

The Sunflower Story

Objective

Students will learn what plants need to grow by listening and responding to the story of a sunflower.

Background

LIGHT is the energy plants use to make food. The green color in leaves, called chlorophyll, takes up light. With the help of water, nutrients and carbon dioxide from the air, leaves change light energy to sugars and starches. This is called photosynthesis. These sugars and starches are then changed to fat and protein. In addition to light, most plants also need a dark period each day. There are many flowers that will not bloom until fall, when nights get longer and days get shorter.

WATER dissolves and transports minerals to the different plant parts. The plant also uses water to manufacture food and regulate temperature. Water circulates through the plant and evaporates from the leaves. This protects the plant from rapid changes in temperature.

AIR contains oxygen, carbon dioxide and nitrogen. All are very important to plant growth. Plant roots cannot grow in soil that has no oxygen. Oxygen helps the plant use the nitrogen present in the soil. Leaves need air to manufacture food. Through photosynthesis, plants convert water and carbon dioxide into nutrients to feed the plant and oxygen for us to breathe.

Plants need a regular supply of **FOOD**. The nutrients a plant needs are found in the soil. **SOIL** supplies nutrients and minerals, stores water for plants to use and holds plants in place. As the plant uses up the nutrients in the soil, additional nutrients are added to replace them. These nutrients can come from parts of the plant that remain in the soil when it dies, from insects that die and remain in the soil, from the droppings of birds and animals and from other sources.

Some plants like cool **TEMPERATURES**, while others like it warm. Some plants will not live in areas where winter temperatures get below freezing, while others must have cool weather to grow well. At cooler temperatures, chemical reactions in the soil become slower, and the plant may have rest until temperatures get warmer. This rest period is called dormancy. Some plants will not grow the next year unless they get a dormancy period.

In order to grow their best, plants need **PROTECTION** from insects, disease and injury from humans and animals. They must also be protected from other plants that compete with them for water and nutrients. To protect plants from cold weather, the grower sometimes waits for warm weather before planting. To get an early start, the grower will sometimes leave young plants in a greenhouse and set

Oklahoma C3 Standards

Grade 3

Science Process—1.1,2;
2.1,2; 4.1,2,3

Life Science—2.1,2

COMMON CORE

Language Arts—3.RF.4;
3.RL.3,7,10; 3.RI.2,5,7;
3.L.3; 3.SL.4,6;
3.W.1,2,4,7,8

Grade 4

Science Process—1.2; 2.2;
4.1,2

Life Science—3.1,2,3

COMMON CORE

Language Arts—4.RF.3,4;
4.RL.4; 4.RI.4; 4.L.1,3,4;
4.SL.1,3,5; 4.W.1,2,3,4,5

Grade 5

Reading—3.1d,3d,4e

Writing—2.1

Oral Language—2.2; 3.1

Visual Literacy—3

Life Science—2.1,2

Science Process—1.2;
2.1,2; 4.2,4

COMMON CORE

Language Arts—5.RF.4;
5.RI.1,5,9; 5.SL.1,4;
5.W.1,3,9

Vocabulary

chlorophyll—the green coloring matter of plants that is found in chloroplasts and is necessary for photosynthesis

photosynthesis

dormancy

carbon dioxide—a heavy colorless gas that does not support burning, dissolves in water to form carbonic acid, is formed especially by the burning and breaking down of organic substances (as in animal respiration), is absorbed from the air by plants in photosynthesis, and has many industrial uses

energy—usable power (as heat or electricity)

sugar—any of various water-soluble compounds that vary widely in sweetness and make up the simpler carbohydrates

starch—a white odorless tasteless carbohydrate that is the chief form in which carbohydrate is stored in plants.

fat—any of numerous compounds of carbon, hydrogen, and oxygen

protein—any of numerous substances that consist of chains of amino acids, contain the elements carbon, hydrogen, nitrogen, oxygen, and often sulfur, and include many compounds (as enzymes and hormones)

evaporate—to pass off or cause to pass off into vapor from a liquid state

oxygen—a reactive element that is found in water, rocks, and free as a colorless tasteless odorless gas which forms about 21 percent of the atmosphere, that is capable of combining with almost all elements, and that is necessary for life.

them outdoors after the weather is warm enough.

Activity

1. Share background information about what plants need to grow and read “The Sunflower Story” to your class before continuing with the activity. Share and discuss sunflower facts.
2. Divide students into seven groups, and assign each group one of the petals of the sunflower on the “Plant Chants” page.
3. Explain that each petal represents one of the elements a plant needs for healthy growth.
4. Coach groups to say their chants every time you read any variation of the word in “The Sunflower Story.”
5. Read the story.
6. Reread the story, and have students underline the stages of the life cycle
7. Have students illustrate the stages in the sunflower cycle by making a story wheel. Divide one paper plate into eight sections, and illustrate each section to represent one stage in the sunflower life cycle. Cut a wedge shape in the second paper plate and attach it to the first with a fastener in the center. The top plate should turn to reveal each stage of the cycle.
8. Have each student write a paraphrase of the story.

