

Potato Lesson

Concept Objective: Plants

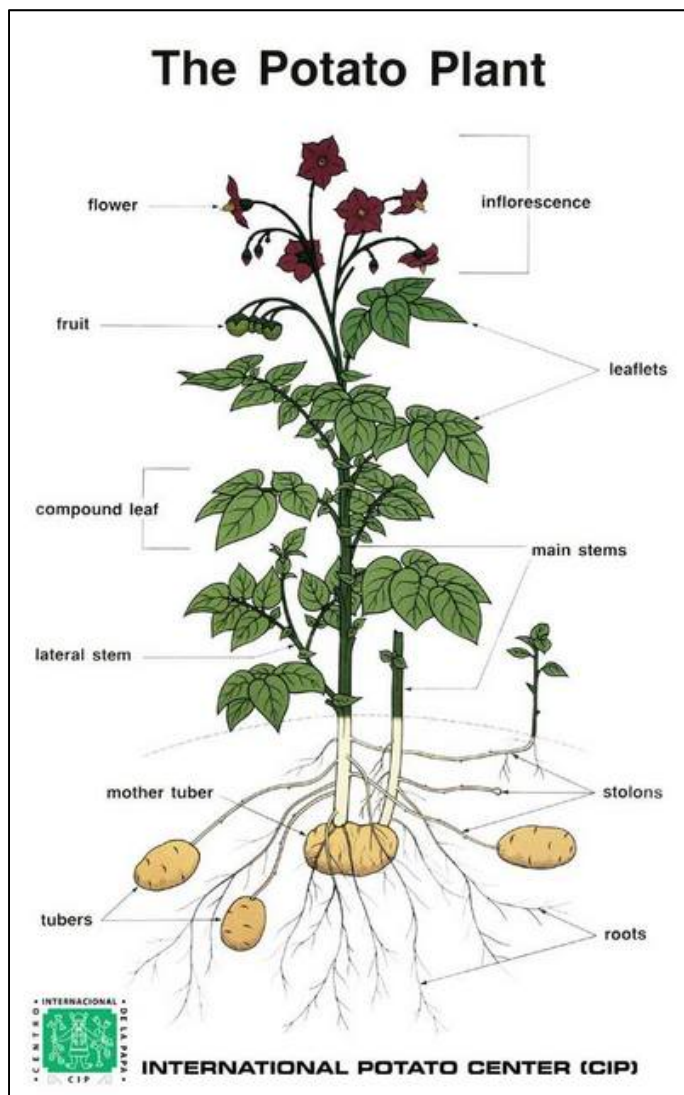
Time: 40-45 minutes

Setting: Indoors

Activities: Potatoes 101, Stalking Starch,
Potato Games and Crafts

Materials Needed:

