Lesson 3: How It's Made
Exploring Non-Food Agricultural Products

Grade Level & Subject: 6-8 / Life Sciences
Lesson Duration: 50 minutes (with 10 and 25 minute extensions)

OBJECTIVES

- Students will explore various sources of agriculture that provide non-food products such as fuel, clothing, shelter, and medical supplies for their community, state, and/or nation.
- Students use the visual representation of a web to explore the role of agriculture in their daily lives and understand how most of the necessities of life can be traced back to the farm
- Students will analyze how human and environmental factors influence sustainability in agriculture and make plans for an advocacy project that will improve agricultural and/or environmental systems in a way that is meaningful for them and/or their school community related to how food is grown, harvested, and used around the world.

Food Education Standards:	**Content Area Standards:**	**This lesson also aligns to:**
FES2: Foods have sources and origins. FES4: Food behaviors are influenced by external and internal factors.	• NGSS - MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	WIDA Standard 1 - Language for Social and Instructional Purposes WIDA Standard 4 - Language for Science

LESSON SYNOPSIS

This lesson uses graphic organizers as a teaching strategy to explore the definition of agriculture to facilitate learning and achievement. Students use the visual representation of a web to explore the role of agriculture in their daily lives and understand how most of the necessities of life can be traced back to the farm. Agriculture is a big umbrella term that includes many concepts, ranging from farm to fork and from field to **fabric**. In addition to food and fiber, agriculture also provides numerous products for

industrial use such as linseed oil for paint and corn for fuel. Older students working in groups using pencil and paper or marker and dry-erase board can create a concept web with the 5-Fs of agriculture: **farming**, food, fabric, **forestry**, and **flowers**.

LESSON PREPARATION

Prep Steps	Materials
• Review the lesson and make adjustments as needed for your class. Pre-assign partners/groups (if desired, random works too). • Prepare and cut the materials for Activity 1	• Computer with internet connection and projector • 1:1 student devices (optional) • Teacher and Student docs (linked below) • Supplemental readings - Farm Web Graphics • 30 pieces of Yarn/string, about 18” long

VOCABULARY

- Agriculture [**ag**-ri-kuhl-cher] (noun) – farming; the science and business of cultivating soil, producing crops and raising livestock
- Cotton [**kot**-n] (noun) – the soft, white seed hairs, which fill the seed pod of the cotton plant.
- Crops [krops] (noun) – agricultural products, growing, harvested, or collected; for example, wheat, cotton, fruit, honey.
- Dairy cows [**dair**-ee kouz] (noun) – cows raised mainly for the production of milk for dairy products.
- Farmer [**fahr**-mer] (noun) – a person who earns a living by farming, especially one who manages or operates a farm.
- Forestry [**fawr**-*uh*-stree, **for**-] (noun) – the science of systematic forest management for the production of timber, recreation, and wildlife.
- Flowers [**flou**-erz] (noun) – plants cultivated for their blossoms; flowering plants.
- Livestock [**lahyv**-stok] (noun) – domestic animals kept for use on a farm or raised for sale and profit.
- Rancher [**ran**-cher] (noun) – a person living and working on a large farm raising livestock in large numbers.
- Timber [**tim**-ber] (noun) – trees or forests collectively; wood suitable for building whether cut or still in the form of trees.
- Wheat [weet, hweet] (noun) – any of several cereal grasses having dense erect spikes containing grains

LESSON ACTIVITIES

Teacher note: These learning tasks and videos are available online for students with access to 1:1 technology, but they should use headphones when watching videos. If your students do not have access to technology, or you don't want them online, feel free to print off the documents. If students are working online. With all documents, please make a copy, do not request access.

Engagement in Phenomena (10 minutes):

- Remind students of the previous lessons they did for AgEd. What food was the focus of the class? What were the differences between organic and conventional? Etc. Remind students of the 4 Pillars and that today they are going to be exploring Growth for All, Environmental Action, and Common Ground.

