

It's in the Ashland Privy! Archaeobotany Lessons

Grade Level: 4-8

Time Required: 45-60 minutes

Curriculum Areas: science, mathematics, and language arts

Kentucky Learning Goals and Academic Expectations Addressed: 1.2-1.4, 1.11-1.12; 2.1-2.2, 2.6, 2.16-2.17, 2.20; 4.2; 5.1, 5.4-5.5; 6.1- 6.3

Students will:

- make sense of various materials/messages they read, observe, and listen to.
- write/speak to communicate ideas and information to an audience for a real purpose.
- understand scientific ways of thinking and working and use those methods to solve real-life problems.
- identify, analyze, and use patterns to understand past and present events.
- understand how living and non-living things change over time.
- observe, analyze, and interpret human behaviors to better understand people.
- interact effectively and work cooperatively.
- understand, analyze, and interpret historical conditions to develop historical perspective.
- use productive team membership skills.
- use critical thinking skills such as analyzing, categorizing, evaluating, and comparing to solve various problems in real life-situations.
- use a decision-making process to make informed decisions among options.
- use problem-solving processes to develop solutions to relatively complex problems.
- develop abilities to connect and integrate experiences and new knowledge from different subjects with what they have already learned and acquire new information.

Materials

- “Magnified Seeds I” and “Seeds Found in the Ashland Privy Deposits” handouts.
- “Magnified Seeds II” transparency handout.
- “Seed Sample Analysis” and “Plant Foods from the Ashland Privy” activity sheets. If possible, have pictures or samples of plants and actual seeds of plants (e.g., corn, grape, blueberry) available for the students to see and touch during the activity.

Vocabulary

Archaeobotanist: a specialist who studies seeds and other plant remains from archaeological sites in order to understand the relationship between plants and people in past cultures.

Carbonize: to turn a seed or other organic item into charcoal through burning.

Cultivate: to promote or improve the growth of a plant or crop by working the soil and controlling weeds.

Flotation: a method used to recover seeds from archaeological sites. Soil is placed into a large container of swirling water. The soil falls to the container's bottom, while the seeds float to the water's surface.

Hypothesis: an explanation or interpretation that can be tested by further investigation.

Privy: comes from the Latin word meaning "private". It is another word used to refer to an outhouse, or outdoor bathroom.

Seed: a fertilized plant egg that has the capacity to produce a new plant.

Background

Seeds have several valuable features that make them useful for archaeologists to study: they can be preserved; they are distinctive; and they are present in many contexts at archaeological sites. They can be preserved for long periods of time if they are *carbonized* and stay buried in the ground in fairly constant environmental conditions. Carbonization occurs when a seed is burned and turned to charcoal, such as in a cooking fire. Other plant parts, such as leaves, flowers, or roots, are far less likely to be preserved.

Different types of plants produce different looking seeds. This distinctiveness allows researchers to identify seeds. Scientists called *archaeobotanists* study seeds and other plant evidence to analyze the relationships between plants and people.

Carbonized seeds become deposited in the ground through people's activities. Seeds show up in areas of a site where people prepared, used, and discarded plants, such as in hearths, refuse pits, and *privies*. When archaeologists excavate a site, they regularly collect small bags of soil to look for seeds. Seeds are recovered through a procedure called *flotation*, which involves placing the soil samples in a container of swirling water. The soil, which is heavy, drops to the bottom of the container, while the seeds float to the top, where they can be scooped off and set aside to dry. The seeds and fragments of seeds are examined closely under a microscope and compared with modern identified

seeds and illustrations of seeds. Archaeobotanists use the size, shape, and surface texture of a seed to help identify it.

Sites that have been dug up by looters looking for artifacts have lost their potential to tell us about past food use. Looters mix layers from earlier times with those from later times and expose previously sealed layers to contamination with modern seeds. They probably do not even realize they are destroying this fascinating evidence of the past. It is up to everyone to preserve our past.

What is the Ashland Privy?

Archaeobotanists working at Ashland have recovered a wealth of seeds from the privy outbuilding. The Ashland privy was a large and elegant outdoor bathroom for its time. It was designed as a story-and-a-half, three-room brick structure and was located 45 feet southeast of the mansion. The main floor of the structure was divided into three rooms, with lathe and plaster walls, glazed windows, and a chimney for heating.

