



Mini-Activity: Plant Evolution

Follows Activity: Producing More Food with Less

Mini-Activity Overview:

In this mini-activity, students work together to use the graphic to build a common understanding of the evolution of plants from the Paleozoic Era through the present, Cenozoic Era. Students consider the evolution of corn and are challenged to make predictions about possible future evolution of plants.

Mini-Activity Duration: 15 minutes

Next Generation Science Standards:

MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed

Earth's surface at varying time and spatial scales

ESS2.A: Earth's Materials and Systems

The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.

Essential Questions:

- How have crops evolved over the last five hundred million years to meet the food requirements of a growing population?
- How might plants continue to evolve based on the characteristics of this era?

Objectives:

Students will:

- Predict how plants might evolve to better suit their current setting or a new growth setting
- Support predictions with evidence

Materials:

- Evolution of Plants Graphic
 - Optional resource located at http://lanbob.com/lanbob/H-Evolution/H-Evolution-006Plants_files/image012.jpg either projected or distributed so all students can view it
- Image of teosinte and modern corn



- Optional resource located at https://tamubugworld.files.wordpress.com/2011/07/corn_and_teosinte.jpg
- Drawing materials for each student group

Procedure:

1. Display a graphic that illustrates the evolution of plants Evolution of Plants graphic. (Note: A link to an optional resource is provided, but other graphics are available on the Internet. If you are using the link provided, follow the procedure described. Otherwise, guide students to analyze the graphic you provide.) Help students understand what they are viewing by asking them to identify the labels on the x and y axes. Ask students to explain what they think the image is showing. If necessary, explain that the graphic is showing how plants have changed (or *evolved*) from the Paleozoic Era, which began 500 million years ago, to today. Build students' understanding of the graphic with questions, such as the following, scaffolding the questions as needed:
 - Which plant has not evolved in the past 400 million years?
 - Which plant evolved into three other kinds of plants?
 - In what era did the evolution of flowering plants begin?
2. Explain that the caring (or *cultivation*) of crops has influenced the evolution of food, because farmers – and not nature – are selecting which seeds to plant and where to plant them.
3. Use the example of corn to ensure that students understand this concept. Show an image of teosinte and an image of corn. Corn is one of man's most ancient foods and its cultivation began about 10,000 years ago. Corn began as a grass-like plant called Teosinte, which had a few kernels but did not look anything like today's corn. Ancient farmers saw its potential as a food source and realized that not all kernels were the same. Some, for example, were bigger or tasted better. These "better" kernels were saved to plant at the next harvest. Because of this selectiveness, Teosinte evolved into corn and corn cobs became bigger and bigger over time, with more and more rows of kernels.
4. Keeping this corn example in mind, challenge students to work in groups to make predictions about the possible future evolution of plants. Instruct them to use their findings from the *Producing More Food with Less* activity and consider how one type of plant in their region might evolve over time to better suit the yearly sunlight and rainfall



of either their region or another region. Each group should sketch their plant's evolution and explain the reasoning behind their predictions.

Optional Extension:

Have students research the evolution of other crops, such as watermelon, cauliflower, broccoli, or turnips. Help them locate or draw images of different versions of the foods. Note that still life paintings can be a source of information about foods of the past!

