



7TH GRADE
STEM & SOCIAL STUDIES



ENERGIZING YOUR LAWN

Driving Question:

How can cultivated yards be changed to provide food for a community?

Materials Needed:

Science notebook, sketchbook, writing utensil, a device for research, small planting boxes or herb containers, seeds or seedlings

In this lesson, students will:

- use knowledge of food webs and the scarcity of food to create nontraditional food sources.

National Learning Standards:

Science: MS-ESS3-3; MS-ESS3-4;
MS-ETS1-1
Math: 7.RP.1; 7.G.1; 7.G.4; 7.G.6
Social Studies: III,h
Art: Pr5.1.7a



SPINNING THE COCOON

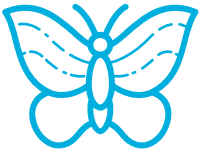
Begin by asking students what makes life on Earth possible. Student responses will likely include our atmosphere and the sun. Explain that our proximity to the sun allows for the ideal climate for the biodiversity needed for all species to survive. Expand on the initial question by asking students what else the sun provides for us. In addition to energy for electricity, it also provides energy needed for plants to grow. After undergoing photosynthesis, plants use energy from the sun along with water and carbon dioxide to produce glucose, a sugar needed by humans and other organisms for energy. Explain that, because plants produce energy, we call them “producers.” Other organisms that consume plants are called “consumers.”

Show students an example of a food chain and ask them for strengths and weaknesses of the model. Explain that the model is great as a simplified version of how just a few organisms eat, but doesn’t explain the complexity of feeding relationships in an ecosystem. A better model is the food web, which uses arrows pointing toward the consumer to expound on the complexity of feeding relationships. Ask students to describe some of the producers they have actually seen growing such as a local corn field or tomatoes in their parent’s garden. Then, create a food web on the board showing feeding relationships, including humans, insects that also eat the food, and other organisms that might break down what is left of it after we have had our fill.

Tell students that the first grocery store in the United States opened in 1916, more than 100 years ago. Grocery stores didn’t open in other places such as Europe until the 1950s, so how did we get our food? The Farm Bureau estimates that less than 2% of the U.S. population is engaged in agriculture, feeding the other 98% of us. A large amount of our food is even grown in other countries. Regardless of it whether it is grown domestically or internationally, our food must travel many miles before it gets to our plates, but what does that mean?

Shipping food means that it is loaded onto carbon-producing vehicles and trucked long distances. During travel, it is exposed to vehicle exhaust and other contaminants. All of this occurs when we could be growing a significant amount ourselves. But where? In place of cultivated lawns! Discuss how cultivated lawns consume resources such as water, and also contribute to chemical pollution via overuse of fertilizers and other lawn chemicals. All of that, and no food to show for it.

Ask students to estimate the number of American citizens who don’t get enough to eat every day. Tell students that, according to [Feeding America](#), a staggering 41 million people suffer from hunger in our nation. What can we do about this locally?



METAMORPHOSIS

Students or student groups will begin by researching the [Food Not Lawns Project](#). They will either use their own lawn or a lawn of their choosing as a basis for their project. Students will research and choose food crops such as pole beans, zucchini and tomatoes to grow in their project and note the space and light requirements, crop yields, potential pests and predators. Students will draw their design and create a timeline for food production. Based on estimated yields, students will also prepare a report of how many people one lawn can feed versus the number of people residing in the attached house. Groups can use ratios to create a scale model of their garden to test functionality, uncover problems that may hinder the ease of harvest, and check yields based on one plant versus many. Students will then create a food web of their new lawn including humans, potential pests and predators, and even decomposers such as earthworms in the soil.



THROUGH THE LENS

Students can create an explanatory video on Flipgrid of their research on how farmers accidentally aided in the creation of the Dust Bowl, and the safety measures that have since been put into effect to prevent such an event from happening again.