You may wonder if this large structure was built to function as a privy alone or if it was used for other purposes as well. There are, unfortunately, no nineteenth century descriptions or illustrations of the privy. Local tradition says that the smaller southern two rooms were used as privy chambers and that the larger northern room was used as a laundry. Excavations inside the privy yielded large quantities of ceramics, bottle glass, and animal and plant remains as well as large numbers and different types of seeds. This information shows that the building was used as a privy from around the 1850s until the 1920s. Excavations outside this building revealed different pipes, suggesting that water was pumped into the building, probably for washing, and that sewage was probably drained into the privy, too.

The Ashland privy offered a wealth of plant remains, including seeds from 32 different kinds of plants, of which at least 22 were food plants. These plant remains provide a direct link to some of the foods consumed by the inhabitants of the estate during the time the privy was in use. Most of the seeds recovered are small and have hard seed coats that can survive cooking and digestion. However, it is important to remember that many food plants do not leave any recognizable residues after they have been cooked or eaten. Thus, we can only gain a partial picture of the foodways of the estate's residents.

The "Seeds Found in the Ashland Privy Deposits" handout lists all of the plants represented by seed remains within the Ashland privy deposits.

Setting the Stage

1. Have students think about the following question:
 - What information can we obtain from the study of past plant remains?

Procedure

1. Divide the class into groups of 4 –5 students. Pass out copies of the “Magnified Seeds I” handout, without the names of the seeds, to each group.
2. Give them 5 minutes to review the handout and ask them to identify which plant they think each seed comes from.
3. Have them share their findings.
4. Project the labeled “Magnified Seeds II” handout transparency to confirm their guesses.
5. Illustrate, if possible, with examples or pictures of the actual plants.
6. Pass out copies of the “Plant Foods from the Ashland Privy” activity sheet to each group. Have each group discuss what these plants are (e.g., fruit, vegetable, grain) and the conditions in which the plant typically grows. Encourage them to write down the information on the activity sheet. Have them share their results with the whole class.
 - Corn: Also known as maize; belongs to the family of grains. It is a domesticated plant that grows in cleared areas with full sunlight. In Kentucky, corn can be picked in the summer and in the fall, but dried corn can be stored for months before eating.
 - Grape: Early spring is the best time to plant grapevines. The fruit ripens in the summer. Grapes grow from temperate to tropical regions, but most vineyards are planted in areas with temperate climates.
 - Goosefoot: It is found in weedy places, such as roadsides, disturbed fields, and well-drained floodplains. It ripens in late summer and early fall.
 - Tomato: This is a fruit that ripens in the summer. It grows best with plenty of sunlight.
 - Blackberry/Raspberry: These fruits ripen in the summer. They should be planted on a good strong trellis. The plants don’t need too much water.
 - Strawberry: This fruit ripens in the summer. It grows both as a wild plant and as a cultivated plant. It grows close to the ground and needs a cool, moist climate to grow best.
 - Coffee: Its cultivation is restricted to tropical and subtropical latitudes. Coffee fruits take between 7-9 months to mature.
 - Celery: This is a vegetable that grows in the fall and needs a lot of moisture to mature.
7. Ask students to imagine uses for the listed plants. Supplement the list with the following information about how Ashland residents may have used them. Tell the students that all of these plants, except for coffee, grew in

Ashland's gardens. Encourage them to write down all their information on the "Plant Foods from the Ashland Privy" activity sheet.

