

This Can't be a Plant



LEVEL: Grades 4-6

SUBJECTS: Science, Language
Arts

AZ ACADEMIC STANDARDS: R-F3, R-E2, W-F1,
W-F4, W-F5, W-E5, SC04-S1C1, SC04-S1C2, SC04-
S1C3, SC04-S1C4, SC05-S1C1, SC05-S1C2,
SC05-S1C3, SC05-S1C4, SC06-S1C2, SC06-S1C3, SC06-
S164

MATERIALS

Moldy piece of apple or orange, plastic sandwich bags, baby food jars with lids (or plastic cups with lids), bread (food specimen with moisture), water, eyedropper (or straw), graph paper or ruler, colored pencils, magnifying glass, and a rock (nonfood item without moisture).

VOCABULARY

Mold, specimen, nonliving, organism

RELATED LESSONS

If it Smells Good, is Edible and Attracts Wildlife, Then it's a Practical Garden!
Where do They Go?
Don't Wait, Just Propagate!
Let's Make Stew
How do Plants Make Food?
Survival of the Fittest
Getting to the Root of the Matter
Soggy Seeds
Plant Seedling
Plants, Plants and More
Plants

SUPPORTING INFORMATION

Quite often we think of plants as green organisms with stems and leaves, but a wide variety of plants do not have these characteristics. While you energy through

may regard mold only as dangerous or slimy intruders that ruin your bread, they are also vital to the survival of life. Since mold can not produce food energy through photosynthesis, as plants do, they depend on energy-rich compounds from other organisms; in fact, they are major decomposers and garbage eaters on the planet! As mold digests compost, wood, plant remains, and other organic matter, they release nutrients that can be used again by plants. Many molds even live symbiotically (having a mutually beneficial relationship) with certain roots, making nutrients directly available to plants. What is more, mold manufacture penicillin and other medicines, produce alcohol in wine and beer, flavor cheeses, and raise bread. Invisible mold "seeds" are everywhere, and when conditions are right a single mold spore will use a substance for food to produce more spores. These spores will grow into new plants and within a few days will be large enough to see. When these molds are looked at closely with a magnifying glass various colors and shapes can be seen.

Definitions:

Mold: a fungus producing a furry growth on the surface of organic (living) matter.

Specimen: a part of an individual used as a sample of a whole or group.

Nonliving: not living

Organism: any living thing

BRIEF DESCRIPTION

A wide variety of plants do not have the characteristics we associate as green organisms, i.e. stems and leaves.

OBJECTIVES

1. Students will grow simple non-green plants.
2. Students will form a hypothesis based on different specimens tested under different mediums in relation to mold growth.
3. Students will graph/chart their findings daily.
4. Students will sketch specimen growth daily.
5. Students will come to a conclusion about mold growth and present their findings to the class.

ESTIMATED TEACHING TIME

5-8 days

GETTING STARTED

Groups of 3-4 students. Per group, give one moldy piece of apple or orange, several plastic sandwich bags, baby food jars and lids (or plastic cups with lids), specimens to be tested (be sure to include one food specimen with moisture, such as bread, and one nonfood specimen without moisture, such as a stone), water, an eyedropper (or plastic straw), graph paper or ruler to measure growth, colored pencils, magnifying glass.

Note: By enclosing the specimens in plastic sandwich bags, students can observe and measure specimen growth without handling the mold. Graph paper can be used to measure growth by placing the appropriate size paper over the growth and counting squares.

PROCEDURES

1. Have the students discuss and describe the types of plants with which they are most familiar (students will most likely list various green plants). "This activity will introduce you to some plants that are very different from the ones you know best".
2. Pass out a piece of moldy fruit to each group. Have each individual group discuss the characteristics of the mold. After sufficient time has been given, get class back together and list ideas of the whole group on chart paper or blackboard.
3. "Have you ever seen this type of plant before? Where? What characteristics make it different from other plants?" (Not leafy or green) "What characteristics make it similar to other plants?" (It is living and has roots)
4. "Why does it grow on this substance?" (Food is available) "Are there similar substances it might grow on? What characteristics does this substance have that may

be conducive to growth?" (Moisture, food source)

5. Let students know that invisible "mold seeds" are everywhere but need the right conditions to grow such as moisture and food.
6. Assign one student from each group to gather the remainder of the materials and have the students set up 8 growth mediums (see attached Growth Mediums Chart)
7. Have students place a piece of bread in each baby food jar, or plastic sandwich bag. Use the eyedropper or straw to add water if necessary. For specimens 3, 4, 7, and 8, students will need to be sure that there is constant moisture by adding more drops of water if the bread is getting dry. Make sure each group of specimens is labeled with their names.
8. Have students form a hypothesis related to the 8 growth mediums. Have them write down what they think the outcomes will be, such as, growth, no growth, amount of growth, and time mold took to grow.
9. Have each group keep a log of (a) the specimens and conditions, (b) the beginning date, (c) the date of the first sign of growth, (d) the amount of growth from daily observations, and (e) daily drawings of the mold growth. The growth and collection of data should run about a week or so.
10. Teachers, you will need to create a space in the room for both light and dark growth as well as coolers with both light and dark available.

EVALUATION OPTIONS

1. Students can log daily observations and drawings of specimen progress from first sign of growth.
2. Students can create a graph or chart of findings including specimens and conditions, first sign of growth

and amount of growth over a certain time period.

3. Students can compare their findings with their original hypothesis and come to a final conclusion about mold growth.
4. Student groups can present an oral report and visual aids about their data and findings.

EXTENSIONS AND VARIATIONS

Students can suggest their own conditions to be tested. Students can conduct a "Moldy Soup" experiment.

RESOURCES

Schnieder, Judy

<http://www.lessonplanspage.com/ScienceExHowGr.>

Pro Teacher

<http://www.proteacher.com/110014.shtml>

EDUCATORS' NOTES

CURRICULUM DESIGN

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Growth Mediums

Specimen	Substance	Moisture	Temperature	Lightness
1	bread	dry	room	light
2	bread	dry	room	dark
3	bread	wet	room	light
4	bread	wet	room	dark
5	bread	dry	cold	light
6	bread	dry	cold	dark
7	bread	wet	cold	light
8	bread	wet	cold	dark