UPCYCLE

One of the reasons farming has improved so much is because of what occurred during the Dust Bowl. Explain the Dust Bowl to students and how it affected the plains in the 1930s. It was called this because, due to drought and bad farming practices, there were severe dust storms in the Texas Panhandle, Oklahoma, Kansas, Colorado and New Mexico. Other areas were affected, but these states endured the worst consequences. Conditions were so horrible that people had to plug their windows and doors with rags, wear face masks and stay indoors. Some suffered major health issues, especially those with lung problems like asthma. Many people had to move because there was no food for them or their livestock to eat and therefore they couldn't survive if they stayed. It would be helpful to show pictures of the Dust Bowl and a map of the affected area to students.

Have students research the Dust Bowl on their electronic devices. Have them determine what farmers were doing that contributed to the event and how the government has since put in place measures to prevent a disaster like this from happening again. You may check for understanding and foster a discussion or have students design an information poster that explains the Dust Bowl and what was learned from it.



eARTh

Food is a source of energy for all living things, but have you ever thought of food as a medium to create art? When artists use food to create their work, it becomes what is known as ephemeral art. This is a type of art that is meant to occur once, and it is temporary. With this type of art, the photograph or documentation of the piece becomes the part of the artwork that lives on. Introduce your students to this term, and show them the work of Nadia Luongo. She is an Italian artist who uses nontraditional mediums to create art. Visit this [link](#) to see images of her food art, as well as videos of her creating some of the pieces.

Now, it's time for your students to make some food art of their own! There are several ways to approach this. You can bring in a specific type of food for them to use or leave it to them to bring in something. Think about taking them to the cafeteria the day of the project to see what food is going to be thrown out that you can repurpose for the art project.

Before the students begin, they need to create some sketches of their ideas. You could give them a theme, or let them choose what they would like to create with their food. It is important that it be something that they can complete in one class period, so they need to create a simple, clean drawing from which to work. Once they have their sketches done and have decided on a final drawing, they can begin creating their food art. As soon as they finish their piece, have them photograph it. They could also record the process of creating it and upload it to Flipgrid or another app of your choice. When everyone has finished, the students should share their work with the class. They need to be able to discuss the principles of design in their piece as well as the elements of art, particularly line and value. If you are able to print out the photos of the final artworks, you could display them in the hall or create an exhibit in the cafeteria.

Community Garden

- Ever wonder what happens to all of the food that grocery stores don't sell?
- Sadly, a huge percentage of it is thrown out – even when it is still perfectly fine to eat. Show your students this [article](#) and discuss how they feel about the information in it. Ask them, “What could be done about all of the food wasted? Where could it go?” With your students, create a proposal for a local grocery store to package the food that they plan to throw out so that you and your class can take it to a local community kitchen. The students can write out the proposal with posters to present, or record a video and send it to the store.

KERNEL OF KNOWLEDGE

In North America, fruits and vegetables travel an average of 1,500 miles before reaching your plate. Buying fresh, local food eliminates long distances traveled and preserves flavor and nutrients.



CAREER CONNECTION

Farmers Market Vendor Coordinator - Vendor coordinators work with local farmers and food artisans to create a sensible market map, ensure product variety, check producer credentials, and promote the market to the community. Most market coordinator jobs require some college courses and advanced interpersonal, organizational and marketing skills.

Homestead Farmer - Homestead farmers create and implement a farm plan, which will vary greatly depending on region. Some raise meats, some produce, and many raise both. Homestead farmers must be well-versed in agriculture practices as well as animal husbandry. No formal education is required, but most take regular courses or spend a lot of time reading about their chosen specialization. Being willing to wake up early and work long hours is a must!

Produce Buyer - Farm-to-table restaurants specialize in preparing and serving food that is sourced locally. A produce buyer for such a restaurant is responsible for knowing what fruits and vegetables are available during each season, where to obtain them locally and then purchasing what the chef needs to create a menu. This career does not require a college degree, but buyers must have extensive knowledge of produce as well as math and negotiation skills.



CAREER HIGHLIGHT

Like many scientists before him, Bill Mollison got his ideas for permaculture from observing nature. He used his observations of marsupials in Australia to develop self-sufficient and sustainable agricultural production practices. The permaculture movement in the United States may be just now gaining steam, but he helped co-found the first ever Permaculture Institute in the 1970s.