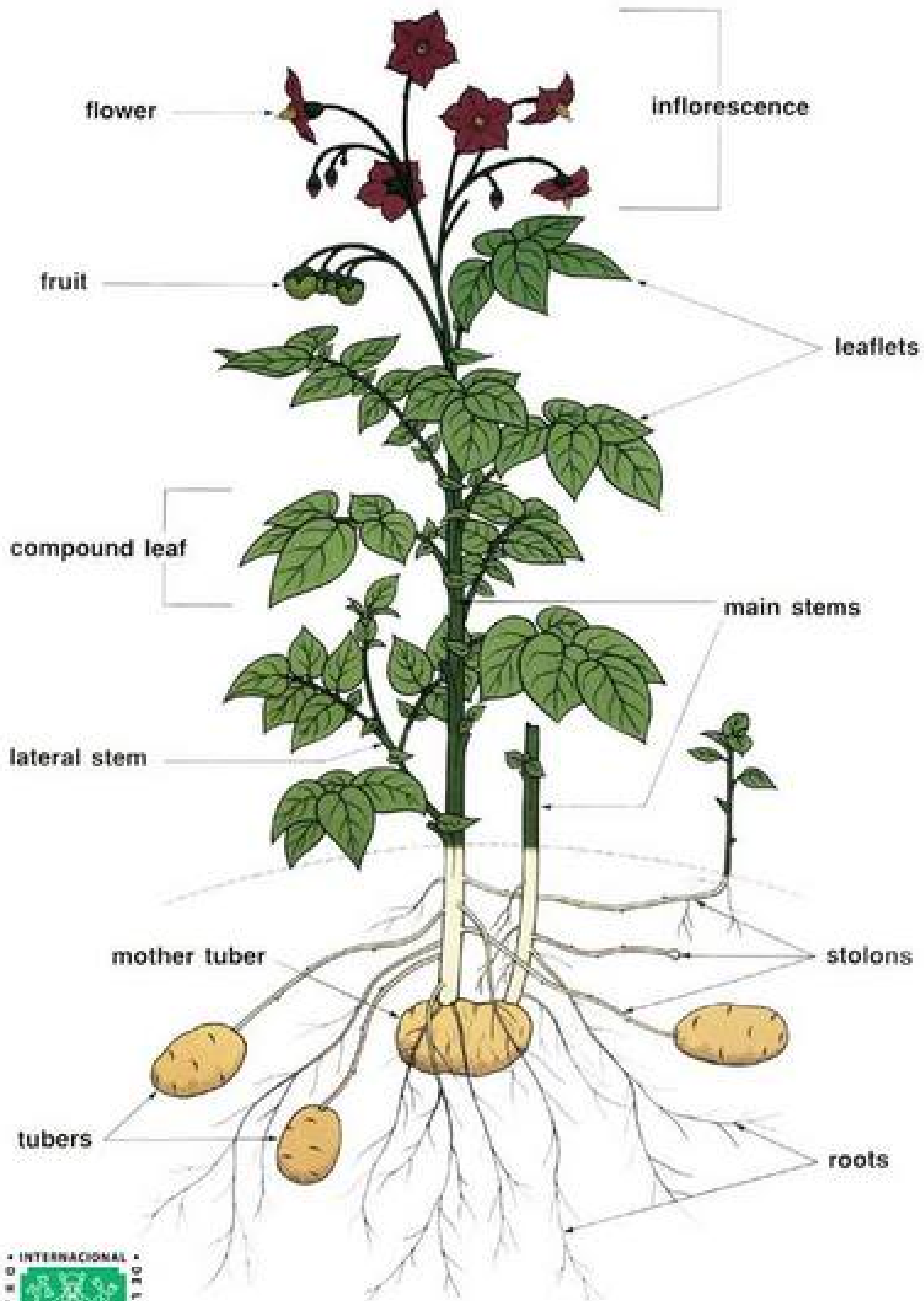
- Large potatoes
- Iodine
- Laminated Potato Facts
- Cloves
- Brads
- Markers, sharpies
- Yarn
- Toothpicks
- Chenille Stems
- Music player
- Plastic knife
- Paper
- Craft paints



Procedure:

1. Begin by looking at potatoes 101 and parts diagram, discuss what eyes are and what a tuber is.
2. Discuss how potatoes are best planted.
3. Pass out the fun facts to the students. Have each one read out loud. Discuss.
4. Then talk about what starch is and do the Stalking Starch Activity.
5. Finish with the crafts and games.

The Potato Plant



INTERNATIONAL POTATO CENTER (CIP)

POTATOES 101

Growing potatoes on your own may not sound like an exciting way to jazz up your garden, but there is plenty to love about this tuberous multi-tasker prized for its flavor and versatility. In addition to being tasty and healthful, potatoes are easy to grow and store, making them a hit with both experienced gardeners and those just starting out. With minimal preparation, and a little attention during the growing season, growing potatoes will allow you to produce your own personal crop of spuds. Grow potatoes to reap the benefits of this healthy food while experiencing the joy of self-sufficiency.

The Three-Year Rule

Don't grow potatoes in the same spot longer than 3 years. This is due to pests and disease that may linger in the soil even after the potato plants have been removed and the soil has been cultivated and fertilized. A good plan is to move your potato crop each year to a different section of the garden. Potatoes are hardy and not too finicky, so this generally isn't a risky venture. Soil should be slightly acidic, from 5.8-6.5 pH. Although potatoes themselves grow underground as tubers, potato plant leaves need full sun for the plant to mature. It is also critical that the tubers aren't exposed to sunlight as they mature; new potatoes will sometimes rise to the soil surface as they develop. If the potato skin is exposed to the sun, it will turn green, and can be toxic.

What Are Seed Potatoes?

Seed potatoes are smaller versions of regular potatoes that are used for planting. They are larger than most vegetable seeds and are really just a small, new potato. Each "seed" should have at least one, but preferably two or three "eyes" or buds. This is where new potato shoots begin. Larger seed potatoes with several eyes can be cut up into smaller pieces to extend your yield. Be sure that each piece has at least one eye. Seed potatoes can be purchased at most home and garden stores, or wherever other vegetable seeds are sold. While they appear to be just small potatoes, they are disease-free, so don't try substituting store-bought potatoes when planning your garden.