Additional Activities

1. Have students reenact the story as a play, and reenact the chant for students in lower grades.
2. Have students research the needs of a different plant and write a story to act out.
3. Have each group design a logo and advertising campaign (commercials, flyers, posters) for its assigned element to show why it is the most important for plant growth.
5. Have students find the top sunflower-producing states (North Dakota, South Dakota, Kansas, Colorado and Minnesota) on a map of the US.
6. Provide sunflower seeds in shells, and have students shell and eat them, then boil the shells and use the liquid to make dye for squares of muslin.
7. Have a native foods feast, and serve treats made from pecans, sunflower seeds, blueberries and cranberries.
8. Make sunflower butter by placing sunflowers in a blender and processing them on “chop.” Let students taste it on crackers. Do a taste comparison with peanut butter. Try doing the same with other nuts and seeds—pecans,

almonds, pumpkin seeds, sesame seeds, etc. Have students predict the results for each.

9. Compare and contrast pumpkin and sunflower seeds. Compare and contrast store-bought sunflower seeds and seeds taken from a sunflower. Have students use the sunflower graphic provided to record their observations.
10. Have students research to find a connection between sunflowers and native Americans. Were sunflower seeds served at the first Thanksgiving?

Extra Reading

Burnie, David, *Plant*, Eyewitness Books, Knopf, 1999.

Fleischman, Paul, and Judy Pederson, *Seedfolks*, HarperCollins, 1997.

Garland, Sherry, *The Lotus Seed*, Harcourt, Brace, Jovanovich, 1993.

Lovejoy Sharon, *Sunflower Houses*, Interweave, 1991.

Stewart, Sarah, and David Small, *The Gardener*, Farrar, 1997.

White, Linda, and Megan Lloyd, *Too Many Pumpkins*, Holiday House, 1996.

All about sunflowers



The sunflower gets its name from the Greek words *helios*, meaning “sun,” and *anthos*, meaning “flower.”



The sunflower is one of only four major crops native to what we now know as the United States. Blueberry, cranberry, and pecan are the other three.



Ancient people made seed balls from sunflower butter for a convenient traveling food.



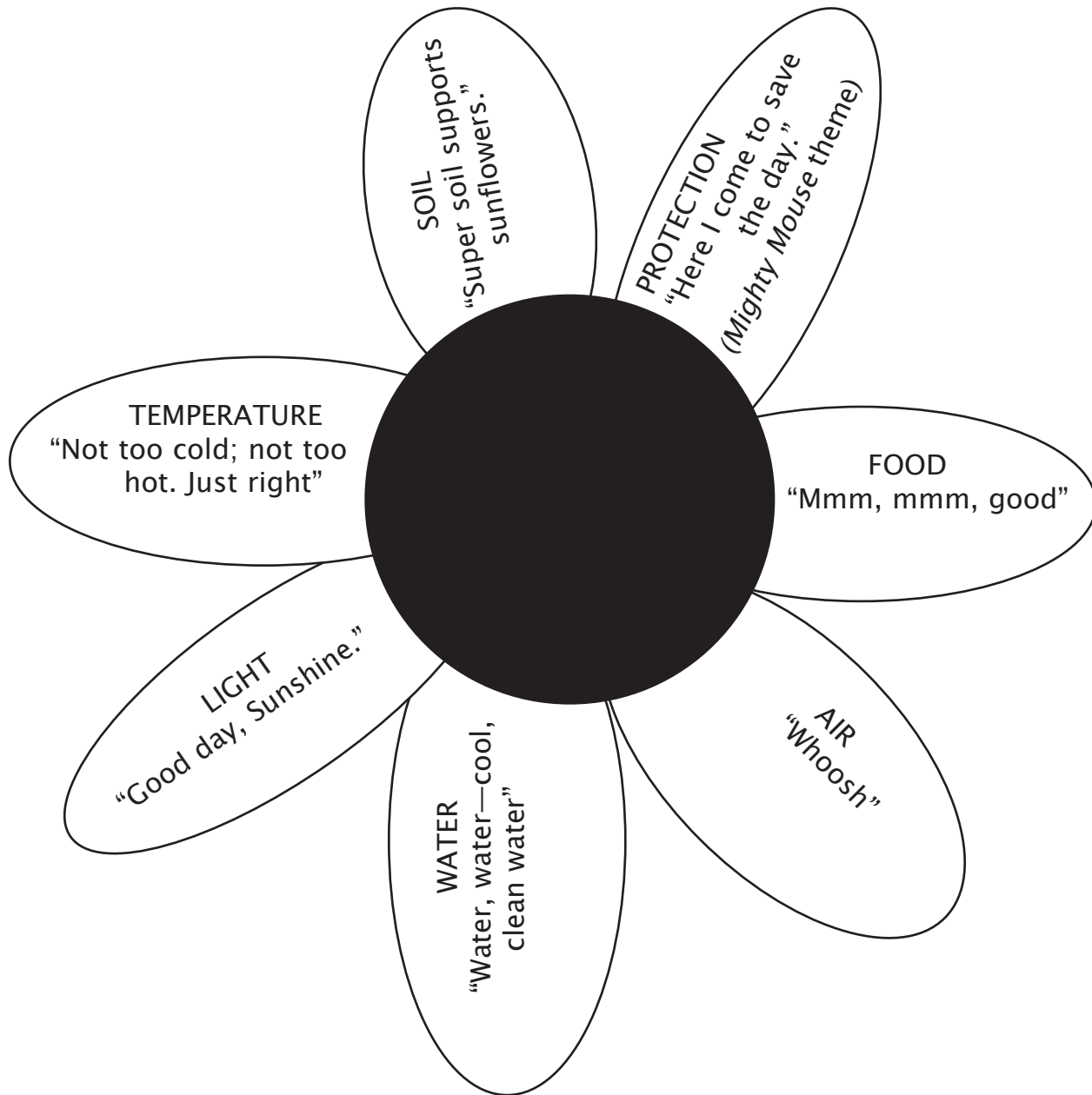
Sunflowers did not catch on as an edible food in the Old World until it reached Russia. During Lent and Advent in Russia, the Holy Orthodox Church forbade the use of many foods rich in oil. Sunflowers provided as an oil source that could be eaten without breaking the laws of the church.