The Four Pillars of AgEd & Advocacy

Each pillar becomes dynamic and fully alive through advocacy.
The future of agriculture needs the ideas, actions, and experiences of young people.

Food Education	Growth for All	Environmental Action	Common Ground
Agriculture is a defining facet of our food systems; it promotes informed decision making for healthy futures.	Agriculture is a changing industry ripe for innovation with a wide range of careers that provide economic pathways for individuals and communities.	Agriculture is both a cause and a solution for climate change that requires social, scientific, and community driven action.	Agriculture is an entry point for thinkers of all backgrounds to come together and bridge urban & rural divides.

- Write down the ingredients from the sandwich and ask students if they know *where* the products are likely farmed? Do they know where the food in their lunch comes from?
- Hand out the ***'Where in the United States does your food come from?'*** learning activity and have students complete it with a partner. Circulate and support as needed.
- Review student answers, honing in on the question, "Why are these products produced in these locations?" Emphasize to students that food and other agricultural products have sources and origins, and generally, crops and other products are tied to the geographic region that provides the proper climate and context to grow/raise that product. Highlight the ingredients for the sandwich.

Instruction (35 minutes):

1. **10 minutes -** Ask the students, "What kinds of things do you use every day?" (*You should get answers like food, clothes, books, phones, paper, computers, pens, water, TV, etc.*)
2. Discuss with the students that the items we use every day are either grown (agriculture), harvested (natural resources like water) or mined (with a few exceptions, like the sun!). If the item is grown specifically for people, it is a product of agriculture.
3. Ask the students "Where do we get the things we use every day?" Most students will say, “at the grocery store!” Some might say, “a factory.” Explain that most stores, especially big ones, are mostly distribution centers where we buy things and that factories are places where “raw” ingredients are put together to make a product that ends up in the store. The raw ingredients are grown/raised (wheat for bread, pigs for ham, etc.) provided by nature (petroleum for fuel or plastic), or created in a lab (synthetics).
4. Ask your students, "What are products of agriculture besides food?” Help the students identify their connection to agriculture by recognizing that things like fabric, flowers, and forestry (wood) comes from agriculture.
5. Hand out the ***Agriculture in your Life*** learning activity and have students complete it with a different partner from the engagement activity. Circulate around the class, supporting when needed. When complete, review with the class, emphasizing the original agricultural sources of basic everyday products produced around the United States and that many food and fiber products are produced outside traditional farming ideas.
    i. Answer Key: Activity Sheet A
        1. timber – paper, pencils, potpourri, houses
        2. dairy cow – cheese, ice cream, yogurt
        3. cotton – blue jeans, paper, shirts
        4. flower – perfume, potpourri
        5. wheat – spaghetti, tortillas, cereal

Explore and Explain (15 minutes)

Preparation - Print and cut out the Farm Web Graphics. The 30 images can be printed in color or black & white and be laminated for future use (especially if printed in color!). If you have more than 30 students, prepare the necessary number of images so that each student gets one. This activity may be conducted inside or outside; either way, you’ll need about 10 square feet of floor space. The students will place a picture and then connect them together with yarn.

