

A Tale of Two Plots

Explore and experiment with gardening using historical Native American practices

Gardening Connection:

Students will be planting corn, beans and squash using modern tools and tools they created based on tools used historically by Native Americans.

Time

Required:

3- 45 minute sessions + garden growth time

Grade Level:

Can be adapted for K-12

EDUCATOR NOTE:

Please see resources section for tips on teaching about Native American Cultures in your classroom.

OBJECTIVES

Students will be able to:

1. Compare and contrast historical Native American and current gardening methods.
2. Create a traditional Native American Three Sisters Garden.
3. Explain how historical methods shaped current agricultural practices.

BACKGROUND

Native Americans, historically, had to create their own tools from materials available. Many tribes used a Three Sisters method for planting their corn beans and squash. Each of the plants relies on the others to be successful.

The Iroquois believe corn, beans and squash are precious gifts from the Great Spirit, each watched over by one of three sisters spirits, called the De-o-ha-ko, or "Our Sustainers". The planting season is marked by ceremonies to honor them, and a festival commemorates the first harvest of green corn on the cob. By retelling the stories and performing annual rituals, Native Americans passed down the knowledge of growing, using and preserving the Three Sisters through generations. See resources section for additional information about the history of Three Sisters Gardens.

MATERIALS

- Green limbs approximately 36-48 inches long and 1-1 ½ inches in diameter
- Mussel Shells
- Drill
- Deer antlers
- Clay pots
- Shovels
- Rakes
- Hoes
- Garden Hose
- Poles/Supports for beans
- Corn, pole bean, and squash seeds

Subjects

Language Arts (literature, writing)
Math (measurement, diagram drawing)
History (Native American tools & gardening)
Social Studies (Native American culture)
Science (plant growth, plant interdependence)
Art (draw and label)

Vocabulary

Nitrogen
Metaphor

Project Connections

PLT – Native Ways
A Look at Lifestyles
Tipi Talk

PROCEDURES

Engage

Ask students if they have ever helped plant a garden?

What kinds of plants did you plant in a garden?

Who helped you learn about gardening? (books, mom, grandpa, etc?)

Do you think Native Americans planted gardens?

What kinds of plants do you think they grew?

Today, we will be learning about a garden in which Native Americans planted three special plants. Today, we sometimes learn to do things by reading books or searching the internet. Native Americans passed down information about gardening through stories. Here is one of those stories:

The Native American story of the Three Sisters vary from tribe to tribe. This story below is taken from an oral account by Lois Thomas of Cornwall Island, compiled by students at Centennial College and found in "Indian Legends of Eastern Canada, and re-printed at <http://www.birdclan.org/threesisters.htm>.

Read the story of The Three Sisters aloud:

The Three Sisters

A long time ago there were three sisters who lived together in a field. These sisters were quite different from one another in their size and way of dressing.

The little sister was so young that she could only crawl at first, and she was dressed in green. The second sister wore a bright yellow dress, and she had a way of running off by herself when the sun shone and the soft wind blew in her face. The third was the eldest sister, standing always very straight and tall above the other sisters and trying to protect them. She wore a pale green shawl, and she had long, yellow hair that tossed about her head in the breeze.

There was one way the sisters were all alike, though. They loved each other dearly, and they always stayed together. This made them very strong.

One day a stranger came to the field of the Three Sisters - a Mohawk boy. He talked to the birds and other animals - this caught the attention of the three sisters. Late that summer, the youngest and smallest sister disappeared. Her sisters were sad. Again the Mohawk boy came to the field to gather reeds at the water's edge. The two sisters who were left watched his moccasin trail, and that night the second sister - the one in the yellow dress - disappeared as well.

Now the Elder Sister was the only one left. She continued to stand tall in her field. When the Mohawk boy saw that she missed her sisters, he brought them all back together and they became stronger together, again.

What do you think this story is about?

How do you think this story relates to a garden?

What if, instead of talking about three sisters, we were talking about three plants in a garden? What common attributes might plants share that the three sisters shared? (they need each other to grow?)

What plants do you think these sisters might represent?

(The three sisters are Corn, Beans, and Squash. They are seen as the three beautiful sisters because they grow in the same mound in the garden. The Corn provides a ladder for the Bean Vine. They together give shade to the Squash.)

Language Arts Connection: Use this story to introduce and illustrate the use of metaphors.

Explore

Students will be looking at and using tools along with making tools similar to those used historically by Native Americans to plant a garden.

