

Powerful Potato

Skills: Language Arts, Math, Social Studies, Science, Visual Arts, Technology

Objective: The student will observe the growth process of a potato.

Background

The potato is not a root but a storage area, which is part of the plant's underground stem. The roots collect more water and food than the growing plant can use at one time. The plant stores the excess food in oval packages, called tubers (the potato). When the greenery starts to wither and turn brown, the potatoes are ready to harvest.

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 tribespeople 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 the main 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.

Most of the world's potatoes today are grown in Europe.

Potatoes are a truck crop and are grown in all 50 of the United States. A truck crop is a crop that is grown on a farm and taken to the market by truck. The biggest potato-producing state is Idaho. 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.

In Oklahoma, many people grow potatoes in their home gardens and harvest them while the tubers are still small. These are called "new potatoes." The average American eats about 65 pounds of potatoes a year.

P.A.S.S.

GRADE 3

Reading—2.1

Writing—2.1

Math Process—5

Math Content—4.2c; 5.1ab

Social Studies—1.1

**Science Process—1.1; 3.3;
4.1,4**

Life Science—3.3

Visual Arts—3.1

Technology—3.1

GRADE 4

Reading—1.1

Writing—2.2

Math Process—5

Math Content—4.4b; 5.1ab

Social Studies—2.2; 3.2

**Science Process—1.1; 3.3;
4.1,4**

Life Science—3.3

Visual Arts—3.1

Technology—3.1

GRADE 5

Reading—1.1

Writing—2.1

Math Process—5

Math Content—4.3; 5.1a

Social Studies—7.1

**Science Process—1.1; 3.3;
4.1,4**

Visual Arts—3.1

Technology—3.1

GRADE 6

Reading—1.1

Writing—2.7

Math Process—5.1

Math Content—4.3; 5.1

Science Process—1.2; 4.1

Visual Arts—3.3

Technology—4.1

Materials

baking potato

paper plate

seed potato or potato from store that has started to sprout

gallon bucket or large clay pot

soil

water-based paint

world map

Potato Soup Recipe

1 medium onion

2 T butter

6 large potatoes

2-3 cups milk

1. Sauté onion in 1 table-spoon butter in a medium saucepan over medium-high heat until softened.
2. Add potatoes and just enough water to cook, about 1 cup. Season lightly with salt.
3. Bring to a boil; cover and reduce heat to low. Simmer until potatoes are tender, about 15 minutes.
4. Add milk, another table-spoon butter, and salt and pepper to taste.
5. Continue to cook over medium heat until hot; do not boil.
 - With a potato masher, mash some of the potatoes right in the pot to slightly thicken the soup.

Language Arts

1. Read and discuss background and vocabulary.
2. Have students make up a classroom story to explain why a potato needs so many eyes.. Use multimedia to present the story.

Science

1. Bring a large baking potato to class.
 - Set the potato on a paper plate.
 - Have your class keep track of how many days pass before the eyes begin to sprout.
 - Log observations on a chart or graph.
2. Plant a potato in a large clay pot or gallon bucket. You may purchase seed potatoes from a seed outlet in early spring or use a potato from home that has started to sprout. Make sure your container has drainage holes.
 - Place the potato, eye end up, in moist potting soil.
 - Cover the potato with more soil until the pot is half full.
 - Place the pot in a sunny spot.
 - Water when dry.
 - As shoots appear and get tall, tie them to a stake.
 - When flowers start to appear, stop watering to prevent the potatoes from rotting.
 - As the potatoes grow they may push up the dirt around the stem or even crack the container in which they are planted.
 - After six to eight weeks, when the top of the potato plant starts to die, harvest them by gently pulling the plant out of the pot.
 - Lay the plant on newspaper, and have students sift through the dirt to find the potatoes.

Math

1. Make potato soup. (See recipe at left.)
2. Have students conduct a survey to find the most popular way to eat potatoes—as French fries, potato chips, mashed potatoes, etc. Have students graph their results.
3. Review your school menu to see how many times a week potatoes are used. What are the different ways they are cooked? Have students use tally marks to record findings.
4. Have students tear potato shapes from brown construction paper.
 - Show students how to measure the potato shape in inches and centimeters.
 - Have them fill in the potato shape with unifix cubes or other non-standard units of measure (beans, seeds, etc.) to measure area.
 - Have students estimate how many units it will take to fill the potato shape.
 - Then have them fill it in and record the data.
5. Have students use classroom containers to estimate the volume of a potato.

Visual Arts

1. Make potato stamps.
 - Cut potatoes in half, and have students create simple designs to carve into the meat of the potato (star, heart, circle).
 - Help students carve the designs in the potatoes, using plastic knives.
 - Mix water-based paints in aluminum pie pans or other shallow dishes.
 - Dip the potato surface into the paint.
 - Press to the surface of paper.
 - Carefully lift the potato, leaving the print on the paper.

Social Studies

1. Have students create a pictorial time line of the growth of the potatoes, with dates. (See science activity # 2 above.)
2. Help students place cut out pictures of potatoes on a world map to trace the potato from South America, to Europe and back to the US.
 - In South America, help students locate Bolivia, Peru and the Andes Mountains.
 - In Europe, help students locate Ireland.
 - In the U.S., help students locate Idaho and Oklahoma.
3. Potatoes grow best in cold weather. On a relief map, have students look at Bolivia, Peru and Idaho to find what terrain they have in common. Compare and contrast these three places to find what features they have that would allow potatoes to grow better there? (cold climate in the mountains)

Extra Reading

Bourgeois, Paulette, *The Amazing Potato Book*, Addison Wesley, 1991.
Ehlert, Lois, *Growing Vegetable Soup*, Harcourt, Brace, Jovanovich, 1988.
McDonald, Megan, *The Potato Man*, Orchard, 1991.
Watts, Barrie, *Potato*, Silver-Burdett, 1987.

Vocabulary

harvest—the gathering of a crop

potato—an erect South American herb widely cultivated for its thick starchy edible underground tubers

sprout—to send out new growth

tuber—a short fleshy usually underground stem (as of a potato plant) having tiny scalelike leaves each with a bud at its base that can produce a new plant

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