1. **Activity 1: Concept Picture Web**

a. Guide the students to understand that agriculture begins on a farm and there are all kinds of farms. Have students think about it in terms of the ingredients of the sandwich, as well as organic vs conventional methods. There are cattle ranches for beef and leather; dairy farms for milk and all the products made from milk (our sandwich cheese); orchards that grow apples to make juice and apple pies; pig farms for pepperoni, bacon, and ham (our sandwich); grain farms that grow corn for fuel or corn syrup for soda, and wheat for bread (our sandwich); cotton farms for blue jeans; vegetable farms for produce like lettuce, cucumbers, and tomatoes; and tree farms for paper and landscaping. In fact, there is a different kind of farm for nearly every type of product. Farms specialize in what they grow based upon their location (climate and soil), and farmers choose only a few crops because the type of equipment used to plant and harvest each crop is very specific and expensive. Some farms can grow a variety of products, but all agriculture in connected to the environment. All products that we use have sources and origins tied to the people and land it's grown on.
b. Inform students they are now going to create a "farm web" to help them understand agriculture and where the items they use every day come from.
c. Place the farm picture in the center of the floor. Mix up the remaining pictures and either put them in a pile or pass a picture to each student. Also give each student a piece of yarn/string.
d. Ask the students, "Which pictures will go closest to the farm picture?" (*The pictures of plants or animals that are grown or raised on a farm go the closest.*)
e. Students with products made from ingredients produced on a farm should place their pictures onto the web after the farm-raised item is placed.
f. As each picture is placed, ask the students to use a linking phrase such as *dairy cows make milk* (the word *make* is the linking word) to describe how their items connect to the web. Discuss each new connection as the pictures are placed.
g. When all the pictures have been correctly placed, review the linking phrases and ask students if they think other pictures could be added to the web.
h. Define agriculture using the 5-Fs of agriculture: Farming, Food, Fabric, Forestry, and Flowers

2. Activity 2: Concept Word Web - (**10 minutes**)

a. Hand out the final Learning Activity: ***Word Web and Advocacy Project***. Have each student choose one of the 5-F words (farm, food, fabric, forestry, flowers) that they think they *MIGHT* want to explore in more detail for the advocacy project. If students are really struggling, you could add a 6th F: fuel.
b. Ask students to create a concept map around their group's word by thinking about products they can associate with the word. Give them about 5 minutes. Next, create linking phrases.
c. Ask each group to share and explain their concept web with the class. (Paper maps should be posted on the wall.)

d. Conclude the instruction by announcing that the students have visually created a definition of agriculture.

Closing & Assessment - (5 minutes)

- Facilitate a class discussion to summarize the key takeaways from the lesson, emphasizing the Can all crops/livestock be grown anywhere and everywhere? How do humans have to change the environment to support agriculture? Highlight the findings that not all organisms need the same things to survive, and that specific conditions must be met for organisms to thrive.
- Review the concepts of **interconnectedness** between food and the environment, **sustainability,** and **advocacy**. Explain to students that people have different means and needs of growing, harvesting, and using agricultural products around the world, how do we make sure we maintain that over time? What factors are most important to me, to us, and to all? Advocacy is the willingness and ability to advocate (speak up) for a cause or belief that you think is important to create change. For the advocacy project, will students want to work on a project that advocates for them, for their communities, for all communities.

CONSIDERATIONS (What adaptations are needed for diverse learners and/or varying dietary needs?)

- Diverse readings, videos, and visuals were provided, but some students may need support in applying their learning. Support as needed.
- Make sure students have access to language support such as Google Translate.

STUDENT SHEETS AND ASSESSMENTS

- Exit ticket available at the end of the student sheets on the next pages

EXTENSION IDEAS

Short (10 min):

- Leave the concept maps up on the board or on the wall, and encourage other groups to help add to each other's maps. It's important to add words showing the relationship between linked concepts if a step or stage is missing.
- In addition to the products students thought about with the 5-Fs, ask students to try to identify careers with the new word links they have created. For example, if they have listed the word yogurt as a food, they should now link the word to milk processing plant worker, and then to dairy farmers, and then to dairy computer programmers, and milk-hauling truckers, etc. Again, give the students 5 minutes to see if they can get 20 new career links. Or, make it a contest to see which group can link and list the greatest number of careers. After careers have been

identified and written on the concept web, ask students to note the natural resources used to produce each product such as fuel (oil), water, soil, etc.

Long (20-30 min):

- Read an issue or two of Ag Today (Issue 1 relates directly to this lesson. It is titled: *Agriculture is Everywhere!* This reader can be printed or accessed digitally. It describes the connections humans make daily with agriculture from business and science to the practices of growing and selling row crops and animals to be used for food, fiber, and fuel.