Ask Students:

Have you ever helped plant a garden?

What tools did you use?

How would you garden if you did not have those tools?

To make the tools:

Digging Stick: Use a green limb from a tree, approximately 36-48 inches long and 1 to 1 1/2 inches in diameter. On one end, saw or cut an angled edge, to give the stick a sharp point for making holes in the soil.

Shell or Bone Hoe: The Woodland Tradition would have used these tools. Some Native Americans would have had access to iron tools. Take a green limb from a tree, approximately 36-48 inches long and 1 to 1 1/2 inches in diameter for a handle. Use one half of a large mussel shell with a hole drilled into the hinged edge that will accommodate the handle. You may want to use a drill ahead of time to drill the hole. The shell would then be tied to the handle with cord. *An alternative would be to use a scapular bone from a turkey or deer (contact a local butcher). A hole would be drilled into the handle that would accommodate the slender end of the scapular bone. The bone would then be tied to the handle with cord.*

Rake: A deer antler would be attached with cord, upside down, to the base of a handle 36-48 inches long. Teachers can scout for antlers that have been shed on public hunting areas or public grounds.

To prepare and plant a Three Sisters Garden:

Students will dig their plots using modern tools (shovels, rakes, hoes, garden gloves, garden hoses etc.) and the Native American tools they created. After the plot(s) are prepared, students will be planting corn, beans and squash. At this point, there are a couple of options. One option would be to prepare two plots. One plot could be prepared using the modern tools and modern methods of planting: corn in rows, pole beans with supports and squash in a mound of its own. The other plot could be prepared using the tools the students created and planted in the three sisters method (planting method follows). Another option would be to have all students use both the modern tools and the Native American tools they created to prepare a plot. The plot could then be planted using the three sisters method. If outdoor space is a concern, the three sisters garden can be grown in a container. The directions for growing in a container are also listed here.

Each Native culture that grew the three sisters had a unique planting system. Here are guidelines for one type of setup. These directions came from www.kidsgardening.org.

- 1. Plan and select a site.** You'll want to plant your three sisters garden in late spring once the danger of frost has passed. Choose a site that has direct sunshine for most of the day and access to water. Once students have determined their site's dimensions, challenge them to plan their three sisters garden on paper. They can use the layout suggested below or research and try others.
- 2. Prepare the soil.** First, break up and rake the soil. Next, build a mound about 12 inches high

and between 18 inches and 3 feet in diameter. If you're in a dry area, flatten the top of the mound and make a shallow depression to keep water from running off. The number of mounds your students create depends on the size of your growing area. Mounds should be 3 to 4 feet apart in all directions.

3. Plant corn. Soak four to seven corn seeds overnight and then plant them about 6 inches apart in the center of each mound. (You'll eventually thin to three or four seedlings.) Many Native people honor the tradition of giving thanks to the "Four Directions" by orienting the corn seeds to the north, south, east, and west. By doing the same, students can learn to use compasses and observe the sun's movements.

4. Plant beans and squash. After a week or two, when the corn is at least 4 inches high, soak and then plant six pole bean seeds in a circle about 6 inches away from the corn. (You'll eventually thin to three or four bean seedlings.) At about the same time, plant four squash or pumpkin seeds next to the mound, about a foot away from the beans, eventually thinning to one. If you are planting a large area, you can also sow the squash in separate mounds (1 foot in diameter) between every few corn and bean mounds.

5. Maintain the 3 sisters garden. As corn plants grow, weed gently around them and mound soil around the base of each stem for support. When the corn is knee-high and again when silks appear on the husks, "side-dress" by putting a high nitrogen fertilizer (such as aged manure or fish emulsion) on the soil surface near each plant. If beans aren't winding their way around the corn, youngsters can help by moving tendrils to the stalks. (Keen observers may notice a pattern in the direction in which the bean vines wind.) To allow room for corn and beans to grow, gently direct squash vines into walkways, garden edges, or between mounds. Once students observe young fruits, side-dress the squash plants with aged manure or compost. If you pinch off the tips of squash runners after several fruits have started to form, the plants will devote more energy to producing squash.

