

Purpose: Students will investigate the three sisters crops and explore the benefit to planting these crops together. Native American Legends as well as plant growth will be involved in this investigation.

Time: Varies depending on planting situation. On-going

Level: 3-5 grade

Materials:

Outdoor planting

- Hoe, shovel, and/or trowel
- Corn seeds
- Bean seeds
- Squash seeds

Container planting

- Large pot or container with holes in the bottom
- Corn seeds
- Bean seeds
- Squash or pumpkin seeds – miniature or space-saver variety

Garden in a Glove

- Clear plastic gloves
- Permanent markers
- Cotton balls
- Small paper plates
- Five different types of seeds: **Three Sisters crops: corn (sweet corn, popcorn and/or field corn), squash (butternut and acorn), beans**



Three Sisters Garden

Minnesota Science Standards and Benchmarks

- 3.1.3.2.1 Understand that everybody can use evidence to learn about the natural world, identify patterns in nature and develop tools.
- 3.4.1.1.1 Compare how the different structures of plants and animals serve various functions of growth, survival and reproduction.
- 5.1.3.2.1 Describe how science and engineering influence and are influenced by local traditions and beliefs. For example: Sustainable agriculture practices used by many cultures
- 5.4.1.1.1 Describe how plants and animal structures and their functions provide an advantage for survivals in a given natural system.

Minnesota Social Studies Standards and Benchmarks

- 5.4.4.16.2 Describe early interactions between indigenous peoples, Europeans and Africans inducing the Columbian Exchange; identify the consequences of those interaction on the three groups.

Minnesota and Common Core English Language Arts Benchmarks

- 3.1.2.2 Recount stories, including fables, folktales and myths from diverse cultures; determine the central message, lesson or oral and explain how it is conveyed through key details in the text
- 4.1.2.2, 5.1.2.2 Describe a theme of a story, drama or poem from details in the text; summarize the text.

Background

Native people from different parts of North America have used a wide range of agricultural techniques. Perhaps the best known is the inter-planting of corn, beans and squash – a trio often referred to as the “three sisters”. Cultivating these companions in your school garden, a small planting near your school, a large container or even indoors, can inspire studies of Native American customs, nutrition, and folklore. As students dig in, investigations of plant growth and relationships will also flourish.

In a three sisters planting, the three partners benefit one another. Corn provides support for beans. Beans, like other legumes, have bacteria living on their roots that help them absorb nitrogen from the air and convert it to a form that plants can use. Corn, which requires a lot of nitrogen to grow, benefits most. The large squash leaves shade the soil, prevent weed growth and deter pests. The three sisters also complement each other nutritionally. Corn supplies carbohydrates and a variety of amino acids. Beans have protein, including two amino acids that corn lacks. Squash contributes vitamin A.

It’s hardly surprising that these crops – considered by many to be special gifts from the creator – played such an important role in the agriculture and nutrition of most of the Native people of the Americas. Because of the sisters’ central role as sustainers of life, a host of stories, customs, celebrations and ceremonies are associated with them.

Growing your own three sisters garden or planting the crops in a small area can provide a springboard for tying in studies of Native American customs, nutrition, folklore as well as investigating plant growth and relationships. Information for planting in a garden, in a container and also a seed germination activity are included. Select the option that fits with the resources, time and expertise available in your educational setting. Background information from <http://www.kidsgardening.org/node/12033/>