REFLECTION AND NEXT STEPS

Activities that worked	Topics to revisit	Community extension opportunities

Name _____ Class _____ Date _____

STUDENT SHEET: The Four Pillars of AgEd & Advocacy

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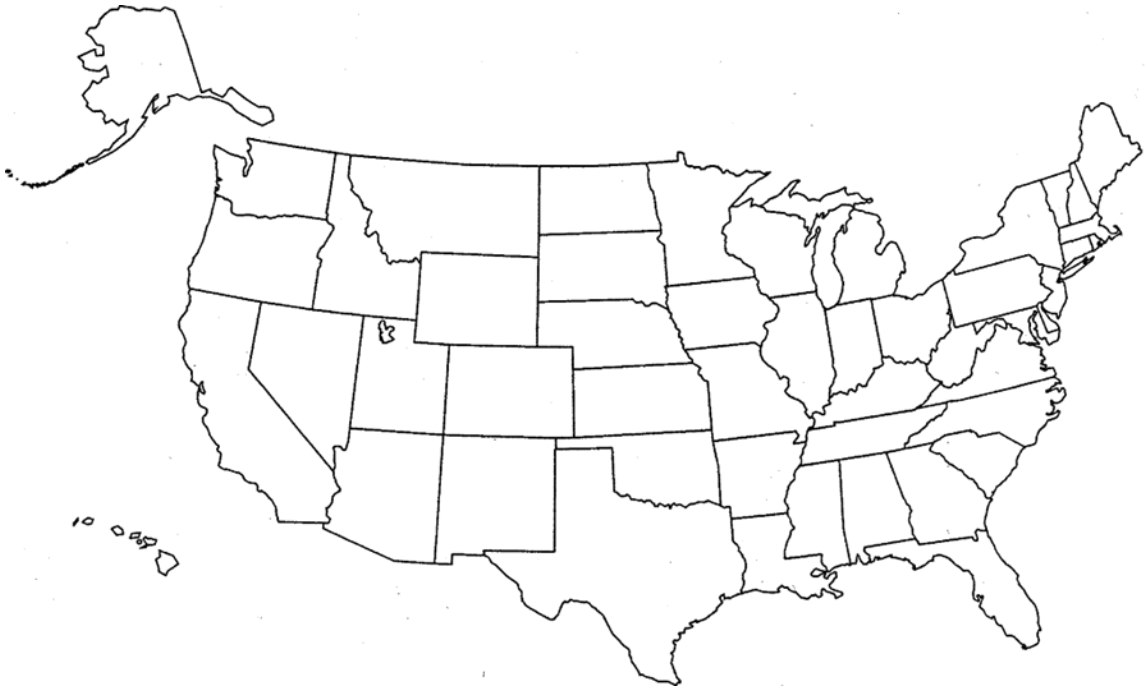
This lesson mostly approached Growth For All and Environmental Action.. What challenges or issues exist within agriculture that we are interested in exploring?

Name _____ Class _____ Date _____

STUDENT SHEET: Lesson 3 - Where in the United States Does Your Food Come From?

Most states have independent farms that produce their own milk, eggs, fruits, vegetables, and grains on a small scale. Some states, however, have the environment and climate perfectly suited to produce so much of a particular crop or animal that they have become famous for their particular products. Color each small circle on the legend with a different color and then color a small circle on the map to match the products of the most productive states in the United States. **Mark each agricultural product with a different color.** Many states will have more than one colored circle. As you complete this learning activity, consider the question, "Why are these products produced in these locations?"