RAISING THREE SISTERS IN CONTAINERS

If your outdoor growing space is limited, you can create a mini three sisters garden in an outdoor container, such as a barrel, or even in the classroom. Although students won't likely see the crops grow to maturity, especially indoors, they should be able to observe the pole beans twine around the corn and the large squash leaves form a mat. To simulate this planting system, use a large container with holes or gravel in the bottom and fill it with potting mix (and compost if you're growing outdoors). Follow the above instructions, but plant only 3 corn seeds (and thin to 1), 2 bean seeds, and 1 mini pumpkin seed. Place the container where it will receive at least six hours of sunlight (or 12 hours of grow lights) each day. See resources section for additional information about growing vegetables in pots.

Explain

Have the students compare side by side use of the tools by doing time trials. Have students partner up and select their tool. Teacher can time how long it takes each student to complete the tasks. Discuss with the students how to measure.

Digging: Dig a hole 5 inches deep using a digging stick vs. a small shovel.

Hoeing: Hoe a row 24 inches long using a shell or bone hoe vs. a modern hoe.

Raking: Rake a pile of debris using the antler rake vs. a modern rake. Look at which tool in each trial is more efficient.

Have students tell about using the tools that were created vs. the modern tools. Which did you prefer to use? Students may write about their experience using the tools. Ask students to choose their favorite tool and explain what characteristics and features made that tool their favorite. If time and interest allows,

students may research and report on ways in which Native American tool technology shaped the tools used in agriculture today.

Elaborate

When corn began to be a major food source it was planted with beans and squash. This combination became known as the "three sisters." The mixing of the three plants was ingenious: The corn stalk provided a pole for the beans to climb. The beans provided nitrogen to the soil ensuring a good crop, and the squash could grow between the plants to prevent the other plants from crowding out the corn.

Three sisters gardens technique originated with the **Haudenosaunee** (hah-dee-no-show-nee), also known with Iroquois, or "People of the Long house". For more information, check out this website on the Haudenosaunee tribe <http://www.nmai.si.edu/education/files/HaudenosauneeGuide.pdf>. Conduct a study on how they discovered how the three sisters garden worked. If time and interest allow, students may also research how this form of agriculture shaped modern agricultural methods? (strip cropping, companion planting, cover crops, etc.)

Evaluate

Invite the whole school and/or the students' families to a Three Sisters planting celebration or ceremony (such as the Iroquois held to honor the gift of their crops). Students may read the story of The Three Sisters, show and explain the tools they created, and explain the planting method for the Three Sisters. Students may share the reports they wrote in the Explain and Elaborate sections above.

Extension Ideas

By saving and replanting some of the seeds from their three sisters gardens, Native cultures brought the cycle of life full circle. Your students may want to save some to replant or package and give to other gardeners. Below are some tips for gathering and preserving the seeds. This suggestion also comes from www.kidsgardening.org.

CORN Leave several ears on the stalk until husks dry and turn brown. Remove and peel back the husks and hang them to dry, out of direct sun, for a month. Once they're dry, remove the individual kernels. Store them in an airtight container. (Note: If you save and replant seed from hybrid corn, the plants will not have their parents' good qualities.)

BEANS Leave several pods on a plant until they turn brown and brittle. Break open the pods and remove the seeds. Leave them on a flat surface or screen, out of direct sun, to air dry for a few days. Put them in an airtight, dark container protected from extreme heat and cold.

SQUASH Scoop out the seeds with a spoon and rinse them with water in a colander. Follow the same instructions as listed for drying and storing beans.

Native American farmers in New England would know to plant their corn when the leaves of the oak tree were the size of a squirrel's ear. What natural signals can your students find in your area that indicate it's time to plant corn? Have students find out how modern farmers decide when it's time to plant corn and other crops.

Create a harvest festival to celebrate the crops as the Haudenosaunee tribes did. Invite family and community members to experience the tools, writing pieces and view the three sisters garden. Serve popped corn or dishes created from the harvest of the garden.

Related Readings:

Native American Gardening: Stories, Projects, and Recipes for Families by Michael J. Caduto

Resources:

Website for kids gardening ideas

www.kidsgardening.org.

More information on Three Sisters Gardening including folklore: www.reneesgarden.com/articles/3sisters.html

Website from New Mexico State University

http://ddl.nmsu.edu/kids/webquests/wqthreesisters_k.html

Growing vegetables in Pots

<http://www.ksre.ksu.edu/library/hort2/mf2873.pdf>

Tips for teaching about Native American Cultures

http://www.4children.org/issues/2007/november_december/teaching_children_about_native_american_cultures/

More information about the origins of corn

<http://www.nativetech.org/cornhusk/cornhusk.html>