



Mini-Activity: Biodiversity

Follows Activity: Producing More Food with Less

Mini-Activity Overview:

In this mini-activity, students explore the concept of biodiversity. Students relate their findings from the *Producing More Food with Less* activity to biodiversity in food. To extend learning, students could conduct research to learn about how farmers support and protect biodiversity on their farms.

Mini-Activity Duration: 15 minutes

Next Generation Science Standards:

MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

LS2.C: Ecosystem Dynamics, Functioning, and Resilience: Biodiversity describes the variety of species found in Earth’s terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem’s biodiversity is often used as a measure of its health.

Essential Questions:

- Why is biodiversity important to agriculture?
- What would happen to our food supply if biodiversity did not exist?

Objective:

Students will:

- Analyze the importance of biodiversity in relation to the world’s food supply

Materials:

- Student work from the *Producing More Food with Less* activity, if available

Procedure:

1. Write the word “biodiversity” on the board, underlining “bio” and “diversity” separately. Ask students what they think “biodiversity” means. In one minute, accept as many ideas and explanations as possible.
2. Tailoring your explanation based on how students have responded, explain that biodiversity means that there is a variety of life (both plant and animal) found on Earth. (*Bio* is short for biology, which is the study of life, combined with *diversity*, which means variety.)
3. Ask students to recall the *Producing More Food with Less* activity in which they examined the idea that different regions of the U.S. are appropriate for different crops based on the amount of rainfall and sunlight the regions get (and the crops need).



4. If the classroom space allows, assemble students in a large circle to promote discussion. Foster a dialogue among your students about the interconnectedness of biodiversity and food. *(Note: Your goal is to guide students towards understanding that agriculture needs biodiversity in order to feed Earth's ever-growing population (who live all over the world in many different climates). From the various soil microbes that help decompose matter, to different bats and birds that feed on crop pests, to a variety of insects and birds that pollinate the crops, biodiversity is needed to maintain crops and farmlands -- both of which are used to create food. It is not only important to have a diverse support system for crops, but to have diversity among crops. Different crops are able to acclimate to different climates. Having a variety within crops (e.g., different types of lettuce) and among crops (e.g., different kind of vegetables) ensures that farmers will have crops they are able to grow in their environment, that the population will be able to eat diverse foods and have a balanced diet, and that, in the event one variety of a crop is no longer available, other variety will be.)*
5. To help students arrive at this understanding, guide the discussion with the following questions:
 - Do most of us eat the same foods for breakfast, lunch, and dinner every day? Why or why not?
 - Are the foods we eat in our state the same foods people eat in other states?
 - What about other countries? Do we eat the same food as people in Japan, Germany or Brazil? *(Note: Change or add countries as needed.)*
 - Do you ever eat apples? What kinds? Why do you think there are different kinds of apples? Why might it be important that there is a diverse variety of apples?
 - In order to grow crops to create these foods, what is needed? Are the same things needed for every crop?
 - Now, taking all of this into account, why is it important to have biodiversity? Why is biodiversity in crops needed in order to feed the world's population? What might happen if crop biodiversity did not exist?

Optional Extension:

For students interested in learning more about biodiversity, encourage them to conduct research about how biodiversity can be protected on farms. Students may use books, websites and/or interviews. The following two websites are a suggested starting point:

- Crop rotation: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/?cid=nrcs144p2_027118
- Wildflowers: <http://www.fs.fed.us/wildflowers/pollinators/>