

Apple: Bare to Pick



LEVEL: Grades K-3

SUBJECTS: Language Arts, Science, Social Studies and Art

AZ ACADEMIC STANDARDS: R-R3, R-F4, W-R1, ISS-R2, M1-F1, W-F4, SC01-S4C2, SC02-S4C2, SC03-S4C2, SC03-S4C3

MATERIALS

Seasons of Arnold's Apple Tree, by Gail Gibbons, Why Leaves Change Color, by State University of New York College of Environmental Science and Forestry (SUNY-EST), globe, blue construction paper, 4 pre-cut tree trunks per student, cotton balls, 1 inch squares of pink crepe paper, pencils, glue, green construction paper, little apple cutouts, red, orange, yellow, brown, purple, and green tempera paints, and small sponges.

VOCABULARY

seasons, changing leaves, photosynthesis, chlorophyll, glucose, sugar, carbon dioxide, globe, tilt

RELATED LESSONS

Apple: Kinds to Products
Apple: Seed to Tree
A is for Apple
What to do with *Malus domestica*, Cultivated Apples?

SUPPORTING INFORMATION

The four seasons of the apple tree occur as the earth tilts towards and away from the sun. In the summer, the earth is tilted toward the sun causing longer days, which give the apple trees time to make

chlorophyll. Chlorophyll is a chemical that helps in the process of photosynthesis, which gives leaves their green color. Photosynthesis occurs when sunlight turns water brought up from the roots in the ground and carbon dioxide from the air, into glucose. Glucose is a kind of sugar that plants use for food. In the fall, the days shorten as the earth starts to tilt away from the sun causing photosynthesis to slow down. The chlorophyll starts to go away and the leaves turn other pigment colors. These colors were always present in the leaves but covered up by the chlorophyll. In the winter, the earth tilts away from the sun and the days become shorter and colder causing photosynthesis to stop. The leaves fall off the trees and wait to bud out again when longer daylight and warmer weather returns. Finally, in the spring the earth starts to tilt back towards the sun causing longer daylight which begins the process of photosynthesis. Apples are not produced in the spring unless pollination occurs. Farmers hire beekeepers to bring in their beehives during the spring to provide pollination to the apple trees.

GETTING STARTED

Get several library books on seasons. Have a globe of the world in the classroom. Cut out a big yellow construction paper sun. Have one 12"x18" piece of big

BRIEF DESCRIPTION

By discussion, investigation, and an art project students will understand the seasons of the apple tree and why leaves change colors and fall off the tree.

OBJECTIVES

Students will:
-Describe the four seasons of the apple tree.
-Investigate why the season's change which causes leaves to grow, apples to grow, leaves to change colors, then fall off the tree.
-Explore what happens during photosynthesis.
-Create an art project showing the four seasons of the apple tree.

ESTIMATED TEACHING TIME
45 minutes

GETTING STARTED

(cont'd)

blue construction paper for each student. Set up four centers with all materials needed to create the four seasons on the apple tree trunks. Cut 4 tree trunks per student. Provide paints, cotton, pink crepe' paper, inch squares, and little apple cutouts to students.

PROCEDURES

1. Have two students come up to the front of the classroom.
2. One holds and represents the sun while the other holds the globe.
3. Tilt the globe towards the sun and discuss why this causes the summer season of the apple tree.
4. Next have the globe start to tilt away from the sun and discuss the fall season and how photosynthesis starts to slow down.
5. Tilt the earth away from the sun discussing why the days become shorter and trees lose their leaves in the winter.
6. Last start tilting the globe back towards the sun and discuss how photosynthesis begins again.
7. Discuss how photosynthesis occurs and do the worksheet. It is the sun plus carbon dioxide to equal chlorophyll production that makes the green color or food for the leaf.
8. Explain that pollination occurs when the bees fly from apple blossom to apple blossom leaving pollen behind each time they land on a different blossom.
9. Pass out a piece of big blue construction paper to each student and have them fold it into fourths.
10. Set up in four centers with materials to create each season of the apple tree. Glue a tree trunk on each 1/4 of blue construction paper.

Fall Center: Sponge paint around first tree with yellow, red, orange, green colors, and color apples on the ground. Winter Center: Glue on 3 pulled apart cotton balls. Spring Center: Have 1"x1" pink crepe' paper squares, wrap one at a time around the end of a pencil eraser, dip in glue and press around tree top. Summer Center: Stamp on little apple prints or glue on small apple cutouts.

11. When dry display on a bulletin board.

EVALUATION OPTIONS

1. True, false quiz. Please see attached quiz and key.
2. Write or illustrate how and why the four seasons of the apple tree occur.
3. Draw a leaf full of chlorophyll.
4. Label the process of photosynthesis, use worksheet.

