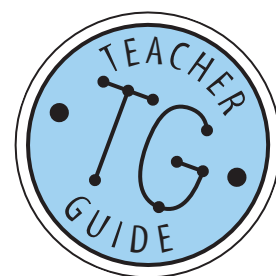


CONNECT THE DOTS



WHERE DOES MY FOOD COME FROM?





Lesson 1 –

Connect the Dots: Tracing agriculture in my daily life

Kick off the Kit

Make copies of the Connect the Dots activity for students and have them complete this activity to begin finding out where their food comes from.

Background Information

While most people understand that food and natural fibers begin on farms and ranches (although even this concept is becoming foreign to many consumers), the total complexity of the agricultural system often eludes the average American. But agriculture touches our lives every day in every way. It is impossible to get in a car and drive on a paved road without agriculture being involved. Almost all sports have some component that originates with agriculture. The same is true in medicine, cosmetics, publishing, education, and recreation. Information about how agriculture affects different sectors of the U.S. economy is in the information provided.

Grade Levels

Two and three (expandable to grades one and four)

Brief Description

This lesson is a challenge activity that helps students recognize the importance of agriculture by asking them to identify activities during their average day that do not include agriculture in some way. This activity will be simplified for the youngest students and greater detail will be used for older students.

Subjects

Social studies, language arts

Skills

Applying, comprehending, creating, developing vocabulary, discussing, listening, sequencing, synthesizing, visualizing

Objectives

At the end of this lesson the student will be able to:

1. Explain how agriculture affects every part of their daily lives; and

2. Give specific examples of human health, transportation, sports, and daily activities that would not be possible without agriculture.

Estimated Teaching Time

One, 45-minute session,
plus evaluation time

Vocabulary

Vocabulary will vary with grade level.

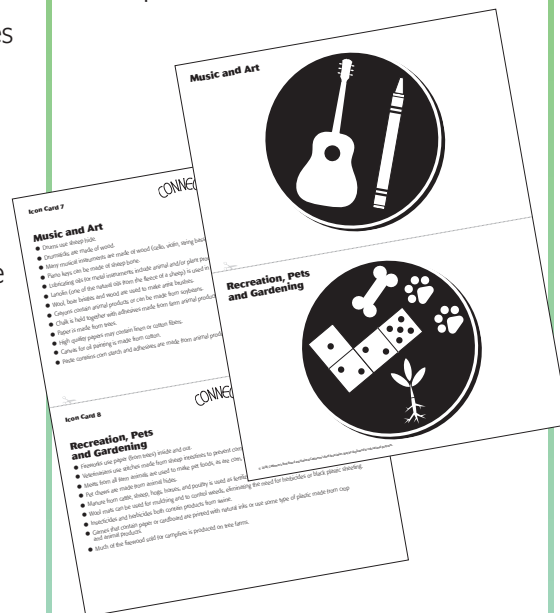
Standards Correlation

National Language Arts Standards:
Evaluation Strategies, Communication Strategies, Applying Language Skills

National Social Studies Standards:
EC.K-4.1, EC.K-4.6, EC.K-4.7,
EC.K-4.9, G.K-12.1, G.K-12.5

Advanced Preparation

1. Cut sheets containing icon cards in half on dotted line. Familiarize yourself with the information provided in each category on the icon cards that describes how agriculture affects almost every aspect of life in the United States.



2. Arrange the cards with the icons in such a way that you can quickly select the appropriate category and display it to the class.
3. Learn more about agricultural byproducts by visiting the Web sites listed under *Credits and Additional Resources*.

Materials Needed

- Icon cards
- Table in front of the class to work from
- Magazines that contain many photos
- Scissors
- Glue/paste

Optional Materials

- Any items listed on the back of the icon cards made from agricultural products

Activity:

Every Day in Every Way

1. Begin by defining agriculture. Merriam-Webster's dictionary defines agriculture as "the science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products."
2. Review what comes from farms and ranches. (*Students will probably list foods and maybe a few leather products.*) Explain that there are many types of farms and ranches. Use tree farms and fish farms to explain that farmers and ranchers produce many products, not just plant crops and meat.
3. Explain to the students that the primary purpose of agriculture is to produce the food we eat. However, non-edible parts of plants and animals are used to make additional products we use every day.
4. Pose this proposition to the class: "I believe that agriculture connects to your life every single day and in every single way. And I challenge you to prove me wrong!"
5. Explain that this activity is a challenge and you really want them to think hard about this. Here is an example: "You might say *brushing your teeth does not involve agriculture*. I will respond (hold up the Cosmetics and Personal Care icon card) by telling

you agriculture produces sugar that sweetens your toothpaste. Then you might say, *but my toothpaste is sugar free*.

And I would respond by saying that your toothpaste has natural flavorings and those are produced on farms." Ask if everyone understands the challenge activity.

- Divide the class into groups of five or six students.
 - Have them brainstorm specific ways that they believe agriculture is NOT connected to their lives. Give them a few minutes to do so.
 - Have them write down their answers so they do not forget.
6. Begin the challenge by having each group give one example. Counter it with the appropriate icon card included in the kit and explain how agriculture is involved. The list on the back of each card begins with the simplest answer and becomes more complex as you work down the list. An example of how this challenge activity works is below.
- The student might say "drive a car." You hold up the transportation icon card and read the explanation on the back of the card. Ethanol in E10 or E85 is a renewable fuel made from corn. This type of gas is used throughout the country to reduce air pollution.
 - If they respond that they are using gas that does not have ethanol, explain that fats from cattle are used to make brake fluid for automobiles.
 - They might argue that they ride a bicycle that does not use any fuel. Respond with the fact that beef fat is used to make rubber tires; it helps tires hold their shape.
 - The students might use walking as a primary source of transportation. You can respond that asphalt contains a binding agent made from beef fat that holds it together. You can also say that leather shoes come from cowhides and canvas shoes come from cotton.
 - If they respond that they walked on the side of the road, not on

the asphalt, hold up the clothing icon and say that their shoes might be leather that comes from the hides of animals or canvas that comes from cotton. Additionally, the glue that holds shoes together comes from the hide, hooves, and horns of cattle and sheep.

- If students respond with something not on one of the icon cards, refer to the example that most closely matches their response. For example, if a student says hairspray, respond with "hair products like shampoo contain lanolin from sheep" (on the Cosmetics and Personal Care icon card).
7. After you exhaust their responses, ask if they would like to do more brainstorming. Allow another 5-10 minutes — if they can't come up with ideas, give them a few hints. Repeat the challenge.
8. After the challenge is complete, ask them whether they can live without agriculture. (*No.*)
9. Review ways that agriculture is essential to their lives every day and in every way using the provided icon cards.

