Sweet Potatoes

*Lesson Plan for Grade K, Science*

*Prepared by NAITC*

*Modified by Mississippi State University, School of Human Science*

*for Mississippi Farm Bureau Federation - AITC*

# OVERVIEW & PURPOSE

Students will explore life science concepts by observing a sweet potato grow with and without soil.

# EDUCATIONAL STANDARDS

**Mississippi College-and-Career Readiness Standards:**

L.K.3A.1 With teacher guidance, conduct a structured investigation to determine what plants need to live and grow (water, light, and a place to grow). Measure growth by directly comparing plants with other objects.

ELA-SL.K.1 Participate in collaborative conversations with diverse partners about Kindergarten topics and text with peers and adults in small and larger groups.

**NALOs:**

T1.K-2 b Describe the importance of soil and water in raising crops and livestock.

# OBJECTIVES

* Students will identify what sweet potatoes needs in order to live and grow

# MATERIALS NEEDED

* 2 large sweet potatoes
* *Potato Pattern*, 10 copies per student
* Paper plate
* Large pot
* Any container that is at least 12” deep and 12” wide with drainage holes will work
* Potting soil to fill the pot
  + Choose a potting soil that contains nutrients to feed for at least two months
* Lamp or lights
  + Any lamp or light that can be positioned to shine closely and directly on the growing potato will work

Watering can or pitcher

### Essential Files (maps, charts, pictures, or documents)

* [Potato Pattern](https://drive.google.com/file/d/1ybbPwqacLZ_hMdfgCg82_wdkp1OZnSJ5/view?usp=drive_link)

# Lesson Set Up:

1. Print 10 copies per student of the Potato Pattern.
2. Obtain and set up the supplies to grow the potatoes in and out of soil.

# VOCABULARY

**potato:** an erect South American plant widely cultivated for its thick, starchy, edible underground tubers

**seed potato:** a potato tuber grown for its buds which are used to start new plants

**staple food:** a food that is eaten regularly and is a dominant part of the diet, supplying a major proportion of energy and nutrient needs

**tuber:** a short, fleshy, usually underground stem (as of a potato plant) having tiny scale like leaves each with a bud at its base that can produce a new plant

# Ag Facts:

* A medium-sized potato has no fat, no cholesterol, and contains about 110 calories.
* Potatoes are a good source of vitamin C, potassium, fiber, complex carbohydrates, and antioxidants.
* The skin of a sweet potato can range in color from brown to tan to purplish red. The inside can be white, orange, or purple.
* Taxonomically, Sweetpotato should be one word because it is not technically a potato (root vegetable) it is a tuber. However, commercially it is usually presented as two words (Sweet Potato).

# Background information for teachers:

The **potato** is not a root but a storage area that is part of the plant’s underground stem. Vigorous potato plants that have plenty of sunlight, water, and nutrients from the soil to produce more energy than the growing plant can use at one time. The plant stores the excess energy in oval packages, called **tubers** (the potatoes). These tubers provide the plant energy to regrow in the spring. When the greenery starts to wither and turn brown, the potatoes are ready to harvest.

After they are harvested, potatoes can be stored for 2-3 months and will remain in a dormant state if kept in a cool, dark location. When moved to a warmer place, the potatoes will begin to sprout in one to three weeks. Sprouts grow from the “eyes” of the potato, which are actually nodes on this enlarged, underground stem. Each node is capable of developing into a branch that can grow up through the soil and emerge into a green, leafy shoot. As the branches grow, they use up the energy from the original **seed potato**, which will shrink and shrivel as its starch is consumed. Soon the branches of the plant will grow bushy and have many new leaves that produce energy through photosynthesis. At this point, new potatoes will begin to form on the underground sections of the branches that grow upward from the seed potato.

Potatoes produce more pounds of protein per acre than corn, rice, wheat, or oats. They are packed with nutrients, low in fat, generous in bulk and efficiently packaged in their own skins. They can be prepared in many different ways and are delicious.

Potatoes were first grown by ancient tribes living in the Andes Mountains of Bolivia and Peru as early as 200 A.D. Archaeologists have found pictures of potato plants in designs on ancient pottery. The ancient people preserved the potatoes by trampling them and then drying them.

Even though potatoes were first grown in South America, people in North America did not start eating them until after they became a popular food in Europe. European explorers carried potatoes from South America to Europe in 1570. About 150 years later, the rulers of several European countries ordered their people to start growing potatoes. In Ireland, potatoes became a **staple food** for the people. In the 1840s disease wiped out the potato crop in Ireland for two years in a row. Many Irish people moved to America then, because they had no food to eat.