Procedure

1. Explain to your students that a legend is a way of passing stories from generation to generation. Legends are very important in many Native American cultures. Also explain to your class that they will be investigating the legend of the Three Sisters that focuses on agriculture and food production techniques used by Native Americans. The three sisters refer to three crops that were commonly planted together – corn, beans and squash.
2. Hand out the Three Sisters Investigation worksheet and facilitate a class discussion that allows students to share what they know about corn beans and squash. (Examples could include: Corn – tall plant, kernels grow on ears, yellow in color, etc.) Instruct students to list the items in the chart. Feel free to share the information found in the background information or have students research the three crops using the internet or other resources to add to their chart.
3. Divide your class into groups of 3 or 4. Give each group one of the attached Three Sisters Legends. Instruct the students read through their legend as a group and record characteristics of each sister in their chart on the Three Sisters Investigation Worksheet. After the groups have read and discussed in a group, have each group share the characteristics of each sister with the whole class. They should also decide which crop each sister in their legend represents.
4. As a class discuss, how the legends relate to how the three sisters can help each other when planted together. For example: Several of the legends describe the sisters “becoming stronger together” or “three sisters helping and loving each other”. Examples of how the actual crops benefit each other include the corn providing a trellis or pole for the bean to climb. The bean providing nitrogen to the soil to help the corn grow. The squash prevents weeds from growing and deters pests.
5. Plant a three sisters garden! Utilize the procedure that best fits your situation.

Planting in a Garden

1. Once the ground has thawed in the spring and the danger of frost has passed, select a site that has direct sunlight for at least 8 hours a day.
2. Build a small mound of soil about 12 inches high and between 18 inches and three feet in diameter. If you have space for multiple mounds, each mound should be 3 to 4 feet apart in all directions.
3. 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 orientating corn seeds to the north, south, east and west.
4. After about two weeks, when the corn is at least 4 inches high, soak and then plant six pole beans seeds in a circle about 6 inches away

from the corn. (You'll eventually thin to three or four bean plants.) At the same time plant four squash or pumpkin seeds next to the mound, about a foot away from the beans, eventually thinning to one.

5. Maintain your three sisters garden. As plants grow, gently weed around them. Make sure the soil is moist. If beans aren't winding their way around the corn, move tendrils to the corn stalk. Be sure to thin the plants once they are several inches tall – see steps 3 and 4 for the ideal number of plants.
6. Harvest any fruits that have been produced in the fall and enjoy a three sisters snack!

Raising Three Sisters in a Container

If outdoor growing space is limited or non-existent, you can create a mini-three sisters garden in a large pot or container. Students will most likely not be able to see the crops grow to maturity, they should be able to observe the pole beans twine around the corn and the large leaves form the squash create a "mat".

1. Use a large container (about 18 inches in diameter) that has holes in the bottom and fill it with soil.
2. Follow the instructions from the previous planting description but plant 3 corn seeds (thin to one), 2 bean seeds and 1 mini-pumpkin seed. Place the container where it will receive 6-8 hours of sunlight each day.
3. To know when to water this container, insert your finger up to your first knuckle in the soil. If the soil is dry, apply water to the soil until water starts to drip out the holes in the bottom on the container. If the soil feels moist do not water.

Garden in a Glove – Three Sisters

If you have limited space indoors or want to get the seeds for an outdoor three sisters garden started indoors, a garden in a glove is a good alternative. Students get to actual see the seeds sprout!

1. Instruct students to write their name on the palm section of a clear plastic glove with a permanent marker. Also label each finger with a different type of seed. (*See materials list for Three Sisters seed ideas*).
2. Dip five cotton balls in water. Give each cotton ball 3 flat squeezes to wring out excess water.
3. Place 2 seeds on a small paper plate or paper towel and pick up with a moistened cotton ball.
4. Put the cotton ball with the seeds attached into the matching labeled finger in your glove. ***Teacher Tip: You may need to use a pencil to get the cotton ball all the way to the tips of the glove fingers. Also, for large seeds like squash, use only two seeds.
5. Repeat the seed pick-up and depositing in the glove with the additional cotton balls and seeds.
6. Tape the glove to a window, chalkboard, or wall. A clothesline can also be used with clothespins holding the gloves on the line.
7. Depending on what seeds are used, germination will take place in 3-5 days. The cotton balls should stay moist through germination. If one or more appear dry you can add a little water with an eyedropper or spray bottle.