Evaluation

1. Have the students cut pictures out of a magazine and create a collage of photos showing everyday items that rely on agriculture. Ask a few students to present their collages and explain why they chose the pictures they did.
2. Have the students write a fictional story titled "A Day With Agriculture" using at least 10 examples that they have just learned.
3. (For older students) Have the student select one of the icon card categories (medicine/health, transportation, sports, environment, food, housing/construction, music/art, recreation/pets/gardening, cosmetics/personal care, general, communication/shipping, dining/housewares, or clothing),

research the ways agriculture is important in that area and write a report about it. Use the Web sites below under *Credits and Additional Resources*.

Extensions and variations

1. If you will be working with younger students, simplify the challenge activity to use information about only plants or only animals.
2. Follow up with a sports challenge.
 - Ask the class to estimate how many balls can be made from one cow hide. The answers are in parentheses.

Baseballs (144)
Volleyballs (18)
Footballs (20)
Basketballs (12)
Soccer balls (18)
 - Next have them estimate how many footballs are used in the Super Bowl each year and how many cowhides it takes to produce those footballs. (*Twice as many footballs are used in the Super Bowl as in any other NFL game — 72. It takes 3.8 cowhides to produce those 72 footballs.*)

Credits and Additional Resources

Wow That Cow.

American National Cattlewomen, Inc.:
www.ancw.org/wowthatcow.aspx

By-products from Peanuts

by George Washington Carver:

www.nps.gov/archive/gwca/expanded/peanut.htm

Agriculture — In touch with you every day.

Texas Ag in the Classroom, Texas Farm Bureau:

www.txfb.org/AgClass/resource/AITCrg7.htm

Everything but the oink.

Pork Checkoff Quick Facts:

www.pork.org/newsandinformation/quickfacts/PorkFacts16.aspx

Major by-products of the Florida Citrus Industry.

University of Florida IFAS Extension:

<http://edis.ifas.ufl.edu/FS107>

Sheep Products and By-products,

Purdue University:

<http://ag.ansc.purdue.edu/sheep/ansc442/Semprojs/byproduct/sheep.html>

Sheep 101: www.sheep101.info/



Lesson 2 – Connect the Dots: Linking the sun to my plate

Background Information

A basic understanding of how and where food is produced and how our bodies make use of that food are essential components in the development of a healthy child, adult, and society. We are all bombarded with messages from the media, but with food and nutrition knowledge, we can make wise food decisions now and in the future. This lesson will provide several of those basic understandings.

Grade Levels

Two and three (expandable to grades one and four)

Brief Description

As part of required science content, students learn about food chains, food webs, carnivores, herbivores, omnivores, producers and consumers. In social studies, they also learn about producers and consumers, but from a different perspective – economics. This lesson helps teach that information in a way each student can relate to – their own anatomy and food supply.

Subjects

Science, language arts, social studies, health

Skills

Analyzing, applying, comprehending, creating, developing vocabulary, discussing, drawing, listening, sequencing, synthesizing, visualizing

Objectives

At the end of this lesson the student will be able to:

1. Draw or describe a food chain, and for older students, a food web;
2. Identify and describe characteristics of food producers and consumers;
3. Identify and describe herbivores, carnivores, and omnivores; and
4. (For older students) Explain the traits and/or roles of humans in food chains, food webs, and as omnivores.

Estimated Teaching Time

One, 45-minute session,
plus evaluation time

Vocabulary

Agriculture, carnivore, consumer, food producer, herbivore, omnivore, photosynthesis, producers

Standards Correlation

National Science Education Standards: Life Science Content Standard C, K-4 – Organisms and Environment

National Social Studies Standards: EC.K-4.1, K-4.7

National Health Education Standards: H.K-4.1

National Language Arts Standards: Evaluation Strategies, Communication Strategies, Applying Language Skills

Advanced Preparation

1. Decide if you will use copies of the illustrations provided or make your own original drawings. If you plan to use the illustrations provided, make copies and decide how and to what you will fasten them for the food web exercise.

2. Decide which evaluation options to use and make copies for students if needed.
3. Learn more about linking the sun to the plate by visiting the Web sites listed under *Credits and Additional Resources*.

Materials Needed

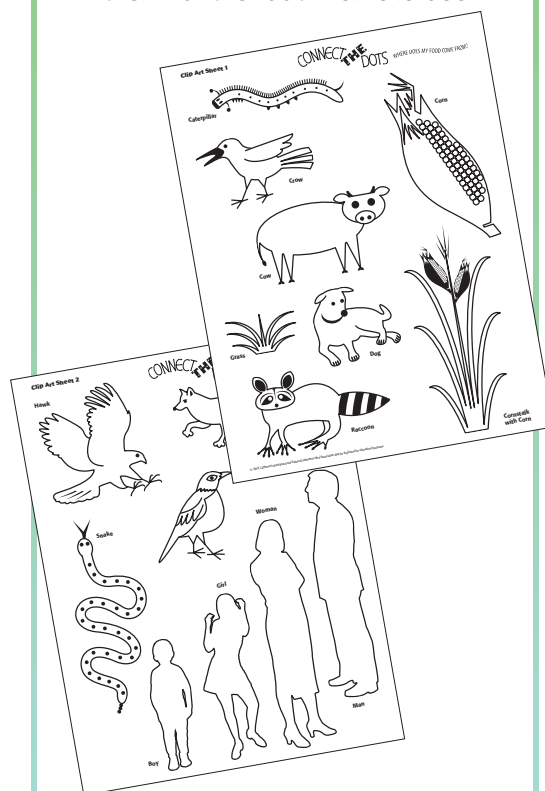
- Paper, pencils or crayons for students.
- If making your own original drawings – chalk and chalkboard or erasable markers and whiteboard for display purposes.
- If using the illustrations provided – additional copies and fastening materials along with chalk or markers to draw arrows.

Optional Materials

- Skull or diagrams of an animal skull with teeth intact.
- Photos of or actual silage, hay, cattle feed – especially cottonseed meal and/or by-product feed such as distiller's grains, ear of corn, cornstalk, grass.
- Ball of yarn or string (for optional enhancement game).

Activity One – The Food Chain

1. Ask the class, "Do all animals eat?" (Yes) "Where do animals get their food?" (Answers will vary.)
- Lead the group to specific animals and their food. For example, what do birds eat? (Seeds or bird seed, insects, fish, nectar – it depends on the bird.) Or, what do lions eat? (Zebra, water buffalo, antelope, etc.)
- Share that some animals only eat plants. These are known as plant eaters or herbivores. Other animals only eat meat. They are carnivores. The animals that eat both plants and meat are omnivores.