- Corn: It is a food item that can be used as an ingredient in many different recipes (i.e., to make cornbread or succotash).
 - Grape: They were consumed when they were fresh, but also used in jams and wine.
 - Goosefoot: This is a food plant similar in flavor to spinach. This is a weed that can be eaten as a green.
 - Tomato: Can be preserved whole or made into sauce for use throughout the year. Draw students' attention to the fact that tomatoes were not considered food until the second half of the twentieth century. For a long time, American Indians and Euro-Americans considered tomatoes poisonous
 - Blackberry/Raspberry: They were consumed when they were fresh, but also in preserves, like jams and marmalades.
 - Strawberry: It was consumed when it was fresh, but also in preserves, like jams and marmalades.
 - Coffee: Charred coffee beans suggest that the Ashland residents probably roasted and ground their own coffee.
 - Celery: It is a common ingredient in recipes dating to the late nineteenth and early twentieth centuries. It was probably used to flavor food prepared at Ashland.
8. Present background information about how archaeobotanists analyze and how archaeologists use seed analysis to learn about past peoples' use of plants.
 9. Distribute the "Seed Sample Analysis" activity sheet. This is a very simplified version of what an actual seed analysis sheet might look like. Tell the students that they are archaeobotanists and have been given this sample of seeds to analyze from the Ashland privy. Explain that they will analyze the seed sample and interpret their results. Tell the students that all of these seeds were found in human fecal remains deposited over time in this privy.
 10. Matching seeds in the sample to those on the "Magnified Seeds II" handout, students identify the plants for each seed and write a paragraph interpreting the results from their sample (For example: "The seed sample included raspberry, grape, and tomato. Because the plants represented here were plants that ripened in the summer, it is likely that the seeds were discarded during that time of year. However, note that these plants could also be preserved. This may indicate that they were probably consumed all year round").
 11. Draw students' attention to the fact that many more items came from the privy besides the seeds, including fine tableware, shoes, bottles, and animal remains, and that the privy was used as a handy place to dispose of unwanted trash.

Closure

In summary, what two kinds of information can seeds from archaeological sites tell us? Why is it important to leave sites undisturbed if archaeologists are to use seeds to help them learn about past foodways?

Evaluation

Evaluate students on their identification of the seeds and the application of their knowledge to interpreting the seed sample results.

This activity appears in *Exploring History In Your Own Backyard: The Ashland Estate (An Historical Archaeology Resource Guide for Elementary and Middle School Teachers, Grades 4-8)* by Cecilia Mañosa (2002). Kentucky Archaeological Survey, Education Resource No. 6 (KAS Report No. 59), Lexington, KY, pages 19-30. The complete resource can be downloaded from another page on this website. Go to {<http://heritage.ky.gov/kas/kyarchynew/Ashland.htm>}, and then on the right, click on the pdf of the guide under "Curriculum Materials."

This activity was adapted from *Intrigue of the Past: North Carolina's First Peoples. A Teacher's Activity Guide For Fourth Through Seventh Grades* by Margo Price L., Patricia M. Samford, and Vincas Steponaitis. 2001. Research Laboratories of Archaeology. The University of North Carolina at Chapel Hill, Chapel Hill, pp. 84-91.

