
Plants and Products

Materials Needed

For each student: Student Data Sheet: "Plants and Products"

For each adult: Leader Sheet: "Plants and Products"
Map: "Plants and Products"

Pre-visit Activity

Focus on the production of oxygen by plants. Oxygen, an invisible gas in our air, is essential to life on Earth. All animals, including humans, rely on plant oxygen production for survival. Watch oxygen bubbles being released by a growing sprig of *Elodea* or *Anarchis* (common aquarium plants found in pet stores). Place cut pieces of these plants in a tightly closed test tube near a window to view bubbles easily.

Have students follow up with study of another important role that plants play in the atmosphere of our planet. Even more important than their many economic uses, the plants of the Earth, especially the trees of tropical forests, take in carbon dioxide produced by industry and automobiles as a natural part of the process of photosynthesis. Atmospheric carbon dioxide and water are taken in by plants, which use the light of the sun to transform the carbon dioxide and water into glucose, water, and oxygen. If the trees are removed, the carbon dioxide increases, exacerbating global warming and the "greenhouse effect". Have students research this problem with a focus on the deforestation of tropical rain forests.

Background Information

Plants have always played an integral role in human activities. Their availability as food source has been essential for our survival. Plants are also used as a source of building materials, specialty products like perfumes and medicines, and to make clothing.

Post-visit Activity

Focus on a particular biome. Have students research the plant products from that area. One biome of particular interest is the tropical rain forest. This biome produces many unique plant products which are threatened by deforestation in tropical areas. Students can study the economic plants of the rain forest, those with medicinal properties, and the tropical woods. The contrast between harvesting these natural products and using the land for grazing or conventional farming should be an interesting focus.

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LESSON

Topic

Humans and Plants

Grade Level

3 - 6

Student Outcomes

- ✿ practice observation and writing skills.
- ✿ identify many uses of plant parts

Time Frame

Year-round for the Temperate House;
May-September for the Scented Garden
60 minutes

Location

Linnean House
Temperate House
Scented Garden

Key Terms

Fruit, Nut
Leaves, Flower

Missouri State Standards

K-4

SC VII.A.1
VII.A.2
VII.C.1
VII.C.1.a
VII.C.1.b
VII.A.3
VII.A.3.a

5-8

SC II.B.1

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1 Spoehrer Plaza

Today we're going to explore a few parts of the Missouri Botanical Garden. We'll go on an exploratory walk, fill out some information sheets, and see how many ideas you have about plants and their uses.

Divide into groups with an adult guide. At the conclusion of our exploration, we will meet outside for the Temperate House.

Hand out copies of "What Use is a Plant?" Be sure that students are in small groups with an adult/parent guide. Each group needs a map. Encourage students to work as a group, especially when generating ideas. The group leader should keep students on task.

2 Linnaean House—Camellias

These plants bloom in late winter.

Look for information on how the leaves of this plant are used. Tea is brewed from leaves of the tea plant, *Camellia sinensis*.

3 Scented Garden

Have students rub fingers along surface of leaves of geraniums or mints.

- What does your leaf smell like?
- Have you ever used any of these plants in cooking? Which ones?
(Mints, basil, and oregano are usually here in a number of varieties. Be sure students find at least one.)

1. Witch hazel plant

Look for flowers in late winter. Smell them.

There are two witch hazel plants native to Missouri. One flowers in the fall, the other in spring. Witch hazel is used in many medications for skin care.

2. Any large tree on your path to Shoenberg Temperate House

Have students brainstorm uses for parts of a woody plant.

4 Shoenberg Temperate House

There are a series of stops here. Help students find which part is used. (furniture, lumber, etc.)

1. Cork Oak

This plant is native to Missouri.

- What do you think it is used for? (cork)

2. Olive (fruit)

This plant has male and female flowers on separate trees.

- Which one would produce the fruits? (The one with female parts—pistil)
- What color is the fruit of this tree?
- What do we use it for? (food)

3. Bay Laurel

- Who can read this sign aloud?

This is a plant from Greece where it is used in cooking and to crown athletes!



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4. Figs

In our part of the world we use these trees differently than in the countries where they are native.

- Have you seen them growing here? Where? (household ornamental)
- What else can we use this plant for? (figs as fruit)

5. Roses (petals, rose hips)

- What can we use this for? (perfume, flowers)

We can also use the swollen ovary (rose hips) for potpourri and as a source of Vitamin C.

6. Papyrus

- What does this plant remind you of? Grass, perhaps?

This plant lives in very wet areas as you see here. Look at its name.

- What do you think it is used for? (paper)

7. Grapes (fruit, leaves, vine)

Again, we have more than one way we use this plant.

- Who can name one? (food—both fruit and leaves, vine for wreaths)



Closure

Now we've seen some interesting plants and generated ideas for their uses. Let's hear what your ideas were.

Be sure to see which group came up the most products.

- What plants seem really useful?
- Which garden site had the most useful plants?
- Which gardens seemed to use plant for their beauty alone?
- Do you have any of these plants at home?

Teacher's Notes

Name: _____

Date: _____

Student Data Sheet

Plants and Products

What Use is a Plant?