- Explain that we can tell whether many animals are herbivores, carnivores or omnivores by their teeth. Ask, "What kinds of teeth do you have?" (*Incisors in the front, then the four sharp and pointed canines, and molars in the back.*)
 - Herbivores have teeth that are flat. Their front incisors are flat but may still be sharp. Cattle only have incisors on the bottom jaw. They don't have top incisors. The canine teeth of herbivores are very short and flattened or do not exist at all as with the horse. And the molars are flat for grinding their food. (*Herbivores that do not have teeth such as chickens swallow stones that grind their food up in their gizzard.*)
 - Carnivores have biting and tearing teeth. All of their teeth are sharp and most are pointed. Even their molars are pointy. Their molars don't work up and down but in a shearing motion like a knife or scissors to cut and tear food. What animals have these sharp teeth for biting and tearing? (*Dogs, cats, wolves, lions, and tigers.*)
 - Omnivores have a combination of teeth. Their front incisors can be either flat or pointed but will be sharp. They have large pointed canines. And they have flat molars for grinding.
 - Have the students make a list of which animals they believe are carnivores and which are herbivores.
 - Ask, "What are we humans?" Examine your own teeth. Are your incisors pointed or flat? Are your canines pointed or flat? Are your molars pointed or flat? (*Omnivores, we have both biting and tearing teeth and grinding teeth.*)
- Discuss other animals that are omnivores based on the knowledge of what those animals eat (students will not know the teeth structure).
 - Bears eat fish, berries, insects, honey, etc. They are omnivores and have the teeth of omnivores.
 - Robins and crows will eat both plants and animals. You may be familiar with a robin pulling an earthworm from the soil, but the robin will also eat berries and insects. The crow will eat dead animals alongside the road and will also eat grains and fruits. (Note: Birds do not have teeth but the stones in their gizzard will grind the food. That is why you see birds picking up small stones by the side of the road or in a gravel drive).
 - The skunk and raccoon will eat small animals, insects or grubs, and also plant materials.
 - 2. Ask, "What foods do you eat?" (*Answers will vary widely but encourage students to list foods from both plant and animal sources.*) Then ask, "Where does your food come from?" (*Answers will vary, but students may indicate that it comes from the grocery store or from a specific store.*)
 - If they do, follow up with, "Where does the grocery store get it?" Follow this through with the students in whatever direction they take it until you reach nature, the farm, or a company – whatever they believe.
 - If they believe that food is made in a company setting, ask them what it is made from. They should end up on a farm or ranch, but if they don't, proceed anyway.
 - 3. Share with the class that all food begins with the sun and the earth (both land and water). The sun? How can the sun make food? Plants take the energy from sunlight and nutrients from the earth and produce food during the process of photosynthesis. (If they have not yet learned of photosynthesis, explain that they will learn about it at another time.)
 - 4. Using the chalkboard or white board, draw the sun, the land, and a plant. The plant can be a tree, shrub, flower, grass or a crop plant. Have the students draw their own version on their paper. Add an arrow from the sun to the plant. Explain that the arrow indicates energy. Explain that plants are the **producers**. Plants produce food. All food begins with plants. Some of that food is food for humans, some for animals. All parts of the plant are food for some type of organism. Write the word "producer" under the plant. Have the students do likewise.
 - 5. Ask the class, "Who eats different parts of the plant?" (*Answers could vary. It could be that a bird eats the plant's seed, a rabbit eats the plant's leaves, a worm eats the plant's fruit, a deer eats the plant's twigs, a boy or girl eats the root of a plant [carrot], or a honeybee eats the nectar from the plant's flower.*)
 - Have them draw in one animal or person of their choice eating the part of the plant that they select. Explain that this is a **consumer**. The animal or person consumes the plant and receives the energy and nutrients from that plant. Label the animal or person as a "consumer." Add an arrow from the plant to the animal or person and again explain that the sun's energy is now transferred to the animal or person.

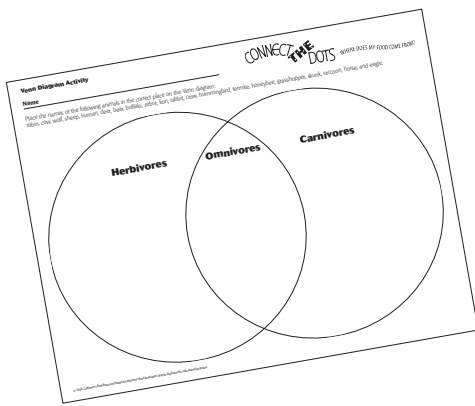
6. Label the whole diagram "A Food Chain" and explain that this transfer of energy (and nutrients) from the sun to a plant to an animal/person is an example of a food chain.
- Review where all of the energy in food begins. Identify the producer and the consumer in the following example. (example: sun and earth → grass → rabbit → hawk)
- Set this diagram aside and move to a clean part of the board. Do not add to the original diagram. It is important for the students to keep this concept separate from the next concept of a food web.
7. Explain that consumers must obtain the nutrients they need from the foods they eat. Simple-stomached animals (humans included) must also obtain that food in an easily digestible form. We can't break down many foods, like grass, that cattle or giraffes can. Each food provides different nutrients that we need. That is why we need to eat a variety of foods. As omnivores, we have many food choices, and we need to eat a variety of all foods to be healthy.

Activity Two —

The Human Food Chain (Younger Students)

Food Webs (Older Students)