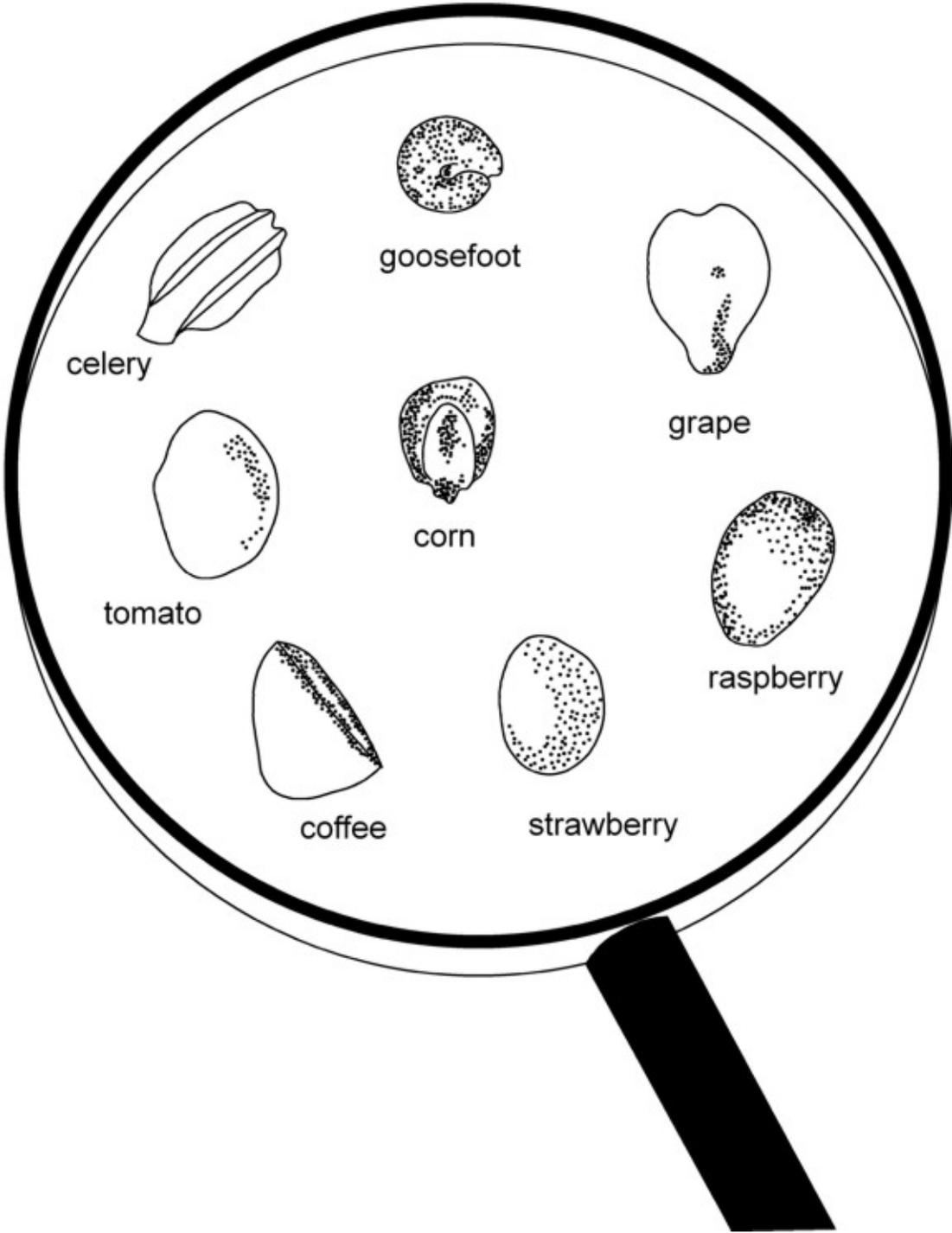
Magnified Seeds handout: adapted from Price, L. Margo, Patricia M. Samford, and Vincas Steponaitis. 2001. *Intrigue of the Past: North Carolina's First Peoples. A Teacher's Activity Guide for Fourth through Seventh Grades*. Research Laboratories of Archaeology. The University of North Carolina at Chapel Hill, Chapel Hill, pp. 89.

Seed Analysis activity sheet: taken and adapted from Price L. Margo, Patricia M. Samford, and Vincas Steponaitis. 2001. *Intrigue of the Past: North Carolina's First Peoples. A Teacher's Activity Guide for Fourth through Seventh Grades*. Research Laboratories of Archaeology. The University of North Carolina at Chapel Hill, Chapel Hill, pp. 90.

Magnified Seeds I



Magnified Seeds II



Seeds Found in the Ashland Privy Deposits

<u>Fruits</u>	<u>Vegetables</u>	<u>Grains</u>	<u>Others</u>	<u>Weeds and Ornamentals</u>
Blackberry/ Raspberry	Tomato	Corn cupule	English Walnut	Amaranth
Strawberry	Capsicum pepper	Corn Kernel	Hickory	Cheno/am
Mulberry	Squash/ gourd		Coffee	Goosefoot
Grape	Celery		Peanut	Purslane
Blueberry	Celery family		Black Walnut	Smartweed
Melon			Butternut	Grass family
Watermelon				Holly
Cherry				Nightshade family
Plum				
Peach				

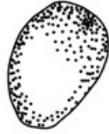
PLANT FOODS FROM THE ASHLAND PRIVY

<u>PLANT NAME</u>	<u>TYPE OF PLANT</u>	<u>PLACE AND SEASON PLANT GROWS</u>	<u>USES OF PLANT</u>
CORN			
GRAPE			
GOOSEFOOT			
TOMATO			
BLACKBERRY/ RASPBERRY			
STRAWBERRY			
COFFEE			
CELERY			

Seed Sample Analysis

Name/s:

Ashland Privy, Layer II
1880s-1890s



1. Name of plant:



2. Name of plant:



3. Name of plant: