

Case of the Missing Pumpkin

Grade Level(s)

2nd grade

Estimated Time

30 minutes

Purpose

Students investigate the phenomenon of decomposing pumpkins as a part of the plant's life cycle.

Materials

▪Book

Pumpkin Jack by Will Hubbell read aloud video is available on our website.

▪Links

Website: www.linncoag.com -2020/21 virtual learning- October

Introduction video: https://www.youtube.com/watch?v=E_3Tp038eG0

Decaying pumpkin video

https://www.youtube.com/watch?v=0ReYKu_luA&index=9&list=PLYA8jFF7RfxsjRpvIkoH7TdqPoMrgO1aS

▪Worksheets

Pumpkin journal (available in kit or on website)

▪Others

Compost bin

Pumpkin-carved

Soil

Leaves

Sticks

Water

Crayons

Vocabulary

Bacteria: a group of single-celled living things that cannot be seen without a microscope that reproduce rapidly and sometimes cause diseases

Decomposer: an organism that feeds on and breaks down dead plant or animal matter

Fungus: any one of a group of living things (such as molds, mushrooms, or yeasts) that often look like plants but have no flowers and that live on dead and decaying things

Humus: a brown or black material in soil that is formed when plants and animals decay

Nutrient: a substance that plants, animals, and people need to live and grow

Pumpkin: a large, rounded fruit with a thick rind, edible flesh, and many seeds

Interest Approach – Engagement

1. Ask the students if they have ever carved a pumpkin into a Jack-o-lantern.
2. Have the students predict what they think would happen to a Jack-o-lantern if they kept it until the next summer.

Background - Agricultural Connections

The **pumpkin** is one of only a few foods native to North America that is still eaten today. Native Americans used pumpkins for food and medicine. Dried pumpkin shells served as bowls or containers for storing grains and seeds. Flattened strips of pumpkin were dried and made into mats.

Pumpkins were a main part of the Pilgrims' daily diet. If left uncut and stored in a cool, dry place, pumpkins can keep for several months. Colonists made pumpkin pies by slicing off pumpkin tops, removing the seeds, filling the pumpkin with milk, spices, and honey, and then baking it all in hot ashes.

Today, most pumpkins grown are sold for decorating and carving. The tradition of carving pumpkins at Halloween started with the Irish. The original jack-o-lanterns were made from turnips. When the Irish immigrated to the US, they found that pumpkins were in large supply and were much easier to carve.

The pumpkin is a member of the cucurbit family which includes gourds, squash, cucumbers, and melons. Pumpkins come in a variety of shapes, sizes, and colors. Most pumpkins are orange, but they can also be yellow, red, white, gray, or pale green. Pumpkins range in size from less than a pound to over 2,000 pounds.

A pumpkin is a fruit that grows on a vine. They are typically planted in late spring or early summer for an October harvest. After a pumpkin seed sprouts, large leaves begin to grow on vines. Eventually, the vine blooms with yellow flowers. Following pollination, the female flower begins to grow a small green pumpkin that will turn orange as it continues to grow. When the vines turn brown, the pumpkins are ready to harvest.

Pumpkins left in the field will be eaten by animals or they will decompose. The phenomenon of **decomposition** is a natural process through which nutrients are recycled back into the soil. Insects, **fungus**, and **bacteria** are decomposers that eat the dead tissue from the pumpkin and excrete it in a form that helps live plants grow.

In nature, dead plants and animals decompose and become **humus**. Humus acts like a sponge to help soil hold water. It also traps air in the soil and provides nutrients. Plants need air, water, light, and nutrients to grow. When farmers plant crops in the soil, the growing crops take out nutrients. The farmers can replace those nutrients by tilling decomposing plants back into the soil. The surviving seeds left by a decomposing pumpkin can sprout and grow into a new pumpkin plant, continuing the pumpkin life cycle.

Procedures

1. Watch introduction video available on our website if not participating in zoom presentation.
2. Read or listen to *Pumpkin Jack* by Will Hubbell (read aloud video is available on our website)
 - What happened to Pumpkin Jack? Why did Pumpkin Jack change shape and color? What stage in the life cycle is decomposing? What do you predict will happen after the pumpkin decomposes? Is this good or bad for the soil?
3. Prepare compost bin (if students are virtual or if you did not sign up to receive a kit- experiment is demonstrated in the intro video)
 - Fill tub with soil
 - Set carved pumpkin into tub- may need to place the top with the stem next to the pumpkin to tightly shut the lid.
 - Add leaves, sticks and more soil
 - Water compost bin
 - Close lid tightly
 - Tape lid to keep smell inside and set near a window (I can pick up the compost bin when I pick up and drop off new kits)
4. Complete the first two pages together as a class.
 - Pumpkin observations (adjectives like orange, hard, round, smooth, etc.) draw a picture of compost bin and describe the pumpkin in a complete sentence using a few adjectives from the first page.
5. Instruct the students to journal about their pumpkin compost bin with date, height, observations and a picture.
6. Repeat once a week for four weeks- observing how the pumpkin changes.
7. Review by watching the decaying pumpkin video
https://www.youtube.com/watch?v=0ReYKu_luA&index=9&list=PLYA8jFF7RfxsjRpvIkoH7TdqPoMrgO1aS
8. Ask the students to recap what they learned.

Organization Affiliation

Lesson adapted by Morgan Hibbs from original National Ag in the Classroom lesson plan.

Agriculture Literacy Outcomes

Agriculture and the Environment

- Describe how farmers use land to grow crops and support livestock (T1.K-2.a)
- Describe the importance of soil and water in raising crops and livestock (T1.K-2.b)

Plants and Animals for Food, Fiber & Energy

- Explain how farmers work with the lifecycle of plants and animals (planting/breeding) to harvest a crop (T2.K-2.a)
- Identify the importance of natural resources (e.g., sun, soil, water, minerals) in farming (T2.K-2.e)

Iowa/ Common Core Standards

1-LS3-1. Make observations to construct evidence-based account that young plants and animals are like, but not exactly like, their parents.

2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.

2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.