Food Repro

Beef Reproduction

Grade Level
9-12

Lesson Length
2 periods x 55 minutes

STEM Careers
- **Animal Biology**

Nebraska Science Standards
- **LS.SC12.3.1 (Structure and Function of Living Systems)**

Next Generation Science Standards
- **LS1.A (Structure and Function)**

Animal Biology Standards
- **5. (Apply Principles of reproductive anatomy and physiology.**

These lessons aim to bring the science, skills of inquiry, critical thinking, and problem solving to life through an agricultural context

Learning Objectives

By the end of the unit, students should be able to:
- ✓ Provide a general description of the parts of a reproductive tract.
- ✓ Provide a general description of the function of those parts.
- ✓ Explain the relationship that exists between the reproductive hormones and the parts of a reproductive tract.
- ✓ Create their own reproductive tract making correlations of different edible foods.
- ✓ Match the reproductive hormones with the correct part within the reproductive tract within the estrous cycle.

Materials List (per student team)

- ✓ Markers
- ✓ Flipchart or other large paper
- ✓ Easel or display space
- ✓ Masking Tape
- ✓ Unlabeled reproductive tract
- ✓ Labeled reproductive tract
- ✓ Clock or stopwatch
- ✓ Pens or pencils
- ✓ One or more trash bags
- ✓ Bag of hard shelled type bite size candies such as (skittles, M&Ms, or Reese's Pieces)
- ✓ 10 plastic eggs or large gumballs
- ✓ bag of fish shaped candy (such as Swedish Fish)
- ✓ bag of licorice(pull apart if available)
- ✓ 10 mini bagels and doughnuts
- ✓ roll of Starburst or similarly sized candies
- ✓ 10 manicotti noodles

- ✓ Quart sized resealable plastic bags

Preparation

- ✓ Print Power Point slides
- ✓ Print lab reports
- ✓ Collect, organize, and prepare materials to be used for the experiment.

Do

Introduction (Interest Approach)

To introduce the students to the reproductive tract of cattle, show the 2 minute video to the class. Encourage them to take notes on the parts of the tract. The video clip shows the basic layout and functions of a reproductive tract. Use the video to gain curiosity in the content and to lead into discussion using the essential questions.

https://www.youtube.com/watch?v=rszo5bHlVmI

Essential Questions

- ✓ *What is the importance in knowing reproductive tract parts?*
- ✓ *How does reproductive tract functions affect profitability?*

Learning Activity 1:

Students have a set of notecards that are lying face down on their tables. Each notecard is labeled with one reproductive tract part. Their task is to organize those cards from anterior to posterior of the beef reproductive tract. This can be completed individually or in groups of two.

Learning Activity 2:

Distribute the "Food Repro" guidelines, data table, and lab report to each student. Students are to work individually or in groups of 2 depending how you see fit for your classroom.

Each student will complete the lab report during the experiment. This experiment allows students to investigate the different parts and functions of a reproductive tract. Have each group define the research problem and construct a hypothesis before beginning of the experiment. After approving the research problem and hypothesis, groups may begin the experiment. Groups may use the "Food Repro" guidelines as instructions for the experiment.

Reflection

Using the prompts below to facilitate reflection, allow each student to respond in writing to the prompts and then facilitate a whole class discussion.

1. How does knowing beef reproductive parts and functions affect profitability for a beef operation.

Apply

Use the prompts below to facilitate small group and whole class discussion.

1. How could we use knowledge of beef reproduction to affect the estrous cycle of cattle?
2. How are beef reproductive hormones related to the estrous cycle of cattle?

References:

✓ Beef Reproductive Tract

https://www.youtube.com/watch?v=rszo5bHlVmI

FOOD REPRO

Objective:

- ✓ Evaluate the proper parts of the reproductive tract. Be able to distinguish the parts and functions of the reproductive tracts.

Preparation:

- ✓ The class shall be divided into pairs.
- ✓ Each team should hypothesize on which food parts match the reproductive tract parts.
- ✓ Develop a plan on how they are going to construct their reproductive tract.

Instructions (per team)

- ✓ Given the food materials determine the proper food item to the correct reproductive part.
- ✓ Label all food parts with the corresponding reproductive parts.
- ✓ Label the function of each reproductive part on your food reproductive tract.

FOOD REPRO

1. What is the function of the Ovary?
2. What is the function of the Cervix?
3. What does estrogen do in the reproductive tract?
4. What is the function of the oviduct?
5. What is the function of the CL?
6. What is the function of LH and FSH?
7. What is the function of Progesterone?
8. What in the function of of Prostaglandin in the reproductive tract?

Name:

Lab Report

Please complete the following report during the design and implementation of your experiment.

Research Problem

✓ Describe what you are investigating and justify why you are investigating the problem.

Hypothesis

✓ Formulate one or more hypotheses for your experiment.

Procedures

✓ Create the steps you will follow for your experiment.

Results

- Explain you're your results.

Conclusion

- Based on your data:
  - What can you conclude?
  - Were your hypotheses supported?
  - Were their limitations to your experiment?
  - What are new research questions that derived from this study?