ELEMENTARY
CURRICULUM

MEET THE **MEAT**

ENVIRONMENTALLY COW-NSCIOUS

Funded in part by
The Beef Checkoff

CONTENTS

Note:

This topical must be accompanied with the Overview for complete understanding.

Overview

Cattle farms are part of the American landscape and beef represents a significant part of the protein in many people's diets. So understanding how cattle are raised responsibly helps in a broader knowledge of the science behind cattle farming and some of the different aspects within our food chains.

Environmentally Cow-Nscious

I. Enduring Knowledge:

Students will learn how being good stewards of the land and animals is important to feeding the growing world population today and in the future.

Learning Targets:

1. Students will gain an understanding of how farmers and ranchers raise beef cattle in a humane and environmentally responsible way.
2. Students will learn how farmers and ranchers that raise beef use science to engage in environmental stewardship practices to better manage natural resources.
3. As active learners, students will become aware of how the modern techniques of raising beef cattle are an important part of the environment.

Vocabulary:

1. **stewardship**: the careful and responsible management of our environment and natural resources
2. **sustainable**: the combination of social, economic, and environmental impacts from producing a good that measures the continued availability of that good for future generations
3. **ruminant digestive system:** a mammalian stomach that has four compartments to process or digest food and nutrients. Ruminant animals are unique in that they regurgitate partial digested food (called cud) and swallow to re-start the digestive process.
4. **nutrient**: the substances found in food that people, animals, and plants need to live and grow
5. **manure**: animal excrement that is rich in nutrients (that plants need to grow) and can be put on the soil as fertilizer
6. **cellulose**: material in plant cells that cannot be digested by humans but can be digested by the ruminant digestive system of cattle
7. **recycle**: to reuse materials or waste by using them more than once

8. **aerate**: to make small holes in the surface of soil in order to add oxygen to help plants grow
9. **rotational grazing**: moving animals from one pasture or field to another to graze, thereby protecting the land from erosion and overuse
10. **erosion**: the gradual wearing away of soil and nutrients by water, air, or overuse
11. **rotate crops**: to plant crops in rotation (for example corn one year and soybeans the next year) to help preserve the nutrients in the soil
12. **pollute**: to contaminate land, air, water, or soil

II. Teacher Background Material:

In order to preserve the land for the future production of food, farmers and ranchers take many steps to make their production sustainable, including using the techniques defined in the vocabulary section.

Teachers can incorporate this video into their classrooms as background for related activities. The video discusses land and water management, the farmers' efforts to be good stewards of the land, cattle and their relationship to the environment, and ways in which farmers can sustain the land for future use. Teachers could use the video in social studies to discuss cattle farmers as part of the community. In the science curriculum, teachers could focus on the environment, land and water management and raising cattle.

In today's educational system the use of research can be a component in learning. Research-driven learning allows students to do individual activities; it encourages learning in almost all areas of the curriculum such as social studies, science, math, writing, and reading. Research also encourages lifelong learners because it provokes individual questions that may need to be answered with scientific or social research. Using research to promote curriculum also helps students organize their thinking to help them when writing about research topics.

The video is an excellent tool to use to drive research curriculum. Before viewing the video ask students to discuss what topics they think might be covered in the video called "Environmentally Cow-nscious." Help your students make a list of possible ideas that might be covered. After the first list is completed ask students to watch the video. After viewing the video, ask students if they were surprised by the information presented. Following that discussion, ask students if there were any new ideas presented in the video. Lastly, ask students to think about any new questions they have after viewing the video. (If students do not have many questions, they might want to view the video again.)

The following are just a few ideas for teachers to use:

- What is **cellulose** and why can't humans digest it?
- What is a **ruminant digestive system**? Why is it important to cows?
- What is **rotational grazing** and why is important to our environment and successful farming?

III. Before Viewing the Video:

Find out what students know about raising beef cattle.

- Check to see if students are aware of some of the causes as well as some of the solutions to the environmental impact of raising beef.
- As students view the video have them take notes on ways in which some modern farmers and ranchers are making sure that beef production is sustainable.
- Be sure students understand the importance of maintaining the environment to their futures.

IV. Viewing Guide:

Have students list and discuss the ways in which farmers are working to help preserve and sustain the environment. (For a complete list titled "40 Ways Cattle Ranchers and Farmers Help the Environment" visit www.ExploreBeef.org or www.BeefItsWhatsforDinner.com)

V. Discussion Guide:

Go over the students' lists and see how many ways the students see how farmers and ranchers contribute to a sustainable world. (this includes all environmental, social and economic implications) For example if their parents have jobs in agriculture- that is an important "social" aspect of sustainability.