Legend

- ◯ Beef: Texas, Nebraska, Kansas, Colorado, Iowa, Oklahoma, and California.
- ◯ Chickens: Arkansas, Georgia, Alabama, North Carolina, Mississippi, and Texas.
- ◯ Corn: Illinois, Iowa, Nebraska, Indiana, Minnesota, and Ohio.
- ◯ Dairy Products: Wisconsin, California, New York, Pennsylvania, and Minnesota
- ◯ Eggs: California, Georgia, Arkansas, Indiana, Pennsylvania, and Texas.
- ◯ Cucumbers: California, Florida, Arizona, Washington, New York, Georgia.
- ◯ Pork: Iowa, Illinois, Minnesota, Nebraska, Indiana, North Carolina, and Missouri.
- ◯ Onions: Idaho, Washington, California, North Dakota, Maine, and Wisconsin.
- ◯ Tomatoes: Florida, California, Virginia, Ohio, Georgia, and Michigan.
- ◯ Wheat: North Carolina, Kansas, Montana, Oklahoma, Washington, and Minnesota

Name _____ Class _____ Date _____

STUDENT SHEET: Lesson 3 - Agriculture In Your Life

Background - Agriculture plays a major part in our lives: from what we wear, to what we use in our classes, and even to what we do after school. We may not always think of agricultural products as the physical source of the items or things we use everyday. However, most daily essentials can be traced back to an agricultural source.

Production agriculture, or farming, is what most students think of when they hear the word "agriculture." This is the actual production or growth of raw commodities. People who raise and harvest crops and livestock for consumption or purchase are typically categorized as farmers and ranchers. It doesn't stop there. Production agriculture also includes a variety of specialties, such as fish, timber, fur-bearing animals, trees, shrubs, flowers, herbs and much more.

Most of the products we use everyday come from agriculture. The sheets we sleep on and the pajamas we wear are made from cotton, just like Q-tips for your ears. The feathers in pillows may come from chickens or ducks. The cereal and milk we eat for breakfast; the pencils, crayons, and paper that we use at school; and the baseballs, bats and gloves we use after school all originate from raw agricultural products. We know that our food comes from agriculture, but we are surrounded by and reliant upon many agricultural products throughout our lives..

Vocabulary/Glossary

- *agriculture* – farming; the science, art and business of cultivating the soil, producing crops and raising livestock useful to people.
- *cotton* – the soft, white seed hairs, which fill the seed pod of the cotton plant.
- *crops* – agricultural products, growing, harvested, or collected; for example, wheat, cotton, fruit, honey.
- *dairy cows* – cows raised mainly for the production of milk for dairy products.
- *farmer* – a person who earns a living by farming, especially one who manages or operates a farm.
- *forestry* – the science of systematic forest management for the production of timber, conservation, recreation, and wildlife.
- *flowers* – plants cultivated for their blossoms; flowering plants.
- *livestock* – domestic animals kept for use on a farm or raised for sale and profit.
- *rancher* – a person living and working on a large farm raising livestock in large numbers.
- *timber* – trees or forests collectively; wood suitable for building whether cut or still in the form of trees.
- *wheat* – any of several cereal grasses having dense erect spikes containing grains

Activity

Agriculture in Your Life

Match the product on the right with the pictures of the product's agricultural source.

