

Sack of Potatoes

How to Grow Potatoes in a Shopping Bag

OVERVIEW: Kids love potatoes, but usually they don't know how they are grown. In New Jersey, potatoes are planted in mid-April. Their long growing season lasts through the summer into the fall, when they are harvested. This lesson shows you how you can grow potatoes in the classroom starting in the winter, so students can watch the entire growth process from seed potatoes to harvest.



OBJECTIVES: The student will be able to:

- Explain that a potato is tuber, not a root, and explain what a tuber does.
- Explain how new potatoes are grown and how this process is different from other vegetables.
- Describe the potato life cycle.

GRADES: PreK-5

MATERIALS:

Organic potatoes

Potting soil (you can mix this with straw if available, to cut cost)

Reusable shopping bag

Compost

Plastic liner or other waterproof protection for floor

BACKGROUND:

Although potatoes grow underground like root vegetables, they are not roots. They are underground stems, called stem tubers. Tubers do two things; First, they store nutrients for the plant. Second, they help the plant reproduce. Each "eye" or bud on a potato can produce a shoot for a new plant

The sweet potato is not a relative of the potato. Sweet potatoes are also tubers, but they are part of the root, not part of the stem. Potatoes come from a family of plants that include tomatoes, eggplants, and peppers.

Some varieties or types of potatoes develop flowers that form fruit. The seed from this fruit can be used to grow a potato plant, but most potatoes are grown by using “seed” potatoes. These are just regular potatoes planted in the ground, where new plants grow from the eyes.

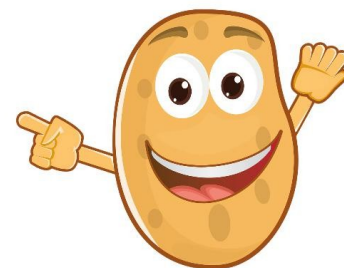
Most potatoes in the grocery store have been sprayed with a chemical that keeps the potatoes from sprouting. So if you are buying your seed potatoes at the supermarket, be sure to buy organic ones.

PROCEDURE:

Open up the reusable shopping bag and fold the top 4-6 inches so that it is easier to reach the bottom. Lay a plastic sheet or cover on the floor under the shopping bag as porous and may leak water.

Cut the potatoes into pieces so that each piece has at least two eyes.

Fill the bottom of the bag with about four inches of potting soil. On top of the soil, lay three or four pieces of the potato *with the eyes facing up*. (You could also use three whole, small fingerling potatoes.) Layer another two inches of soil on top of the potato pieces. Water lightly. Continue to water the bag so that the soil is moist, but not soaking wet. Do not over-water, as this will cause the potatoes to rot before they can sprout.



Within two weeks, leaves will sprout and grow quickly. It is important that the potato bag be placed in a sunny, warm spot, or under strong lights.

When the leaves are six inches high, it is time to ‘hill’ the potatoes. Lightly pack soil mixed with a little compost around the leaves and stems until only about three inches of foliage is showing. Allow the potatoes to grow for another week or until they are six inches high once again. Then hill the potatoes again, by packing more soil around the stems.

Continue hilling every six inches of growth until the soil reaches the top of the bag. After that, let potatoes grow. Water only when necessary, remembering to keep soil moist but never wet. Watch for signs of over-watering, such as stunted and curled foliage. If that happens, water less often. After 60 days or so, plants will flower and little tubers will begin to form on underground stems called *stolons*. This is the time to harvest new potatoes. Some varieties either bloom very late or not at all. If you want to harvest new potatoes on plants that don’t bloom, check after 65-75 days by gently probing around the base of the plant for developing tubers. Dig up only enough baby-sized potatoes for one or two days’ use, as they are perishable. You can dig up a few baby potatoes and leave the rest to mature. Do not harvest or eat green potatoes. They have a bitter taste and contain a mild toxin that can irritate the stomach.

Potatoes will mature within three to four months. The leaves will begin to turn yellow, and the plant will appear ill, but it's just reaching the end of its life cycle. Once the tops have died back, you can harvest the potatoes. Carefully dump the soil in the bag onto the plastic sheet, and search through it to remove potatoes. Each eye of the potato can produce one plant, and each potato plant can produce 5 to 10 potatoes.

Brush soil from the potatoes but do not wash them until you are ready to use them. Potatoes that are washed may never fully dry, leading to rot. Leave potatoes in a warm, dry environment for a few days to "cure" them, then store in a cool, dark location.

EVALUATION:

Students record their observations of the life cycle of a potato plant in their science journals.

Students write a sentences or paragraphs explaining what they learned about growing a potato and how it is different than other vegetables.

EXTENSIONS:

Ask students to investigate further the difference between stem tubers and root tubers.

Ask students to research other tubers that people eat and where they are grown.

Read a book about potatoes:

The Enormous Potato, by Aubrey Davis

Jamie O'Rourke and the Big Potato, by Tomie dePaula

One Potato, Two Potato, Cynthia C. DeFelice

One Potato, Two Potato, Todd H. Doodler

The Potato King, by Christoph Niemann

We Made Mommy Mashed Potatoes: Two Sides to Every Story, Michael J. Weber

New Jersey Learning Standards

Science: PreK:5.1.1-5, 5.3.1-4 1:LS1.A 2:LS2.A 3:LS1.B 4:LS1.A 5:LS1.C

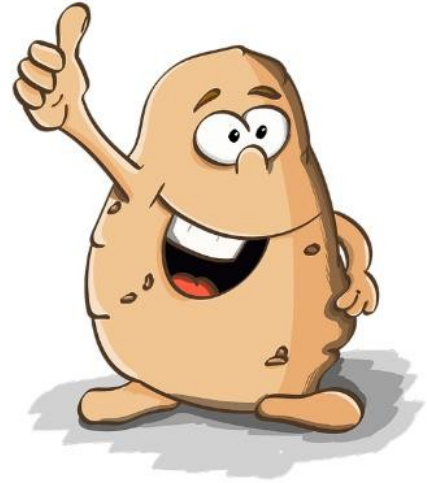
English Language Arts: K:W.K.2,3 1:W.1.2,7 2:W.2.2,4,8
3:W.3.2.A-D, W.3.4,8 4:W.4.2.A-E, W.4.4,8
5: W.5.2.A-E; W.5.4,8

Potato Fun Facts

The average American eats about 124 pounds of potatoes per year.

Potatoes are vegetables but they contain a lot of starch (carbohydrates). That makes them more like rice, pasta, and bread in terms of nutrition.

Thomas Jefferson is generally credited with introducing the French fry to America. Jefferson ate French fries while serving as American Minister to France from 1784 to 1789. He brought the recipe back to America, and served French fries at the White House when he became president.



French fries contain a lot of fat so don't eat too many!

In October 1995, the potato became the first vegetable to be grown in space. NASA and the University of Wisconsin, Madison, created the technology with the goal of feeding astronauts on long space voyages, and eventually, feeding future space colonies.

One million people died of starvation in Ireland's Great Potato Famine in the 1840s and early 1850s. Another two million people left the country to find homes elsewhere. Potatoes were the biggest crop in Ireland at that time, and the main source of food for many poor people. But crops began to fail due to a disease called a blight that destroyed both the leaves and tubers of the potato plant.

China grows the most potatoes in the world, followed by India and Russia. The United States ranks number five in potato production.

In America, potatoes are grown in 30 states. Idaho grows the most potatoes, followed by Washington and Wisconsin.

Potato plants are self-pollinating. That means they do not need help from pollinators such as bees or butterflies.