8. Germinated seeds can be transplanted in 1-2 weeks. Cut the tip off each finger and pull out the germinated seeds (cotton ball and all), and transplant into a container with soil.

Additional Activities

- Explore plant lifecycles – invite students to make observations and document in a journal the emerging plant parts and life cycle changes that occur in your three sisters garden.
- Nutrition – have students research the nutritional value of each of the three sisters and the benefits of eating them in combination. You could also challenge students to find “three sisters themed” recipes that they can make at home or as a class.
- Explore the role and importance of the three sisters in Native cultures through stories, celebrations and art. Search for resources to discover these connections in your school library and on-line sources.

Resources

- Information on corn, soybeans and dry edible beans grown in Minnesota can be found on the MAITC Commodity Cards.
<http://www.mda.state.mn.us/en/kids/commoditycards.aspx>
- The National Gardening Association’s [kidsgardening.org](http://www.kidsgardening.org) has many educational resources focused on the three sisters.
<http://www.kidsgardening.org/node/12033/>

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651/201-6000. TTY users can call the Minnesota Relay Service at 711 or 1-800-627-3529. The MDA is an equal opportunity employer and provider.

Name _____

Three Sisters Investigation

List facts and characteristics that describe each of the Three Sisters Crops.

Corn	Beans	Squash

List characteristics of each of the Three Sisters from the legend you read.

Sister #1	Sister #2	Sister #3

Which crop does each sister in your legend represent?

Sister #1 = _____ (List corn, beans or squash) Explain why you think this way.

Sister #2 = _____ (List corn, beans or squash) Why?

Sister #2 = _____ (List corn, beans or squash) Why?

In what ways does the legend describe how the three sisters support each other?

Three Sisters Legend

From <http://www.birdclan.org/threesisters.htm> retrieved August 14, 2014

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. The Cherokee till the mound three times.

The Native American stories 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."

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.

Three Sisters Legend

From <http://blogs.cornell.edu/garden/get-activities/signature-projects/the-three-sisters-exploring-an-iroquois-garden/a-legend/> retrieved August 14, 2014

The following story, entitled "The Three Sisters," was recorded by Lois Thomas of Cornwall Island, Canada. It is one of a collection of legends compiled by students at Centennial College, Toronto, Canada. Out of respect to native culture, we ask that you share the legend in a spirit of respect.

Once upon a time very long ago, there were three sisters who lived together in a field. These sisters were quite different from one another in their size and also in their way of dressing. One of the three was a little sister, so young that she could only crawl at first, and she was dressed in green. The second of the three wore a frock of bright yellow, 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 guard them. She wore a pale green shawl, and she had long, yellow hair that tossed about her head in the breezes.

There was only one way in which the three sisters were alike. They loved one another very dearly, and they were never separated. They were sure that they would not be able to live apart.

After a while a stranger came to the field of the three sisters, a little Indian boy. He was as straight as an arrow and as fearless as the eagle that circled the sky above his head. He knew the way of talking to the birds and the small brothers of the earth, the shrew, the chipmunk, and the young foxes. And the three sisters, the one who was just able to crawl, the one in the yellow frock, and the one with the flowing hair, were very much interested in the little Indian boy. They watched him fit his arrow in his bow, saw him carve a bowl with his stone knife, and wondered where he went at night.

Late in the summer of the first coming of the Indian boy to their field, one of the three sisters disappeared. This was the youngest sister in green, the sister who could only creep. She was scarcely able to stand alone in the field unless she had a stick to which she clung. Her sisters mourned for her until the fall, but she did not return.

Once more the Indian boy came to the field of the three sisters. He came to gather reeds at the edge of a stream nearby to make arrow shafts. The two sisters who were left watched him and gazed with wonder at the prints of his moccasins in the earth that marked his trail.

That night the second of the sisters left, the one who was dressed in yellow and who always wanted to run away. She left no mark of her going, but it may have been that she set her feet in the moccasin tracks of the little Indian boy.