1. In the **Linnean House** are many *Camellias*. They're lovely, but what drink is made from Camellia? (Look at the signs!)

2. The **Scented Garden** has many fragrant plants. Locate one that you could use in your cooking (an herb).

3. The path near the daylilies has a witch-hazel plant which can be used to produce a liquid often used to soothe burns or irritations.

Latin Name _____

Draw the plant below:

4. Stop at the nearest tree. As a group, see how many uses you can think of for tree products (wood, sap). Time yourself (3 minutes).

Tree Name _____

List the tree product uses below.



Name: _____

Date: _____



Student Data Sheet

Plants and Products



What Use is a Plant?

5. Walk along the marked path to the **Shoenberg Temperate House**. There are many plants here that have been used by humans for centuries! Find the plants below and record their many uses. Look for the black signs that tell you about the plants. (Ask adults if you need help!)

Common Name	Latin Name	Uses
Cork Oak		
Olive		
Figs		
Papyrus		
Grapes		
Bay Laurel		
Roses		



Map: Plants and Products!

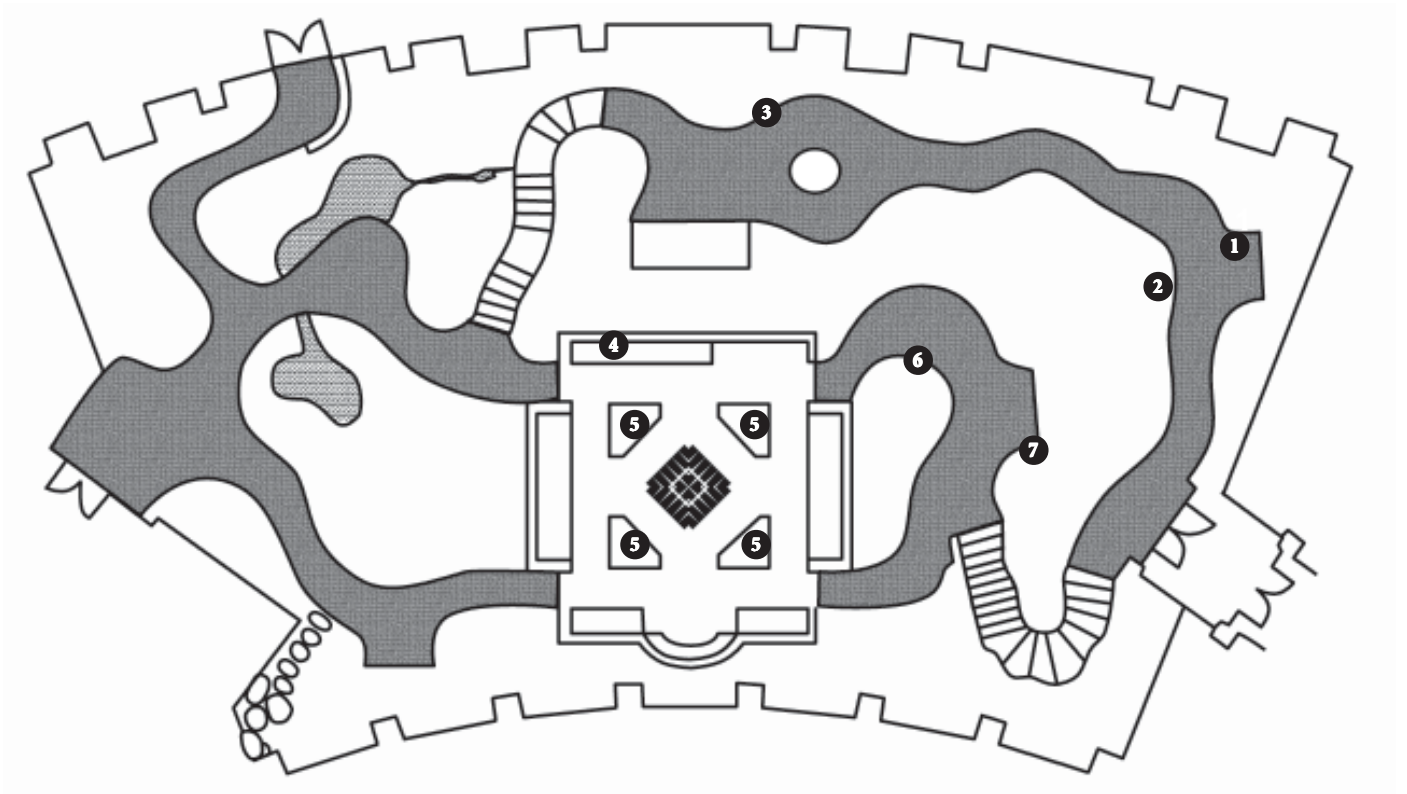


Garden Map Key

1. Camellias (in the Linnean House)
2. Scented Garden
3. Witch hazel plant
4. Shoenberg Temperate House
(see additional map)



Map: Plants and Products!



Shoenberg Temperate House Map Key

- | | |
|---------------|------------|
| 1. Cork oak | 5. Roses |
| 2. Olive | 6. Papyrus |
| 3. Bay Laurel | 7. Grapes |
| 4. Figs | |

