https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/NVAP-Reference-Guide/Animal-Identification/Cattle-Identification</p> <p>We'll have 10 minutes to complete this assignment.</p> <p>Split into groups based on cattle, swine, sheep and goat and equine. Direct them to the website and give them time to complete a slide on the topic. This can be turned in as an assignment for presented to the entire class.</p>



LESSON HANDOUT

NAME: _____ DATE: _____ COURSE: _____

DEFINITIONS

Traceability: the ability to _____ information about _____ & _____ a product was made, or the ability to _____ or _____ something.

Animal Disease Traceability: knowing _____ diseased and at-risk _____ are, _____ they _____ been, and _____ they were at those _____.

Verified Programs: tracing verified _____ of _____ animals from _____ to _____.

DIFFERENCES IN RFID TAGS

Low Frequency RFID Tag

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-
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Ultra-High Frequency RFID Tag

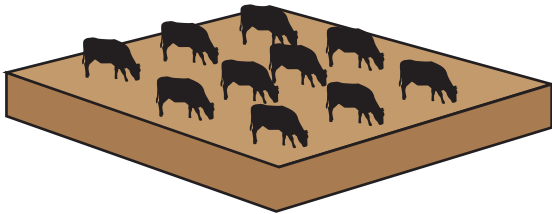
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-
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LESSON HANDOUT

TRAILING CATTLE ACTIVITY

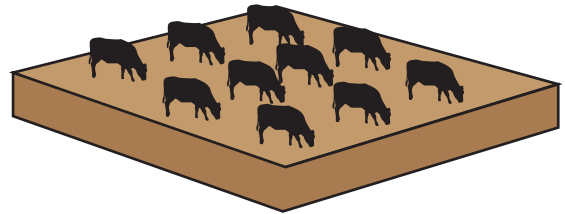
COW/CALF OPERATOR



Beginning Cow Total: 10

Ending Cow Total: _____

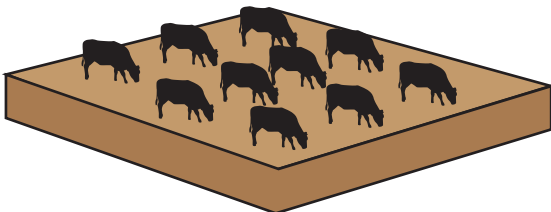
LIVESTOCK MARKET



Beginning Cow Total: 10

Ending Cow Total: _____

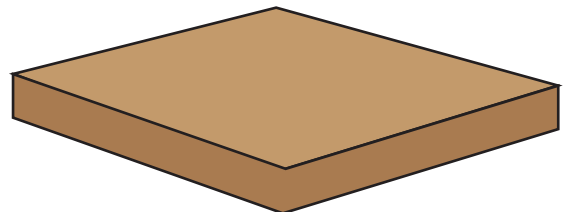
FEED YARD



Beginning Cow Total: 10

Ending Cow Total: _____

PROCESSING FACILITY



Beginning Cow Total: 0

Ending Cow Total: _____

**Hint - You start the activity with 30 cattle total. Because you don't lose any cattle, you should end the activity with 30 total cattle across all four "pens".*