In 2011 the top sunflower-producing states in the U.S. were North Dakota, South Dakota, Nebraska, and Kansas.

Plant Chants

Follow along as your teacher reads “The Sunflower Story.” When you hear your group’s word, say your group’s chant.



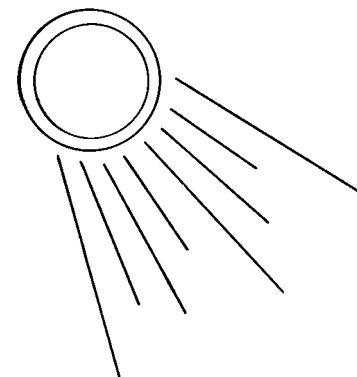
The Sunflower Story



There once was a cold and lonely sunflower seed, buried just beneath the garden SOIL and PROTECTED from the cold winter AIR. The seed was a patient seed that waited for the summer SUNLIGHT. Before the summer SUNLIGHT came, spring rains WATERED the SOIL that PROTECTED the seed. Then the SUN began to shine. As the SOIL began to warm up, the seed's

TEMPERATURE began to rise, too.

Suddenly the seed burst open, sending a shoot up toward the SUNLIGHT. The roots grew deeper into the SOIL to search for FOOD. As the shoot began to reach the surface, it could feel the warm TEMPERATURE and feel the cool AIR. The seed became a sunflower plant and began to grow taller and stronger as it enjoyed the SUNLIGHT, WATER, AIR, FOOD, perfect TEMPERATURE and SOIL.

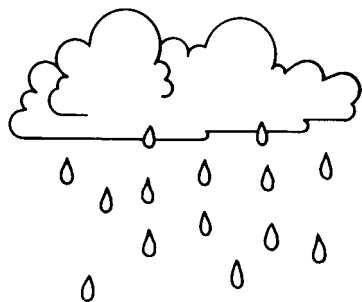


The gardener did her best to PROTECT the sunflower from insects, disease and weeds.

As the sunflower plant continued to grow it began to sprout leaves. These leaves enjoyed the SUNLIGHT, WATER, fresh AIR and warm TEMPERATURE. The leaves produced chlorophyll, which converted carbon dioxide from the AIR and nutrients and WATER from the SOIL into FOOD to make the sunflower plant grow.

The plant grew and grew until one day a beautiful flower began to form. The sunflower needed FOOD, WATER, SOIL, fresh AIR, SUNLIGHT, good TEMPERATURE and PROTECTION to do its job. As the flower grew, it began to produce sunflower seeds for the gardener, the birds and the squirrels to enjoy.

As summer turned to fall, the AIR TEMPERATURE began to cool, and the days grew shorter. The leaves didn't have enough SUNLIGHT to photosynthesize FOOD. After harvesting the seeds, the gardener stopped WATERING and PROTECTING the plant. The sunflower plant began to wilt and dry



until finally it collapsed on the ground, scattering the last of its seeds into the garden SOIL.

The newly-scattered seeds were patient, buried just beneath the SOIL, waiting for the spring rains to bring WATER and the summer to bring SUNLIGHT, AIR, FOOD, warmer TEMPERATURES and the gardener's PROTECTION. And the seed burst open and began to grow . . . And there is no end to this story.