EXTENSIONS AND VARIATIONS

- Computers; KidPix Deluxe, KidPix Activity Kit Volume 1
- Handouts on photosynthesis and chlorophyll production
- What activities do you do during the different seasons?
- Invite a beekeeper into the classroom to show and tell about the important role bees play in pollinating the apple blossoms.

RESOURCES

Books on Seasons and KidPix, Computer lab. Why do Leaves Change Color in the Fall? By Science made simple www.photoscience.la.asu.edu/photosyn/education/colorchange.html.

CURRICULUM DESIGN

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K-3 Teacher
Childhelp U.S.A.

EDUCATORS' NOTES

This Arizona Grown Specialty Crop Lesson Plan was paid for by a grant from the Arizona Department of Agriculture's Office of Marketing and Outreach.

APPLE TREES: BARE to PICK
True / False Quiz

Directions:

If the statement is true circle T, if it is false circle F.

1. Apples are picked in the Fall. **T or F**

2. Bees help pollinate the apple blossoms. **T or F**

3. Photosynthesis happens only in the winter. **T or F**

4. Chlorophyll is a chemical that makes leaves green. **T or F**

5. The earth tilts toward the sun in the winter. **T or F**

6. Leaves fall off the tree in the summer. **T or F**

7. Glucose is a kind of sugar. **T or F**

8. All leaves have another color covered up by chlorophyll. **T or F**

9. There are 5 seasons of the apple tree. **T or F**

10. The seasons happen when the earth tilts toward and away from the sun. **T or F**

Answer Key

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T or F

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8. All leaves have another color covered up by chlorophyll.

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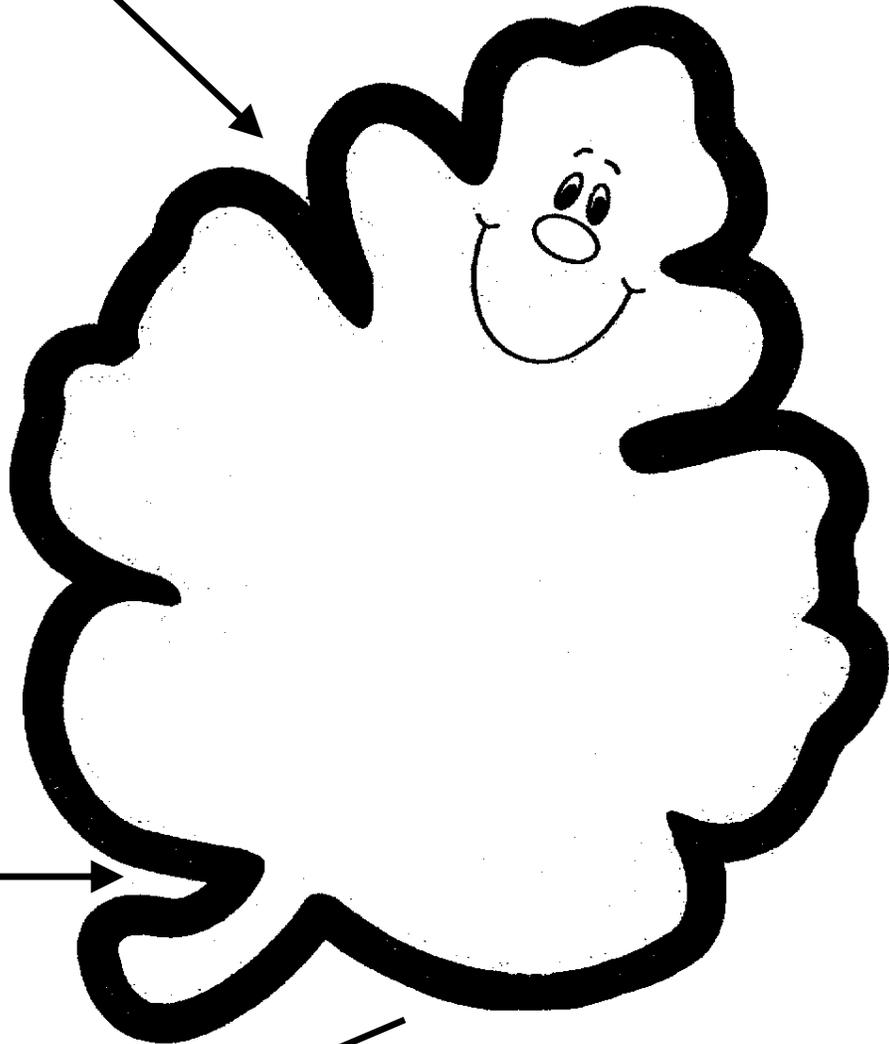
T or F

PHOTOSYNTHESIS



SUNLIGHT

CARBON DIOXIDE



WATER

GLUCOSE

PHOTOSYNTHESIS