Timber

Dairy Cow

Cotton

Flower

Wheat

cheese

blue jeans

paper

spaghetti

perfume

ice cream

pencils

tortillas

shirts

potpourri

houses

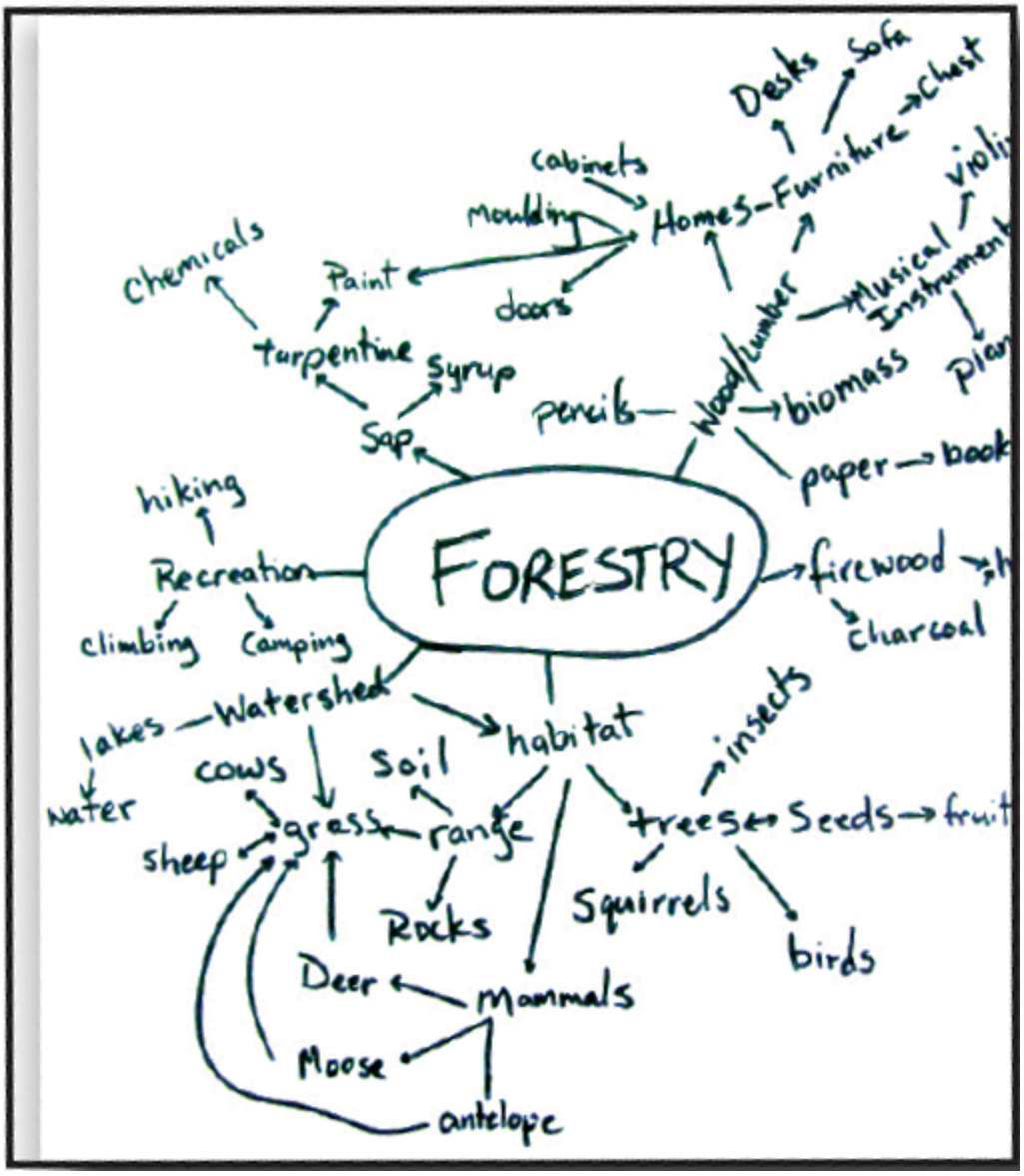
yogurt

cereal

Name _____ Class _____ Date _____

STUDENT SHEET: Lesson 3 - Word Web and Advocacy Project

Directions: Choose one of the 5-F words (farm, food, fabric, forestry, flowers) that you think you *MIGHT* want to explore in more detail for the advocacy project. On the back, create a concept map around your word by thinking about products they can associate with the word (see the model below). You may use the internet to help you. After, create linking phrases. Be prepared to share and explain your concept web with the class.



My chosen branch of agriculture (F)_____

Explanation_____

_____

_____

_____

_____

_____