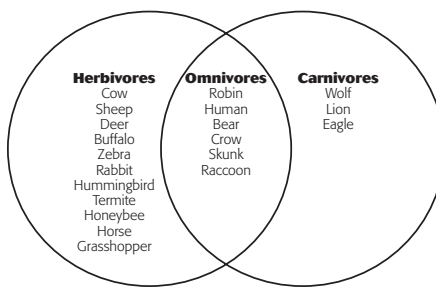
1. Start a second diagram, and as you direct the students to add components, add them to yours as well. You may use the illustrations provided on the Clip Art sheet or your own original drawings. Have the class draw the second diagram on the other side of their paper and start by drawing a simple food chain with the sun and land, corn as the producer, and a cow as the consumer.
- Ask, "What foods do we get from cattle?" (*Milk, cheese, yogurt, ice cream, hamburgers, steaks, roasts, etc.*)
- Discuss whether humans are consumers of cattle. (*Yes.*)
- Ask, "Can we add humans to the diagram?" (*Yes.*) Do so and have the students add a person and arrow from the cow to a person.
- Stop here for younger students.** Go to *Evaluation* (page 7).
- Have the students consider whether people also eat corn (sweet corn, corn flakes, corn chips, taco shells, corn sweeteners, etc.). (*Yes, we do.*) Have the students draw another arrow from the corn directly to the person.
- State, "Cattle eat corn as corn silage, corn grain, and corn by-products." Ask, "Do cattle eat other plants?" (*Yes.*) "What plants?" (*Grass, oats, soybeans, hay, milo, etc.*)
- Direct the students to add grass to their drawing and another arrow from the sun to the grass and corn and another arrow from the grass to the cow.
- Ask, "Can humans eat grass and live on it like cattle can?" (*No, cattle have a special stomach. If we tried to live on just grass we would starve because our stomachs cannot digest grass.*)
- Ask, "What other animals eat corn?" (*Answers will vary.*) Suggest a caterpillar eats the corn leaf and a crow eats the corn. Have the students add these to their diagram and draw the appropriate arrows.
 - Ask, "Would the crow eat the caterpillar?" (*Maybe.*) "Could other birds eat the caterpillar?" (*Yes.*) Add another bird and an arrow from the caterpillar to the bird.
 - Ask, "Do humans eat crows?" (*Not normally.*) "What might eat a crow or the other bird?" (*Fox, dog, hawk, a snake or raccoon might eat its eggs.*) Add a consumer of the birds and appropriate arrows.
2. Discuss how complex the diagram is getting and how many more things can be added. Explain that this is not a simple food chain, but that it is a food web. Can they see how all of the arrows as they continually add will resemble a web? Label the diagram "A Food Web."
3. Have the students identify the producers (only the plants) and the consumers. (All others are consumers.)
4. Explain to the class that many words in our language have more than one meaning. Can they think of any? (Buck — meaning a dollar or a male deer, row — as in row the boat or a row of chairs, dress — as in an item of clothing or to put clothes on.) **Producers** and **consumers** are such words. The first meaning is producers take light energy from the sun and convert it into food energy and consumers eat that food. The second meaning is that farmers and ranchers are producers of crops and livestock — they produce the food that we eat (consumers). Consumers are not only those who eat plants or other consumers in the food chain or food web, they are also people who buy goods and services and make use of them as food, clothing, shelter, entertainment, transportation, etc. In the second definition, any person or animal that produces something is a producer, and any person who buys those goods is a consumer.
- For example, chickens, cattle, and goats are consumers in the first definition used in food chains and food webs because they eat plants. But in the second definition, these animals are producers because they produce meat, milk, and eggs for human consumption.



Evaluation

1. Have students complete the Venn diagram quiz by listing the animals in the correct category.

Answer Key



2. Have younger students create a food chain involving humans, producers, and consumers.
3. Have older students create both a food chain and a food web using the animals listed on the Venn diagram handout. Have them identify the producers and consumers.

Extensions

1. (For older students) Introduce the concepts of predator and prey and have the students identify those on the diagrams as well.
2. For younger students, make copies of the appropriate illustrations and have them select illustrations to use and create the food chain using the illustrations they have selected.
3. Have students select one producer that humans depend upon and research how humans grow it today, how we use it or eat it, and the other animals that depend upon that producer.

4. Have students select one herbivore, carnivore, and omnivore, research their life cycle, foods they eat, survival adaptations, and habitat and write reports of the three animals they have selected.
5. Have the students find pictures of herbivores, carnivores, and omnivores and place them on a large Venn diagram as in the quiz.

Enhancement Games

1. (For younger students) Squigly's Games has an online quiz game called "Carnivore or Herbivore?" that the students can play as a review. It can be found at http://www.squiglysgames.com/Games/Quizzes/Animals/Carnivore_Herbivore.html.
2. (For older students) Play a food web game with a ball of string or yarn. Have all of the students stand in circle around you.
 - Tell students that the class is going to play a "to or from" food web game as a review. Indicate that you represent the sun and that the ball of string or yarn is your energy. Hold onto the end of the yarn or string and toss the ball to a student. As you do so say, "I give my energy to a plant/producer."
 - That student holds onto the yarn and tosses the yarn to another student and says, "I give my energy to animal/consumer." The student who receives the yarn becomes either that producer or that consumer.
 - The next student decides if they want to identify another consumer that they receive energy from or if they are consumed by another consumer. They state so and holding onto the yarn, toss the ball to the other student.
 - Each student from this point on has to identify where their energy comes from or goes to. The yarn must go to a new student each time and the students must hold onto to yarn until all students are connected.

- Once all are connected, have the students look at the web they have created. Ask all but the last student to set their yarn down and step away from the circle and return to their seats. Have the last student roll up the yarn carefully. It should roll up without tangling.

Credits and Additional Resources

Ag in the Classroom www.agclassroom.org

Agricultural Council of America
www.agday.org

American Farm Bureau Foundation for Agriculture
www.ageducate.org

Carnivore Teeth, Animal Diversity Web, University of Michigan Museum of Zoology
http://animaldiversity.ummz.umich.edu/site/resources/anatomical_images/family_pages/carnivora/carnivore_teeth.jpg/view.html

Kalman, Bobbie and Jacqueline Langille. *What are Food Chains and Webs?* Crabtree Publishing Company. ISBN 13: 978-0865-0588-80

Lauber, Patricia. *Who eats What?: Food Chains and Food Webs*. Harper Collins. ISBN13: 978-0064-4513-07

Nature Files Index, Nature Works, New Hampshire Public Television
www.nhptv.org/natureworks/nw4.htm

Peterson, Cris. *Amazing Grazing*. Boyds Mills Press. ISBN 13:978-1563-9794-22

Wildlife Web I: Producers and Consumers, Nature Works. Nature Files, New Hampshire Public Television www.nhptv.org/natureworks/nwep9.htm

Wildlife Web II: Herbivores and Carnivores, Nature Works. Nature Files, New Hampshire Public Television. www.nhptv.org/natureworks/nwep10.htm



Lesson 3 –

Connect the Dots: Understanding the families behind my food

Background Information

Most farms and ranches in the United States are family owned and operated. In almost every state, there is a program (usually run by the state Department of Agriculture or other agricultural organization) that documents, verifies, and recognizes farms and ranches that have been owned and operated by the same family for more than 100 years. Many times these programs are titled “Century Farm and Ranch.” Some states even have programs for sesquicentennial and bicentennial farms and/or ranches for those that are 150 or 200 years, respectively. Considering our mobile society and the continuing growth of urban areas, it is an amazing accomplishment for any family business to thrive for so long. How many other families have lived in the same location for that length of time — much less in the same house or on the same land? How many other families have been in the same business? What does it take to make that possible?

It takes people who care. People who care for their environment, their families, their buildings, their land and water, and the food they produce. It takes a great deal of hard work (and a little bit of luck) to keep a business in the family for a century, but families involved in agriculture always want to ensure that the next generation can continue the legacy and live on the same land as their ancestors.

