Sweet Potato Cloning

Materials:
- Science notebooks
- Sweet potatoes harvested the previous year or sweet potato slips
  Optional:
- Toothpicks,
- Quart or pint sized clear glass or plastic jars
- Ruler

Overview & Objectives
Sweet potatoes are an ideal school garden crop. They are planted just before the end of the school year and harvested when students are back in school in the fall. During the summer, they tolerate blazing heat and infrequent watering. Best of all, sweet potato harvest day is filled with surprises and lots of digging!

The sweet potato challenge contest begins in May. If you are creating your own sweet potato slips you want to start in February or early March. This lesson focuses on sweet potato propagation and comparing sexual and asexual reproduction. Included are resources for connecting to the cultural significance of sweet potatoes. For more information on growing and harvesting sweet potatoes see the resources section on the following page.

Students will:
- Recognize the difference between sexual and asexual reproduction.
- How to monitor and care for sweet potato slips and plants, recognizing their needs.

Pre-Activity Questions:
1. How do we usually start plants in the garden? (seeds)
2. How do plants change as they start to grow from seed?
3. How to animals, people, and plants change during their life?
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Strategies for Engagement
- If you do not have sweet potatoes, join the Sweet Potato Challenge with Gateway Greening to get slips. The first 10 gardens to sign up get from sweet potato slips. Follow the Gateway Greening E-News to be the first to hear about the challenge.
- Be creative with your sweet potatoes! Graph their growth, carve vegetable stamps, and ask students for their favorite sweet potato recipe.

Resources
- Carver Birthplace Association www.carverbirthplaceassoc.org
- Gateway Greening, Sweet Potato Growing Video, GGI Youtube channel

Sweet Potato Slip Propagation How-to:
Directions for creating your own sweet potato slips. If you are picking up slips from Gateway Greening, skip to the following section
- After harvesting your sweet potato crop in the fall, cure your potatoes by leaving them in a single layer, in a warm, humid environment. Ideally in a greenhouse, but a warm closet will work.
- After curing the potatoes, keep at least one healthy sweet potato per class and store in a dark, cool location. Cook and enjoy remaining sweet potatoes
- In February or early March, gather a glass jar and 3 toothpicks per sweet potato.
- Rinse the sweet potatoes and poke 3 toothpicks around each potato, about halfway down (see image below).
- Balance the sweet potato on the mouth of the jar and fill the jar until the bottom 2-3 inches of the sweet potato are covered in water.
- Leave in a sunny spot. Change the water, about once a week or when it gets cloudy.
- When roots begin to grow from the bottom and small slips sprout from the top, water will need to be added more frequently.
- When the slips are 6 inches long, twist them off of the potato and place in their own glass of water. You should get several slips from each potato!
- When the slips have a healthy set of roots and the soil is warm (May), they are ready to be planted outside.
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In the Garden with Dr. Carver and Cultural Connections
After reading In the Garden with Dr. Carver, have students research and design a garden bed based on another culture or historical era. Projects could include a three sisters garden or a victory garden. Students then share the cultural significance of the plants they chose.

Gateway Greening Resources
Connect with us on Facebook to discover upcoming Youth Garden Institute workshops or join the Gateway Greening Educators Group to connect with other teachers:

@GatewayGreening
Discover season-specific gardening how-to’s and examples of current lessons:

@gatewaygreening
Looking for Field Trip opportunities or need to ask a question about our education services? Please contact education@gatewaygreening.org or 314-588-9600 ext 107

Sexual vs. Asexual Plant Propagation
- Whether you grew your own sweet potato slips using the above method or picked them up from Gateway Greening, the slips should be planted at the end of May. See the Resources section for more planting guidance.
- After planting, ask the students how plants are usually started in the garden – seeds.
- Many of the plants in the school garden start as small seeds. The seeds are produced after a plant flowers and is pollinated. Pollination shuffles genes and creates variation among plants. No two plants that come from pollinated plant seeds are the same, just like people!
- Sweet potatoes in gardens are usually reproduced asexually. Taking a cutting from a plant’s root or stem means that there is no opportunity for genes to shuffle or for new genes to be introduced. This sort of propagation is cloning! The plant is genetically identical to its parent.
- After discussing sweet potatoes, do not forget to mulch around the sweet potato plants with a layer of compost before the end of the school year and harvest them in the fall!

Additional Activities & Follow Up
- Join the Gateway Greening Sweet Potato Challenge! Sign up for the Enews to know when to register. The following fall, school gardens are awarded a variety of prizes, from biggest sweet potato harvest to weirdest sweet potato shape. Be sure to take before and after pictures.
- Add math to the Sweet Potato Challenge. Measure and graph the growth of sweet potato slips and plants in the garden. Are they affected by where they are growing or how much water they receive? Weigh the sweet potatoes and be amazed by how big of a harvest you cultivated!
- In their science journals, have students write explain the difference between sexual and asexual reproduction. Create a diagram of the process of growing a slip from a harvested sweet potato.