Plant potatoes in rows about 2 feet apart, placing each seed 16 inches apart. Start by digging a small hole, about 6 inches deep, for each seed potato. Or, if you prefer, dig a trench about the same depth; this may make it easier to keep track of where you've planted, and your planting measurements. If you have cut your seed potatoes, place them cut side down into the hole or trench. A consistent water supply is crucial to potato plants, especially in the early weeks. Plant your spuds early enough to take advantage of spring moisture, but not until after the threat of hard frost has passed. Soil needs to be 45 degrees or warmer for the potatoes to grow and send out shoots. Potatoes will rot in soil that has too much moisture, so don't plant too early (especially if it has been a particularly wet season). If necessary, amend your soil with organic compost. The compost will help with drainage and add vital nutrients to the soil, resulting in a quality potato plant. When flowers appear on the potato plants, the potatoes are mature enough to withstand some dry conditions.

High on the Hill

A few weeks after planting, you'll notice green leaves poking out of the ground. These are your potatoes growing exactly as they should. It is important at this point to "hill" the potatoes. The process is easy, doesn't take much time, and is critical to the success of your potato crop. When the plant's green leaves appear, add a couple of inches of soil, creating a small hill around the plant. Mound up another inch or two of soil about once every 2 weeks, depending on how rapid the growth is, keeping an eye on where the plant's stem emerges from the ground. Use caution, and don't bury the leaves, as they need sunlight and air to continue maturing.

Harvesting

Potatoes are ready to be plucked from the ground as soon as their flowers have died off. Be sure to give your potato plants a wide berth as you stick the fork into the ground (so as not to damage the potatoes underneath). The tubers travel as they grow, and each plant can produce upwards of 10 potatoes, depending on variety and soil conditions. To have potatoes for storage over the winter, it's fine to leave the potatoes in the ground a few more weeks into fall, just watch for the threat of frost. The plants on top of the ground will die back, but leave straw-like shoots so you can see where to dig when you are ready. Do not wash the potatoes once you've dug them up. Put them on a cool, dry surface for a few days, then use a dry cloth to brush off the dirt. Store the potatoes in a cool, dry place (such as an unheated garage) where temperatures are about 40 degrees. Protect the potatoes from light by covering them with a light, breathable cloth; they should keep for several months under the right conditions.

Potato Varieties

There are many different choices for the potato gardener, limited only by personal preference. Listed below are the most common varieties.

Reds — This kind of potato has reddish skin, white flesh and a lower starch content. They are especially good for roasting. Red varieties are more susceptible to scab, as their skin is generally thinner and they have shallower eyes than brown-skinned potatoes. However, the issue is not serious enough to be a deterrent to planting red potatoes.

Whites — The most common type of potatoes found on grocery store shelves, white potatoes have pale skin and white flesh. They are good all-purpose potatoes, suitable for just about any dish.

Yellow — Varieties of yellow potato include Yukon Gold. Yellow potatoes have yellow flesh and are notably good for baking and frying.

Russet — The classic baking potato, russets have a high starch content (which also makes it great for mashing) and a skin that is a bit thicker and darker than other white potato varieties.

Potato Fun Facts

1. Potatoes were first grown more than 3,000 years ago
2. 1 acre of potatoes will produce 52,000 servings of French Fries
3. The potato is about 80 percent water and 20 percent solids.
4. The world's largest potato chip was produced by the Pringle's Company in Jackson, TN in 1990. It measured 23' X 14.5'
5. Potatoes grow underground, but are actually swollen stems, not roots.
6. The average American eats about 134 pounds of potatoes per year while Germans eat about twice as much.
7. In 1974, an Englishman named Eric Jenkins grew 370 pounds of potatoes from one plant.
8. Thomas Jefferson gets the credit for introducing 'French fries' to America when he served them at a White House dinner.
9. The average American eats about 124 pounds of potatoes per year while Germans eat about twice as much.
10. According to the Guinness Book of World Records, the largest potato grown was 7 pounds 1 ounce.
11. During the Alaskan Klondike gold rush, (1897-1898) potatoes were practically worth their weight in gold. Potatoes were so valued for their vitamin C content that miners traded gold for potatoes.
12. Potatoes and lettuce are the two most popular fresh vegetables in the U.S
13. Potato chips were invented by mistake. The year was 1853, and Railroad Magnate Commodore Cornelius Vanderbilt was dining at a fashionable resort in Saratoga Springs, New York. He sent his fried potatoes back to the kitchen complaining they were too thick. To spite his haughty guest, Chef George Crum sliced some potatoes paper thin, fried them in hot oil, and salted them. To everyone's surprise, Vanderbilt loved his "Saratoga Crunch Chips", and potato chips have been popular ever since
14. The potato is the second most consumed food in the United States - trailing only after milk products