Grade Levels

Two and three (portions are expandable to grades one and four)

Brief Description

This lesson shares with students that farmers and ranchers in the United States have been producing safe and healthy food for consumers for generations. Century Farms and Century Ranches are examples of farmers and ranchers living and working where their families have lived and worked for decades, even centuries. In order to thrive for so many generations, farmers and ranchers have to take care of the land, air, and water around them, in addition to taking excellent care of their crops and animals.

The first activity will have students document their own family’s immigration and migration patterns and compare them with those of families living on Century Farms or Century Ranches. The second activity describes how these producers care for those plants and animals to produce food while taking care of the environment for themselves and future generations.

Subjects

Social studies, mathematics, science, language arts

Skills

Applying, comprehending, comparing, contrasting, creating, developing vocabulary, discussing, listening, reading, sequencing, synthesizing, visualizing, writing

Objectives

At the end of this lesson the student will be able to:

1. Identify and locate the countries of origin of their family, the pattern of relocation and careers that led their family to the community where the student is now located;

2. Describe the meaning behind, and the significance of, Century Farms and Century Ranches;
3. Explain what efforts it takes to continue to farm or ranch the same land for generations;
4. Compare and contrast their own family’s history with families living on Century Farms and Century Ranches.
5. Listen to a story and accurately sequence different life stages of an animal (cow) and plant (corn); and
6. List five things that farmers and ranchers do to produce food with care.

Estimated Teaching Time

Two, 45-minute sessions,
**plus research and
evaluation time**

Vocabulary

auction, bicentennial, calf, calve, Century Farm, Century Ranch, centennial, cow, dairy, generations, germinate, hay, seed corn, sesquicentennial, soil erosion, veterinarian, weaning

Standards Correlation

National Environmental Education Standards: 2.3C, 2.3E, 2.4A, 2.4C, 2.4D, 4D

National Social Studies Standards: USH.K-4.1, USH.K-4.2, EC.K-4.1, EC.K-4.7, EC.K-4.8, EC.K-4.9, EC.K-4.11, G.K-12.1, G.K-12.5, G.K-12.6

National Science Education Standards: Life Science Content Standard C, K-4.3, K-4.4, K-4.6

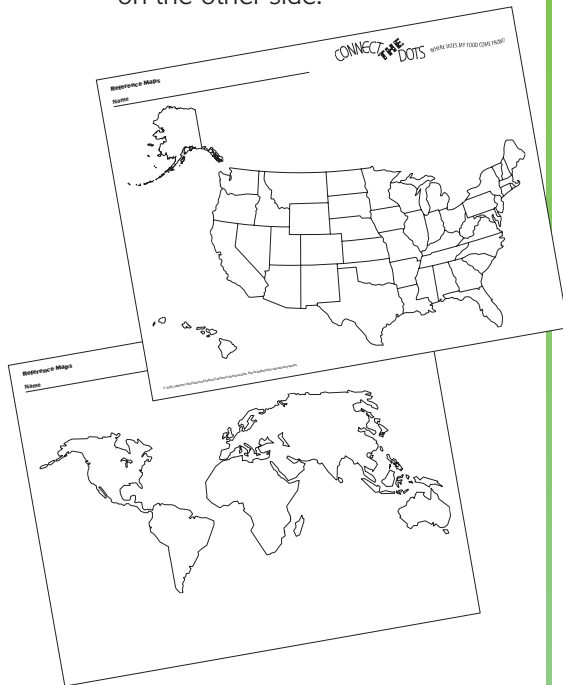
National Health Education Standards: H.K-4.1

National Language Arts Standards: Evaluation Strategies, Communication Strategies, Applying Language Skills

National Mathematics Standards: ALG.PK2.4, MEA.PK-2.1, MEA.3-5.1

Advance Preparation

1. Make copies of the homework activity, maps and illustrations for sequencing (one set for each student). Copy the maps with the world map on one side of the page and the United States map on the other side.



2. Using the list of Century Farm/ Century Ranch recognition programs, print information about any of the states' programs including a list of farms or ranches with the dates the farm or ranch began, if provided on the Web site. If the state you choose does not have the program, find information from another state.
3. Familiarize yourself with *Producing Beef With Care* and *Growing Corn with Care* stories at the end of this lesson (pages 14 and 15) and identify any unfamiliar words.
4. Learn more about the families behind food by visiting the Web sites listed under *Credits and Additional Resources*.

Materials Needed

- Copies of the homework handout – one per student
- Large world map
- Large U.S. map
- Copies of the pre-cut illustrations for students to sequence
- Copies of the U.S. and world maps
- Blank paper for book covers
- Stapler
- Writing and coloring materials

Optional Materials

- Photos of the Century Farm or Century Ranch from the Internet to share with students
- Internet access for older students to conduct research

Homework Prior to Activity One

1. Have the students sign their first name only to the homework handout. (Some parents may be hesitant to share the information for privacy reasons. They may feel it is being collected for purposes other than intent of this lesson.) Tell students that other than checking to ensure they have completed the assignment, their information will remain confidential. Explain that if exact dates or locations are not known they may use educated estimates.
- Note: Adopted or foster children may choose to explore their own family or their adoptive or foster family.
2. Have students complete the homework handout about their family history. Tell the students that the information is to help them learn more about their own families and it will be used in the classroom only.

3. If the student is unable to obtain the information through family sources, work with him/her to make some estimates based on what they may know of their family's history and approximate age of parents, grandparents, and great grandparents or other family members.
- If the student is unable to estimate their family's history based on a lack of information, another option is to share your own family history with the student or ask the student to choose someone in the community and complete the homework assignment based on their history.

Activity One – Generations

1. Using the information from the homework assignment, have students create a time travel map of their family's history by drawing a star on the country/countries of origin and the date(s) the family emigrated on the world map. Draw arrows from those locations to the area where the family first settled in the United States.
2. Then have the students draw a star on that location on the U.S. map along with the date the family settled there.
3. Next have the students draw a star on the various locations where their parents, grandparents, and great grandparents lived and write that person's birth date and occupation below the star. Ask them to connect the locations in sequence to make a map timeline of their family's history and migration.
- If they have lived in the same town or county for a number of generations, have the student draw their own map of the town or county to complete this portion of the activity.