Now there was but one of the sisters left. Tall and straight she stood in the field not once bowing her head with sorrow, but it seemed to her that she could not live there alone. The days grew shorter and the nights were colder. Her green shawl faded and grew thin and old. Her hair, once long and golden, was tangled by the wind. Day and night she sighed for her sisters to return to her, but they did not hear her. Her voice when she tried to call to them was low and plaintive like the wind.

But one day when it was the season of the harvest, the little Indian boy heard the crying of the third sister who had been left to mourn there in the field. He felt sorry for her, and he took her in his arms and carried her to the lodge of his father and mother. Oh what a surprise awaited here there! Her two lost sisters were there in the lodge of the little Indian boy, safe and very glad to see her. They had been curious about the Indian boy, and they had gone home with him to see how and where he lived. They had liked his warm cave so well that they had decided now that winter was coming on to stay with him. And they were doing all they could to be useful.

The little sister in green, now quite grown up, was helping to keep the dinner pot full. The sister in yellow sat on the shelf drying herself, for she planned to fill the dinner pot later. The third sister joined them, ready to grind meal for the Indian boy. And the three were never separated again.

Three Sisters Legend

From <http://www.ncdcr.gov/Portals/7/Collateral/Database/F05.legend.three.sisters.pdf>

Legends and Myths: The “Three Sisters” as told by Shelia Wilson from Tar Heel Junior Historian 45:1 (fall 2005).

When Native people speak of the “Three Sisters,” they are referring to corn, beans, and squash. Known as the “sustainers of life,” these are the basic foods of sustenance. They are seen as three beautiful sisters, because they grow in the same mound in a garden. The corn provides a ladder for the bean vine. The squash vines shade the mound and hold moisture in the soil for the corn and beans. The well-being of each crop planted is said to be protected by another. Many a legend has been woven around the Three Sisters—sisters who should be planted together, eaten together, and celebrated together. Legends vary from tribe to tribe.

The legend of “Three Sisters” originated when a woman of medicine who could no longer bear the fighting among her three daughters asked the Creator to help her find a way to get them to stop. That night she had a dream, and in it each sister was a different seed. In her dream, she planted them in one mound in just the way they would have lived at home and told them that in order to grow and thrive; they would need to be different but dependent upon each other. They needed to see that each was special and each had great things to offer on her own and with the others. The next morning while cooking breakfast, she cooked each daughter an egg, but each was different: one hard-boiled, one scrambled, and one over-easy. She told her daughters of her dream and said to them, “You are like these eggs. Each is still an egg but with different textures and flavors. Each of you has a special place in the world and in my heart.” The daughters started to cry and hugged each other, because now they would celebrate their differences and love one another more because of them. From that day on, Native people have planted the three crops together—Three Sisters helping and loving each other.

Three Sisters Legend

From <http://www.ncdcr.gov/Portals/7/Collateral/Database/F05.legend.three.sisters.pdf>

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A long time ago, three sisters lived together in a field. These sisters were quite different from one another in their height and in the way they carried themselves. The little sister was so young and round that she could only crawl at first, and she was dressed in green. The second sister wore a bright, sunshine yellow dress, and she would spend many an hour reading by herself, sitting in the sun with the soft wind blowing against her face. The third was the eldest sister, standing always very straight and tall above the other sisters, looking for danger and warning her sisters. She wore a pale green shawl and had long, dirty-yellow hair. 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 strange bird came to the field: a crow. He talked to the horses and other animals, and this caught the attention of the sisters. Late that summer, the youngest and smallest sister disappeared. Her sisters were sad. Again the crow came to the field to gather reeds at the water's edge. The sisters who were left watched his trail as he was leaving, and that night the second sister, the one in the yellow dress, disappeared. Now the eldest sister was the only one left. She continued to stand tall. When the crow saw how she missed her sisters, he brought them all back together, and they became stronger together again. The elder sister stands tall looking out for the crow to this day