Animal Science

Animal Electronic I.D.

Science, Technology

Grade Level: 3-6

Time: 30 minutes

Standards:
Science

Materials

Electronic I.D. (EID) tags from County Extension Office
EID Reader from County Extension Office
Resealable plastic bags
Tape
2 small orange cones to represent the scale
Glo Germ™
Small blacklight
Signs with ranch and other business names (Appendix A)

Some of these items may be hard to find; you may create a virtual scanner (using a "wand" of any kind) and use cardboard ear tags to simulate the process.

Overview

After studying the prairie biome, the lesson in environmental education is necessary to show students the interdepen-dence of animal life with their environment. With our planet in the serious condition it exists today, students need to see the plan of nature so that they can understand the need to preserve and protect our resources.

Objectives

1. Students will learn about the technology associated with animal identification and its benefits.

Background Information

The importance of maintaining consumer confidence in the safety of the U.S. beef supply was made clear after the discovery of a single case of bovine spongiform encephalopathy (BSE) in Canada in May 2003. The consequences of this event demonstrated the need for an individual animal identification system capable of transferring information quickly and accurately throughout the beef industry. A well-designed system will help contain new or deliberately introduced diseases and minimize harmful effects on the industry and national security. Although individual animal identification did not prevent the occurrence of BSE in Canada, the Canadian tracking system significantly reduced the time required to identify the herd(s) with which the infected cow was associated.

Why is individual animal identification important now?

A well-designed national individual animal identification system offers advantages for both the individual producer and the beef industry as a whole. At the national level, individual animal identification is critical to domestic and exotic disease prevention and control, quality assurance, and maintenance and expansion of export markets. Producers benefit because they can

incorporate the individual identification system into their own production record systems. This allows them to improve their product for the marketplace and consumers.

The beef cattle industry is dynamic and highly mobile, with animals typically managed by multiple owners in multiple sites, often widely dispersed throughout the nation during the production cycle. An individualized animal identification system would provide national coordination of source identification, animal movement, and pathogen tracking in the event of the unintentional or deliberate introduction of a foreign animal disease such as foot-and-mouth disease or bovine spongiform encephalopathy (Disney et al., 2001). Animals could be traced should evacuation and relocation be necessary in the event of a natural disaster such as flood or fire. The system would allow for within- and between-state animal tracking for domestic disease control and eradication programs. In addition to tracking the forward movement of animals, animal identification would allow backtracking should quality, safety, or environmental events or violations occur (McKean, 2001; Augsburg, 1990).

Information adapted from "*A Guide for Electronic Identification of Cattle*," a publication of Kansas State University Research and Extension, copyright 2003.

One advantage of animal electronic identification is that ranchers can collect information on an animal that may prove to be helpful in making management decisions. A rancher can determine which animals are the most efficient, such as which put on pounds of muscle and fat more than others. He can use this information to give to the person who buys the animals, so they can design a feeding program that is a perfect fit for the animal. The rancher can also document actions that were taken to ensure the health of the animal such as when and where vaccinations were administered.

From a food safety standpoint, another advantage of animal electronic identification is that animals can be traced back through their history to determine if other animals may have come in contact with a disease and may need to be quarantined in order to ensure a safe food supply.

However, a disadvantage to using animal electronic identification is the cost of the technology because both the tags and the tagging process can be costly. In addition, animals may lose a significant amount of weight as they walk through the tagging process, which would cost a rancher a higher amount of income.

Preparation

1. Place one EID tag and a "home place" assignment (ranch or business name) in a resealable plastic bag. There should be one bag for each student. Divide "home place" assignments equally.
2. In private, ask one student to be the infected animal. This student will rub his or her hands with Glo Germ™ before beginning this lesson. Be sure to tell this student to keep his or her involvement in this activity a secret, so it doesn't spoil the surprise for the classmates!
3. Hang ranch or business signs in various locations around the classroom.

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Instructional Format

1. Share background information with students.
2. This lesson will be a large class activity with student participation.
3. Upon completing the lesson, students will discuss the activity.

Procedures

Note: this activity can be done without the use of a computer and computer program. If there is no computer system, students will need to determine the travel route the "infected" animal took.

1. Hand out one resealable plastic bag to each student. This bag contains an EID tag and a "home place" assignment.
2. Each person is "scanned" into the computer program – this may be virtual with role-playing.
3. Have the names and EID pre-entered prior to the class – or create an Excel spreadsheet with tag number, home place, and student name.
3. Tell students to go to the sign that indicates their "home place." Once everyone is at their "home place," instruct students to "shake" each others' hands to get to know one another. They are simulating what animals may do in the pasture as they interact with each other (nose -to-nose contact).
4. Now instruct students to move as listed below. This may be done slowly, so students can hear instructions. Each time students move, they must pass through the scanner (electronic reading device) and shake the hands of the other students at the new place they visit.
    - Broken Arrow Ranch Heifers move to Better Beef Feedlot
    - Steers move to Round 'Em Up Background Lot
    - Flint Hills Ranch moves to Get M Started Wright Background Lot
    - Jeff's Angus Ranch Moves to Round 'Em Up Background Lot
    - Round 'Em Up Background Lot – ½ moves to Better Beef Feedlot; ½ moves to Sellin' High Sale Barn
    - Get M Started Wright – moves heifers (girls) to Better Beef Feedlot and steers (boys) to Sellin' High Sale Barn
    - Sellin' High Sale Barn moves to T-Bone Feeders
    - Better Beef Feedlot – moves to Meat Market Packers
    - T-Bone Feeders – moves to Meat Market Packers
7. Once the list of "cattle movement" is complete, call the game to a halt, dim the lights and check students' hands with the black light for a communicable disease. Get the tags of each animal and trace them back to their "home place" with the computer records. Note which place the diseased animals all have in common.
8. As a class, discuss electronic identification technology and the activity in which students participated.

Resources

Kansas State University Research and Extension (2003). A guide for electronic identification of cattle.

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Want More? Extensions

Take advantage of the math moment! Share the following scenario with the students, and have them determine the numbers:

Rounding up animals to tag can impact cost for the rancher. Let's determine how much electronic identification will cost a rancher.

- The rancher hires three cowboys for $10/hour. It takes three hours to round up the cattle. It takes two hours to run the cattle through the chute and put in the ear tags. How much does the rancher pay the cowboys for their work?
- The cattle walk off a combined total of 20 pounds of weight per animal at a cost of $1.12 per pound. How much is this weight loss worth?
- Each tag costs $3.00, and there are 300 cattle. To use the electronic reading device costs $1.00 per animal. What is the cost for using EID tags and the reading device?
- What is the total cost to the rancher for identifying animals using electronic means?

Broken Arrow Ranch

Better Beef Feedlot

Round 'Em Up Background Lot

Get M Started Wright Background Lot

Jeff's Angus Ranch

Sellin' High Sale Barn

T-Bone Feeders

Meat Market Packers