4. To demonstrate the cultural diversity of the class, make a large classroom map and star or color in all of the countries of origin represented.
5. Ask if there are any students whose parents, grandparents, and great grandparents have all lived in the same location (city) and had the same occupation. If a student's parents, grandparents, and/or great grandparents all lived in the same location (city) and had the same occupation, ask the student/students to share with the class what occupation that was.
6. Explain that all across the country we have family farms and ranches that have been in the same family for 100 years or more.
 - Explain or review that 100 years is called a century. The celebration of that anniversary is known as a centennial. One hundred and fifty years is a sesquicentennial and 200 years is a bicentennial. Point out that the United States celebrated its bicentennial in 1976, so the United States is just a little more than 200 years old as a country. If your state is more than 100 years old, you can share with the students how old the state is, and when the most recent "centennial" celebration was or when it will be.
 - Explain that in almost every state, a program documents, verifies and recognizes farms and ranches that have been owned and operated by the same family for more than 100 years. In most states, these are called Century Farms or Century Ranches. In other states, they are called the Centennial Farm or Centennial Ranch program. A few states have given them a different title such as Heritage Award or Pioneer Farm Award.
 - If available, share the information from your state (total number of farms recognized, earliest dates that the list includes, where those farms are located, the number of new awards given out in the past year, etc.).
- Share that in Massachusetts (locate the state on the map) two farms have been in the family since 1650. Ask how many years that is. (*More than 350 years!*) Iowa has more than 15,000 farms that are listed as Century Farms. Pennsylvania has almost 2,000 Century Farms and has just started a Bicentennial Farm recognition with 300 farms recognized as being in one family for 200 years or more. New York also has a Bicentennial Farm recognition with 50 farms listed. Oregon has more than 1,000 farms and ranches listed as Century Farms and Century Ranches, and the state just began a sesquicentennial program with 150 farms and ranches recognized.
7. Discuss how amazing this is when you consider all of the changes that have taken place in this country in the past 100 years, 150 years, 200 years, and even 350 years. Think about how many people lost farms during historic events in our country's history (the Civil War, Reconstruction, Great Depression or lesser depressions and recessions); or because of the changes in technology (that make it more expensive to run a farm or ranch), growth of cities, impact of urban sprawl, etc.
8. Break the class into groups of five to six students. Have the groups compare and contrast the history of Century Farms and Century Ranches with the family histories of the students in their group (in a general way). Ask students to identify what it would take to keep a farm or ranch in the same family for so long using the following categories: family, soil, buildings, water, pastures or grasslands, animals and crops, and business. Give the students an example: To keep a farm or ranch in the family for a long time, these people must take great care to ensure they keep the water clean for their family, animals, and plants.
 - Family (*The family must have a love of the land and the type of farming or ranching they conduct. They must also pass on that love to their children, their children's children, etc. Farming and ranching can be very uncertain and at times heartbreaking. During a drought, flood, early freeze, or blizzard, and through hurricane damage, a bad economy, or disease outbreak, they must remain optimistic that they can recover and that life will improve. A farmer or rancher can make all the right decisions and then a disease can attack their crops or livestock. Or the weather can be too cold for a corn seed to grow. Hail can damage fruit so that no one will buy it or a freeze can damage oranges and kill the trees. The family has to continue working together. The plants and animals they raise and the people who eat the food they produce are counting on them.*)
 - Soil (*Farmers and ranchers must prevent the soil from eroding and they ensure it remains fertile and nutritious for the plants they are growing.*)
 - Buildings (*Farmers and ranchers must take care of the buildings that house their animals, machinery, and family.*)
 - Water (*Farmers and ranchers must ensure that the water their family and animals drink and the water they use on their crops and gardens is clean and healthy. Most farms and ranches rely on well water for their own family's use and for their animals to drink.*)
 - Pastures or grasslands (*These lands must be used year after year, generation after generation. To do so, they must be well cared for, including controlling weeds, controlling brush to prevent fires, and controlling the amount of grass available for animals to eat. Farmers and ranchers often plant trees to block some of the wind and provide habitat for wildlife.*)

- Animals and crops (*Both animals and crops must be raised in a humane, healthy, and profitable manner. Plant diseases and insect damage must be carefully controlled. Animals need to be protected from predators and harsh weather conditions. Clean water must be available for both plants and animals in adequate quantities. Both plants and animals need a high level of nutrition, which requires constant attention from farmers and ranchers.*)
 - Business (*The farm or ranch has to be successful as a business or it will not be able to support the family and pay its taxes.*)
9. Explain that, in other words, for a family farm or ranch to stay in business for 100, 200 or even 300 years takes a lot of care and very responsible people. All across the United States, there are literally thousands of family farms that have lived up to these standards for more than 100 years. These farms and ranches care for their animals, land, and water, and produce healthy, safe, and nutritious food for people to eat. Their Century Farm or Century Ranch designation is the proof that they produce food with care and have done so for generations. Ninety-eight percent of all farms and ranches in the United States are still family farms and ranches. The next activity will use two examples to explain how America's farmers and ranchers have produced with care for generations.

Activity Two –

Producing Beef with Care

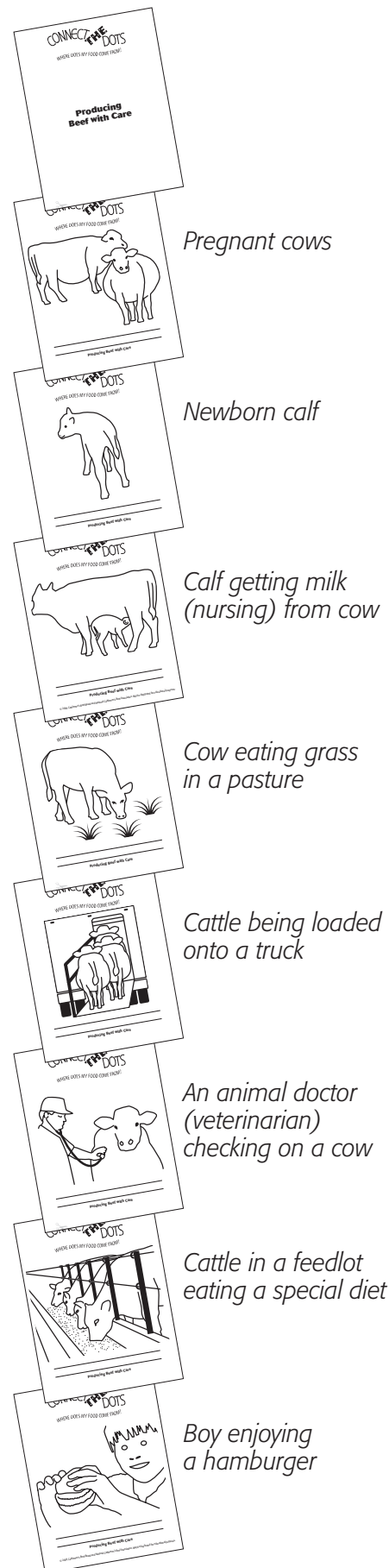
1. Begin by asking the students to share what they know about cattle. Ask them what we get from cattle. Hopefully, they will say *meat and milk*. If not, lead them in that direction by explaining that some cattle are raised for beef (meat) and others for dairy (milk). Explain that you will be discussing beef production and not dairy.