Stalking Starch Activity

To test for the presence of starch, cut a potato in half and brush iodine on the cut half. Iodine turns dark blue/black in the presence of starch. By observing, can students tell where the starch is concentrated in the potato? (Most starch is stored inside the protective skin, while the center is mainly water.)

Try sprouting and growing a potato for a few weeks, then test for iodine again. Can students explain their findings? (Most of the starch will have been removed from the potato piece to provide nutrients for the young plant.)

Potato Games and Crafts

Potatoes are starchy spuds parents love because they are versatile for eating and can be baked, fried, mashed or grilled. Parents should also love potatoes because they can be used for play. Multiple games that are fun for children and adults alike can be played starting with a simple potato out of the pantry.

Mr. Potato Head

1. Wash the potatoes and let them dry. Microwave each potato for about three to five minutes to soften them up a little. Let them cool.
2. Hand each child a potato.
3. Instruct the children how to push the various craft items into the potatoes to make faces or dress them up. Potatoes can then be used as dolls.

Hot Potato

1. Have kids in a group stand in a circle to play the game Hot Potato. The object of the game is not to have the potato when the music stops.
2. Explain the rules to the children and then turn the music on. Keep the music player next to you so that you can stop the music when you need to.
3. Keep playing until one child is left and is the winner.

Stamping

1. Carefully cut a clean potato in half.
2. Push a small cookie cutter into the potato. Carefully carve out (with a plastic knife) around the cookie cutter into the flesh of the potato. Carefully peel off pieces and discard. What should be left is a protruding piece shaped like your cookie cutter design.
3. Dip the protruding carving into paint of any color and press it down on a blank piece of paper. You'll see your carving shape as a stamp on the paper. Dip the stamp in the same color or rinse the potato off, dry the potato and dip again in a different color.
4. Repeat Step 1 through Step 3 for as many stamps as you'd like. Ask the kids what patterns or designs they would like and make them.

More Potato Information

Potato plants are herbaceous perennials that grow about 60 cm (24 in) high, depending on variety, the culms dying back after flowering. They bear white, pink, red, blue, or purple flowers with yellow stamens. In general, the tubers of varieties with white flowers have white skins, while those of varieties with colored flowers tend to have pinkish skins. Potatoes are cross-pollinated mostly by insects, including bumblebees, which carry pollen from other potato plants, but a substantial amount of self-fertilizing occurs as well. Tubers form in response to decreasing day length, although this tendency has been minimized in commercial varieties.

After potato plants flower, some varieties produce small green fruits that resemble green cherry tomatoes, each containing up to 300 true seeds. Potato fruit contains large amounts of the toxic alkaloid solanine and is therefore unsuitable for consumption. All new potato varieties are grown from seeds, also called "true seed" or "botanical seed" to distinguish it from seed tubers. By finely chopping the fruit and soaking it in water, the seeds separate from the flesh by sinking to the bottom after about a day (the remnants of the fruit float). Any potato variety can also be propagated vegetatively by planting tubers, pieces of tubers, cut to include at least one or two eyes, or also by cuttings, a practice used in greenhouses for the production of healthy seed tubers. Some commercial potato varieties do not produce seeds at all (they bear imperfect flowers) and are propagated only from tuber pieces. Confusingly, these tubers or tuber pieces are called "seed potatoes".

The potato originated in the region of southern Peru. Potatoes were first domesticated in Peru between 3000 BC and 2000 BC. In the Altiplano, potatoes provided the principal energy source for the Inca Empire, its predecessors, and its Spanish successor. In Peru above 10,000 feet altitude, tubers exposed to the cold night air turned into chuño; when kept in permanently frozen underground storehouses, chuño can be stored for years with no loss of nutritional value. The Spanish fed chuño to the silver miners who produced vast wealth in the 16th century for the Spanish government. chuño; when kept in permanently frozen underground storehouses, chuño can be stored for years with no loss of nutritional value. The Spanish fed chuño to the silver miners who produced vast wealth in the 16th century for the Spanish government.