Engage the students in a discussion of the points they made in the prior knowledge discussion. Ask them to research items the class found controversial by further studying the subjects.

VI. Evaluation:

Teachers should informally assess students' understanding through classroom discussions before and after video.

Student understanding of this topic could also be assessed by the questions generated about a related topic. A research paper or presentation could be presented based on teacher requirements.

VII. Suggestions for Extended Learning:

1. Have students research the various methods of preserving the soil that is currently being used in farming. Have them try to discover the practices that contribute to the loss of soil as well, such as overgrazing.
2. Have students research what other agribusinesses are doing to sustain their production; for example, farmers that raise chickens, corn, strawberries, etc.
3. Have students research where their food comes from. A visit to the grocery store could reveal sources, including asking the butcher where the beef they sell comes from.
4. Have students draw a cow showing its ruminant digestive system.
5. The teacher could invite a butcher, a farmer, rancher, veterinarian, or nutritionist to visit the class.
6. Have students create a healthy menu for a special event in their families.

Wisconsin Teacher Standards which can be met with this curriculum, including rationale.

Standard 1: Subject matter.
This curriculum provides information not readily available in other forms. A teacher using this material will be well-informed about the subject matter.

Standard 2: Broad range of ability.
This curriculum provides instruction that supports their intellectual, social, and personal development.

Standard 3: Adapt instruction.
This curriculum provides suggestions for learners with a variety of intelligences and levels of ability.

Standard 4: Instructional strategies.
This curriculum includes the use of technology to gain information and suggestion for using research in extending learning.

Standard 5: Individual and group motivation.
Both prior knowledge and group projects promote motivation for students to learn.

Standard 6: Verbal and nonverbal communications.
Instruction media and technology that promotes active learning are key parts of this curriculum.

Standard 7: Organizes and plans systematic instruction.
This curriculum is organized to support teacher knowledge, to draw on and motivate students to engage in active learning, and promotes active inquiry, collaboration, and supportive interaction in the classroom.

Standard 8: Formal and informal assessments.
Suggestions for a variety of assessments, both formal and informal, are offered in the curriculum.

WISCONSIN STUDENT PROFICIENCY STANDARDS which can be met teaching
Environmentally Cow-Nscious – Topic Video, Discover Mediaworks, 2012

A. GLOBAL AGRICULTURAL SYSTEMS

Content Standard

Students will learn about the role of food, fiber, and natural resource systems in their lives and the lives of others around the world.

Rationale

Knowledge of global agricultural systems and the natural resources required to produce food and fiber used in daily life leads students to understand the relationship between production and sustainability. Understanding food and fiber production, distribution, and consumption at local, national, and international levels allows students to comprehend the complex interdependence that exists within agriculture.

4th Grade: A.4.1

B. TECHNOLOGY/INFORMATION

Content Standard

Students will demonstrate the ability to access information from multiple sources, synthesize the information, and use it for the technological improvement and stewardship of food, fiber, and natural resource systems.

Rationale

The use of technology for gathering information and producing products within the food, fiber, and natural resource industries is essential in the global marketplace. Producers, processors, manufacturers, and researchers who utilize technology will be able to compete better in the global marketplace. Students must realize that using technology and understanding its potential are lifelong skills necessary for employment and existence in society.

4th Grade: B.4.2 (see LA A.4.4, E.4.1; SC A.4.3)

D. AGRISCIENCE/PRODUCTION

Content Standard

Students will demonstrate an understanding of the scientific principles and societal implications involved in the production and processing of food and fiber as well as an understanding of basic animal husbandry and sustainable agricultural practices.

Rationale

Students need an understanding of the scientific principles underlying the production of food, fiber, and sustainable agriculture, and the relationship that this has to their daily lives. Knowledge of the concepts of agri-science production and processing will assist students in making informed consumer choices. By learning about the production of food, fiber, and animal husbandry, students understand the impact agri-science makes on their communities and communities throughout the world.

4th Grade: D.4.1, D.4.2, D.4.3, D.4.5

E. ECOLOGY/ENVIRONMENT

Content Standard

Students will understand the relationships between natural resources, ecological processes, and the production and processing of food and fiber.

Rationale

Land and other natural resources need to be managed in a sustainable manner. Balance and agreement need to occur among producers, processors, manufacturers, scientists and other users of natural resources. Students, as citizens, must learn to make informed choices about their environment based on facts.

4th Grade: E.4.1, E.4.2, E.4.4, E.4.4.5, E.4.6

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4th Grade: E.4.1, E.4.2, E.4.4, E.4.4.5, E.4.6