2. Provide the students with copies of the pre-cut illustrations to sequence based on the story you will read and create a book.



3. Explain that you are going to read the story of how farmers and ranchers produce beef with care. They are to listen to the story carefully and put the pictures in the correct sequence as you tell the story. They will also need to write a caption for the illustrations on each page.
4. Explain that farmers and ranchers care for their animals, day in and day out, in all weather, even if it is a holiday or weekend. The animals have to be fed, watered, and protected from disease, predators or other harm. That is the job of farmers and ranchers and the people who may work with them to produce food.
5. Read the story *Producing Beef with Care* (page 14) to the class. After the second paragraph ask the students to think how much they weigh right now and compare that weight to the birth weight of a calf.
6. Have the students assemble their pages into the correct sequence and staple them into a book.
 - Ask students to color the illustrations.
 - On each page they should write a caption to describe the step.
7. Once the books are completed have a couple of the students volunteer to read their story.

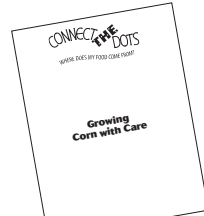
Answer Sequence to Assembling *Producing Beef with Care* and Caption Examples



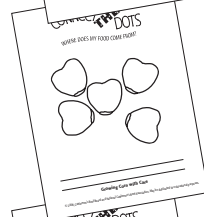
Growing Corn with Care

1. Begin by asking the students to share what they know about corn. Ask them what we get from corn. They will most likely identify sweet corn (corn on the cob or corn in a can). Lead them to other foods made from corn such as corn flakes, corn chips, taco shells, or cereals such as Cap'n Crunch,TM Corn Chex,TM or Cocoa Puffs.TM
2. Provide the students with copies of the illustrations to sequence based on the story you will read and create a book.
3. Explain that you are going to read the story of how farmers and ranchers produce corn with care. They are to listen to the story carefully and put the pictures in the correct sequence as you tell the story. They will also need to write a caption for each illustration.
4. Explain that farmers and ranchers care for their crops just as they do their animals. That is the job of farmers and ranchers and the people who may work with them to produce food.
5. Read the story *Growing Corn with Care* (page 15).
6. Have the students assemble their books into the correct sequence and staple them into a book.
 - Ask the students to color the corn.
 - On each page they should write a caption to describe the step.
7. Once the books are completed have a couple of students volunteer to read their story.

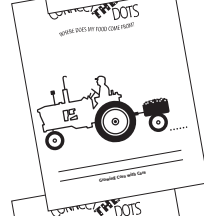
Answer Sequence to Assembling *Growing Corn with Care* and Caption Examples



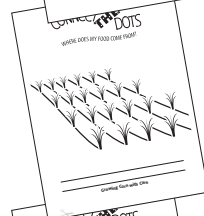
Sweet corn seeds



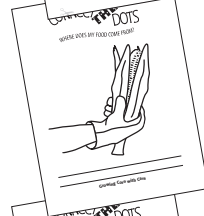
Farmer planting sweet corn seeds in a field



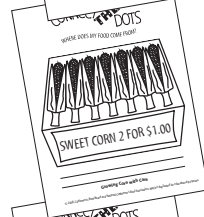
Young sweet corn plants



Picking sweet corn by hand



Sweet corn at the grocery store



Girl enjoying corn on the cob



Evaluation

1. Assess how completely and accurately each student completed the homework assignment.
2. Have each student write an essay comparing and contrasting their family with the history of a family living on a Century Farm or Century Ranch.

3. Assess the accuracy of the sequence of each student's book.
4. Have the students write a report about how cattle are raised and have them specify the changes that occur from birth to two years old. Ask them to specify weight, height, foods, and other specific changes.

Extensions

1. Have students research and write a report about a Century Farm or Century Ranch in their state or another state they are interested in.
2. Have students research small businesses or large corporations in your community and determine how many have been in business for 100 years or more.
3. Have older students estimate the number of generations that have lived on the Century Farms in Massachusetts that have been around since 1650. *(If we estimate that each generation takes 25 years before they begin the next generation, then there would be 14 generations since 1650. The students can also set their own parameters and estimate the number of generations.)*
4. (For older students) Have students describe five decisions that farmers and ranchers make that demonstrate that they make decisions very carefully to care for the environment, their families, the animals they raise and the people who consume the food they produce. *(For example, What crops will prevent soil erosion? What type of tilling should I do? How do I keep livestock out of the stream?)*

Century Farm and Century Ranch Programs

Alabama:

http://agi.alabama.gov/program_forms

Colorado:

www.coloradohistory-oahp.org/programareas/centfarm/apply.htm

Delaware:

<http://archives.delaware.gov/collections/guide/1300S/1380-003-008.shtml>

Florida:

www.florida-agriculture.com/marketing/century_pioneers.htm

Georgia:

www.gashpo.org/content/displaycontent.asp?txtDocument=119

Idaho:

www.idahohistory.net/centuryfarm.html

Illinois:

www.agr.state.il.us/marketing/centfarms/

Indiana:

www.in.gov/isda/files/homestead_brochure.pdf

Iowa:

www.iowaagriculture.gov/centuryFarmsProgram.asp

Kansas:

www.kfb.org/CenturyFarm/default.htm

Massachusetts:

www.mass.gov/agr/centuryfarms/farms_byyear.htm

Minnesota:

www.fbm.n.org/page/1049/century/farms.html?inet=aD1wcmFnaGVsLXNuZXpmLXlhcCZyaD11YnpyLXlhcA

Missouri:

<http://extension.missouri.edu/centuryfarm/index.html>

Nebraska:

www.aksarben.org/Programs-and-Events/recognition.htm

Nevada:

www.nv.nrcs.usda.gov/centennial_awards.html

New York:

www.nysagsociety.org/cen_farms/index.htm

North Carolina:

www.agr.state.nc.us/paffairs/century/index.htm

North Dakota:

www.agdepartment.com/Programs/Centennial%20Farms.html

Ohio:

www.ohioagriculture.gov/centuryfarm/

Oklahoma:

www.okhistory.org/shpo/historyfr.htm

Oregon:

<http://oregon.gov/ODA/cfr.shtml>

Pennsylvania:

www.agriculture.state.pa.us/agriculture/cwp/view.asp?a=3&q=129146

South Dakota:

www.state.sd.us/doa/century_farms/

Tennessee:

<http://www.tncenturyfarms.org>

Texas:

www.agr.state.tx.us/agr/program_render/0,1987,1848_5409_8622_0,00.html?channelId=5409

Utah:

<http://ag.utah.gov/pressrel/centfarm.html>

Virginia:

www.vdacs.virginia.gov/century/index.shtml

Washington:

www.fostercreek.net/century_farm_&_ranch.htm

Wisconsin:

www.co.ozaukee.wi.us/ochs/CenturyFarm.htm

Wyoming:

<http://wyoshpo.state.wy.us/cfr/index.asp>

All Web sites were active at the time of publication. If your state is not listed, they may have a program, but their Web site was unavailable when this publication went to print.

