



Acterra

YOU(TH)
BE THE
CHANGE



AGRICULTURAL SYSTEMS & FOOD CHOICE


WHAT YOU WILL LEARN

- 1** Review Session 3
Agricultural Systems
- 2** Food Choice
Carbon Footprint of Food
- 3** Food Waste
Composting



LESSON 4: AGRICULTURAL SYSTEMS & FOOD CHOICE

Time	60 Minutes
Next Generation Science Standards	<p><u>Next Generation Science Standards</u></p> <p>5-LS2 and MS-LS2 Ecosystems: Interactions, Energy, and Dynamics MS-ESS3 Earth and Human Activity</p> <p><u>Disciplinary Core Ideas</u></p> <p><u>5-LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</u> Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2.B)</p> <p><u>MS-LS2.B: Cycle of Matter and Energy Transfer in Ecosystems</u> Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)</p> <p><u>MS-ESS3.C: Human Impacts on Earth Systems</u> Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-4)</p>
Vocabulary	Carbon footprint, Animal agriculture, Large scale agriculture, Monoculture, Polyculture, Predatory birds, Composting, intentional irrigation, Food waste, soil health

Materials	Session 4 PowerPoint 
Topics Covered	<ol style="list-style-type: none">1. Review session 32. Agricultural systems and food choice3. Carbon footprint of food4. The impact of our diet <p>Enrichment: Food waste and composting Reading the graph</p>
Learning Goals	Students will learn... <ol style="list-style-type: none">1. an introduction to the basics of agricultural supply chains2. the idea of the carbon footprint of our food choices3. various greenhouse gases emitted from our food systems4. about food waste and composting

INTRODUCTION

Review Lesson 3: Sea Level Rise

Ask | "What do you remember from Lesson 3?"

This piece is to start the lesson off with classroom participation.

Bonus: List the vocab words from Lesson 3 (and a few from Lesson 2!) on the board and have students independently try to remember what each word means - even the act of trying to remember is helpful, even if they ultimately can't remember. Then go through each vocab word as a class. If there are any words that nobody remembers, make a note of it (an you can re-review it at the beginning of the next class).

Topics to review include:

1. The definition of **sea level rise**: an increase in the level of the world's oceans due to the effects of global warming. Sea level rise is caused primarily by these factors related to global warming;
 - the added water from melting ice sheets and glaciers (land based ice);
 - the expansion of seawater as it warms, and;
2. Hard engineering, soft engineering, and three examples of adaptation strategies

After the review, go over the agenda and begin the lesson.

Today's Agenda:

1. Review session 3
2. Agricultural systems and food choice
3. Carbon footprint of food
4. The impact of our diet

Enrichment:

1. **Food waste and composting**
2. **Reading the graph**



ICEBREAKER

Ask | "What is your favorite food?"

After asking students what their favorite food is, ask them to list out the ingredients in that food or meal.

Bonus: Ask the students to call out the ingredients and you can write them on the board. You can also group them by what category they fall under (meat, vegetables & fruit, or grains).

We will cover how these different categories of food have different levels of impacts on the environment, and subsequently on climate change. Tell them this and ask them to notice what ingredient is the biggest portion in their favorite food or meal

AGRICULTURAL SYSTEMS & FOOD CHOICE

Engage Explore, Explain, Elaborate, Evaluate



Introduce students to the term "carbon footprint"

Carbon Footprint: The amount of greenhouse gases and specifically carbon dioxide emitted by something (such as a person's activities or a product's manufacture and transport) during a given period.

Ask students to take a moment to think about which of the groups on the board has the highest carbon footprint. Then, ask them to guess which of the items listed in each group has the highest carbon footprint within the group.

- As a class, ask some students to share their thoughts and their rationales. (We'll come back to this later!)



VISUALIZING THE CARBON FOOTPRINT

Engage, **Explore**, Explain, Elaborate, Evaluate



Watch this video on ["The Life of a Strawberry" by It's Fresh](#) 

Ask students to write down all the places or ways in which energy or resources are being used. Challenge them to write down as many as they can.

"Can you get to 10, 20?"

As a class, share where and how energy and resources are being used (don't forget about labor).

Purpose: The purpose of this activity is to point out the whole agricultural supply chain. Remind the class that this process is happening for every food we produce. California, for example, ships out food to all parts of the world. This activity will help students quickly understand the energy and logistics it takes to produce and deliver food.

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