Today, China produces more potatoes than any other country in the world. In the mountainous regions of northern China, potatoes are both a staple food and an important source of income for rural households. In neighboring India, potatoes are less of a rural staple, but they are an important cash crop, providing significant income for farmers. Indian farmers grow potatoes during the winter season when the days are shorter. India, Russia, and Ukraine follow China in production, and the United States is the fifth largest producer of potatoes globally.2

Potatoes are grown across the United States. The biggest potato-producing states are Idaho and Washington. Over half of the potatoes produced in the United States are sold to processors to make French fries, chips, and other products.2 A large portion of the remainder goes to the fresh market. Before they go to market, potatoes are graded according to size and quality. The price of the potato depends on how it looks and how much it weighs.

There are thousands of varieties of potatoes. Potatoes come in different colors, including white, red, russet, yellow, and blue. Different varieties also mature at different times and can be broadly grouped as early-, mid-, and late-season potatoes. Yukon gold is a common early-season variety that matures in approximately 90 days, although new potatoes can be harvested as early as 60 days. Russet Burbank is one of the most common potato varieties, and it is a long-season variety, taking 120-140 days to mature. Potatoes are an excellent plant to grow in a school or home garden. The plants grow quickly, and it is exciting to unearth tender, new potatoes that can be turned into many familiar and tasty dishes.

# LEARNING PROCEDURES

Activity 1: Potato Life Science

1. Provide each student with 10 copies of the *Potato Pattern*, and ask them to cut out each one. Explain that they will be using these cutouts to make a journal, and they should color the front and back covers. Ask them to write their names and the title “Potato Journal” on their front covers. Then staple the cutouts together on the top or left side.
2. Place one of the large baking potatoes on a paper plate in a location where students can easily make observations.
3. Ask students to examine the potato and describe it on the first page of their journals. They should make sure to note the date on which observations are made.
4. Ask students if they think the potato is living or nonliving. Discuss the characteristics of living and nonliving things.
5. Using the information provided in the *Background Agricultural Connections*, discuss how potatoes grow with students.
6. Explain to students that they will observe the potato to find the number of days that pass before the eyes begin to sprout. The potato contains enough nutrients, energy, and water for the plant to begin to grow without any soil.
7. Tell students that they will also observe a potato planted in soil and compare its growth to that of the potato with no soil. Show students the bag of potting soil and ask them if it is living or nonliving. Point out that the soil contains nonliving nutrients that the potato will use as it grows.
8. Plant and care for the potato as follows:
   * Fill the pot approximately one-quarter full of potting soil. Place the potato on top of the soil and cover with three to four inches of soil or until the pot is about half full.
   * Position light to shine on pot.
   * Water lightly. Do not over water or the potato may rot. After green sprouts appear, pay attention to the soil moisture and water when dry.
   * As shoots appear and get tall, cover them with more soil, and tie them to a stake.
   * When flowers start to appear, stop watering to prevent the potatoes from rotting.
   * As the potato grows, it may push up the dirt around the stem or even crack the container in which it’s planted.
   * After six to eight weeks, when the potato plant has finished flowering or the top starts to die, harvest the potatoes by gently pulling the plant out of the pot.
   * Lay the plant on newspaper.
   * Have students sift through the dirt to find any potatoes left behind in the pot.
9. Instruct students to document their observations of the potatoes in their journals at regular intervals (e.g., once a week).

**Concept Elaboration and Evaluation**

* As the potatoes grow, or after harvesting the first new potatoes from the potted plant, discuss the differences that students observe between growing a potato with and without soil. Discuss the importance of soil to plants as an example of the interaction between living and nonliving things. Ask students if they can think of any other non living things that affect plants (e.g., light, water, temperature).

Additional Learning Procedures

To help students review and elaborate more about sweet potatoes, try using the “[Think Pair Share](https://drive.google.com/file/d/1ypj5UOQfX-sXhq6TLzYdlGzR4eWCf7rj/view?usp=drive_link)” method to allow students to think deeper and make new connections.

Additional Things to Consider:

[All Kinds of Farms](https://www.agfoundation.org/recommended-pubs/all-kinds-of-farms)

[The Gigantic Sweet Potato](https://www.amazon.com/Gigantic-Sweet-Potato-Dianne-Casas/dp/1589807553/ref=asc_df_1589807553/?tag=hyprod-20&linkCode=df0&hvadid=312695551910&hvpos=&hvnetw=g&hvrand=9948358622511711231&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1020785&hvtargid=pla-569663600091&psc=1)



Source: <https://www.agclassroom.org/teacher/matrix/>

*For more information and additional lessons visit*

*https://msfb.org/ag-in-the-classroom/lesson-plans/.*