Credits and Additional Resources

Ag in the Classroom

www.agclassroom.org

American Farm Bureau Foundation for Agriculture

www.ageducate.org

Beef From Pasture to Plate

Beef Checkoff Consumer Resource

www.BeefFromPastureToPlate.org

Peterson, Cris. *Century Farm*. Boyds Mill Press.

1999, IBN-13: 978-1-56397-710-7

Producing Beef with Care

When you ride down the road or highway and see cattle grazing in a pasture, you are probably witnessing a family farm or ranch in action. Most beef calves are born and raised on family-owned farms and ranches, and the farmers or ranchers that own beef cattle are called beef producers. The family is involved in caring for their cattle, land, fences, and buildings every day. Their life revolves around caring for their animals.

A pregnant cow carries its calf for 9 months. Farmers and ranchers give the cows extra care when they are about to give birth (calve). If the cow has trouble giving birth, it is helped by the owner and sometimes an animal doctor (veterinarian) is called. When a calf is born, it weighs 50 to 100 pounds. *(Note: Ask students how much they weigh right now and compare that weight to the birth weight of a calf.)*

While calves can be born year round, most farmers and ranchers will try to avoid having calves born in the coldest part of the winter because of the possibility of having bad weather, such as a blizzard. After the calf is born, the beef producer makes sure that the calf stands and gets milk (nurses) from the cow. The first milk that a cow produces protects the calf from getting sick until its own immune system can develop.

When calves are young, they mainly get nutrition from milk. Calves will begin to nibble on grass, but it will be a while before they can eat all of the foods that adult cattle enjoy. Beef calves stay with their mothers until they do not require milk anymore. At that point, the calves weigh 450 to 700 pounds and are six to 10 months of age. At all times, beef producers make sure there is plenty of fresh, clean water for the cattle to drink and enough healthy plants in the pasture to eat. If there are not enough plants in the pasture for cattle to eat, the farmer or rancher brings them extra food, such as hay bales, which is grass that is cut, dried and bundled up (baled) in the summer and stored. During the winter when grass is not growing, the cattle are fed hay. The farmers and ranchers also give the cattle salt blocks and minerals to keep them healthy, much like the vitamins and minerals many children take. Just as important as caring for their animals, farmers and ranchers care for the environment where they raise their cattle. It is so important to them because it is the same environment in which they raise their own children who, one day, will take over the farm or ranch.

When the cattle are 600 to 800 pounds, most will be sold at an auction market. However, the best females may be kept and used to produce more calves. At the auction market, the buyers bid against each other until one buyer is willing to pay more than anyone else. The best cattle bring the most money, so a beef producer must strive to raise the healthiest and highest quality cattle.

After the auction market, most animals are shipped to a feedlot by a truck. At arrival, cattle are carefully watched and given a number that will be used to help manage the cattle. The people who work at the feedlot keep very good records of all the animals they care for. A veterinarian watches the cattle closely and gives medicine if cattle get sick.

In a feedlot, cattle are put into pens where they eat special diets made mostly of corn and corn products along with hay, vitamins and minerals. At about 18 to 22 months, or when the animal weighs 1,200 to 1,400 pounds, they are considered finished and can be sent to market. Some of the cattle may be raised for grass-fed beef, meaning they will continue to eat grass until they are fully grown and ready for market.

Cattle are trucked to a processing plant and processed into meat. Inspectors from the United States Department of Agriculture (USDA) check to make sure safety practices are upheld and that the meat produced is safe to eat.

Growing Corn with Care

There are several types of corn that farmers can grow: sweet corn, dent corn, popcorn, flint corn, and flour corn are a few examples. This story will describe sweet corn that is grown for people to eat directly. You might eat sweet corn as corn on the cob, corn from a can or frozen corn.

Sweet corn can be grown in a field or in a garden. No two areas of the country grow corn the same way. When farmers are deciding the best way to grow sweet corn, they must think about how their farm might be different from the other farms growing sweet corn. For example, farmers must check the type of soil to find out if it has nutrients to help their particular type of corn grow and understand the kind of weather that will nourish the corn. Some types of corn may need more rain than others. The farmer also considers the average temperature in the area and any insects and diseases when choosing a type of sweet corn. Depending on all these factors, certain areas of the country may prefer special varieties of sweet corn.

During the winter when crops are not growing, farmers select the seed they will plant, have their soil tested so they know how much fertilizer to use, and take classes on how to use crop-protecting chemicals properly. Also during this time, farmers make decisions about how to manage the money they need for their farms and families, repair equipment like tractors, and decide whether new equipment needs to be bought or rented. Many farmers plan how to rotate their crops in different fields. This keeps one crop from using all of one nutrient from the soil. For example, corn may use more of one nutrient that's in the field but it may give a different nutrient back to the soil. The next year, the farmer can plant a crop in that field that needs the nutrient corn left in the field, such as soybeans, wheat or alfalfa. Rotating crops also prevents insect damage and diseases because the different plants each year do not attract the same insects. This keeps the soil full of different nutrients and healthy so that it won't erode.

In early spring, farmers prepare their fields. Many will plant their sweet corn seeds under a row of clear plastic, which warms the soil and prevents the new plant from freezing early in the spring. As the weather warms up, farmers remove the plastic to give the corn room to grow and to prevent the hot sun from baking the plant.

To prevent soil erosion, many farmers use what is called "minimum- or no-till equipment." This equipment does not disturb the top of the soil and reduces soil erosion. Fertilizer is placed next to the seed to provide added nutrients to the plant. Crop protecting chemicals are often used to kill weeds and insects that will damage the corn. These chemicals are used in exact amounts and are used very carefully.

The farmer watches the growing corn carefully. In some areas of the country, the corn may need more water than the rain provides. In this case, it is given extra water (irrigated), similar to how a lawn of grass is watered with a sprinkler. Farmers also make sure the corn has enough fertilizer and that diseases, insects and weeds are being properly managed.

Sweet corn takes anywhere from 55 to 95 days to be ready for harvest. Farmers know it is time to pick the corn when the hair-like fibers, or silk, dry up and become brown. Sweet corn can be picked by hand or by using a mechanical corn picker. Whether it is picked by hand or by using a machine, the edible part of the corn (the ear) is then trucked to the market or processing plant before it makes its way onto your plate for dinner.

