

Three Sisters Gardening Lesson

Lesson Name	Gardening Project	
Topic:	Growing the 3 sisters in students' own gardens	
Objectives:	<p>Students receive seeds and cultivate their own gardens.</p> <p>Students will learn about the significance of the three sisters to Native people</p> <p>They will receive the seeds and lessons to successfully grow their vegetables</p> <p>Use the Native Way of Knowing about complimentary plantings and the benefits of planting this way</p>	
Internal/External Assets addressed	<p>Internal</p> <p>Commitment to Learning-traditional ways</p> <p>External</p> <p>Constructive use of time-cultivating garden</p>	
Standards or language proficiency descriptors:	<p style="text-align: center;">Productive</p>	<ul style="list-style-type: none"> ● Produce learned words and phrases and use gestures to communicate basic information. ● Express ideas using visuals such as drawings, charts, or graphic organizers. ● Write or use familiar words and phrases related to everyday and academic topics. <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p style="text-align: center;"><i>Communities</i></p> <p style="text-align: center;"><i>Participate in Multilingual Communities at Home & Around the World</i></p> <p>Standard 5.1: Students use the language both within and beyond the school setting.</p> <p>Standard 5.2: Students show evidence of becoming life-long learners by using the language for personal enjoyment and enrichment.</p> </div> <div style="width: 45%;"> <p style="text-align: center;"><i>Cultures</i></p> <p style="text-align: center;"><i>Gain Knowledge and Understanding of Other Cultures</i></p> <p>Standard 2.1: Students demonstrate an understanding of the relationship between the practices and perspectives of the culture studied.</p> <p>Standard 2.2: Students demonstrate an understanding of the relationship between the products and perspectives of the culture studied.</p> </div> </div>

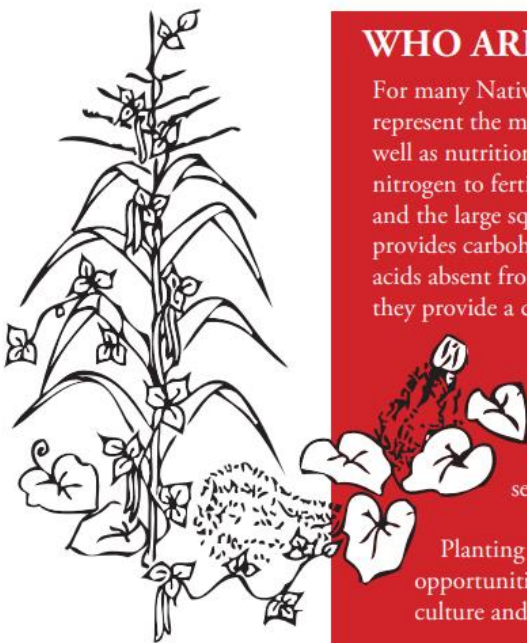
<p>Words of the week</p>	<p>Squash</p> <p>Corn</p> <p>Beans</p> <p>Water</p> <p>Sun</p> <p>Soil/Dirt</p>
<p>STEPS to success</p>	<p>1) Students attend the Three Sisters presentation</p> <p>2) Students receive their materials and draw their garden layout</p> <p>3) They go home to begin their garden and document their progress with a journal or photos.</p> <p>Language Focus: Write the name of each vegetable in your indigenous language on your plant markers</p>
<p>Guiding Questions:</p>	<p>1) What is the significance of the 3 sisters?</p> <p>2) Why do we plant them the way we do? Did a certain garden layout work better than another?</p> <p>3) What goes into cultivating your garden?</p>
<p>Measurable student outcomes:</p>	<p>Students can share photos of how their garden is growing by pictures.</p>
<p>Traditional Knowledge or Teachings</p>	<p>The Native way of knowing about planting vegetables together to encourage growth is something we've known for thousands of years.</p> <p>How did native americans know about biodiversity?</p>



HOW TO GROW A THREE SISTERS *Garden*

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The mission of Native Seeds/SEARCH (Southwestern Endangered Aridland Resources Clearing House) is to conserve, distribute, and document the adapted and diverse varieties of agricultural seeds, their wild relatives and the role these seeds play in cultures of the American Southwest and Northwest Mexico.



WHO ARE THE THREE SISTERS?

For many Native American communities, three seeds - corn, beans, and squash - represent the most important crops. They complement each other in the garden as well as nutritionally. Corn provides tall stalks for the beans to climb, beans provide nitrogen to fertilize the soil while also stabilizing the tall corn during heavy winds, and the large squash leaves shade out weeds and help retain soil moisture. Corn provides carbohydrates and the dried beans are rich in protein and have amino acids absent from corn. Squash provides different vitamins and minerals. Together they provide a complete, balanced diet.

The tradition of calling these crops the "Three Sisters" originated with the Haudenosaunee, also known as the Iroquois, where these seeds were planted together in the same mound. In the Southwest there is a tradition of planting the sisters together as well as in separate fields with wide plant spacing to maximize limited water.

Planting these three crops together offers interdisciplinary learning opportunities about biodiversity, companion planting, and Native American culture and for gardeners of all ages and backgrounds.

WHEN TO PLANT

The crops grown in a Three Sisters Garden are warm season crops and do not tolerate frost. Plant seeds for the three sisters outside with the spring, summer, or monsoon planting periods. We recommend directly planting all of these types of seeds as they will fare better than transplants.

Sister Corn should be planted first so that it can grow tall above the other crops. Plant seeds for Sister Bean 2-3 weeks later, or at least when the corn is a few inches tall. Plant the squash seeds 1 week later after the beans have emerged.

WHAT VARIETIES TO PLANT

The corn should be a tall variety so the bean plants have plenty of room to climb and do not overcrowd the corn. The bean variety should not be a bush bean. Lima, runner, and common bean types do best. Teparies often receive too much water and humidity in this type of planting and do not grow well. Traditional squash varieties can grow vines up to 15 feet long and therefore need adequate space to sprawl. Consider growing more compact summer squash varieties if you do not have much space. Be sure to choose varieties that fit your elevation.

THE OTHER SISTERS

For some cultures, other crops are also important in traditional agriculture. For example, tobacco is equally sacred as the Three Sisters in much of the Southwest. Sunflowers and amaranth are considered other sisters. They offer shade to the other sisters during the heat of the afternoon, and attract pollinators. Amaranth's edible seeds and greens contribute to a nutritionally balanced diet, as well as provide additional stalks for beans to climb. Consider incorporating tobacco or circling your Three Sisters Garden with amaranth. **Please note: While sunflowers are traditionally seen as an "other sister", because of their allelopathic nature, it is not suggested planting older varieties of sunflowers in a Three Sisters Garden.**

Because they have a similar growing habitat, other cucurbits including watermelon, melons and gourds can be substituted for the squash.

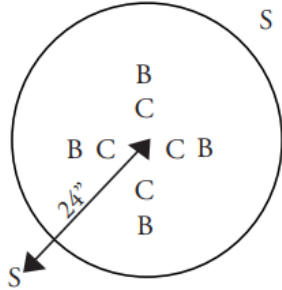
Suggested varieties:

Chapalote Pinole Popcorn	New Mexico Bolita	BEAN
Dia de San Juan Dent	Hopi Purple String	
Flor del Rio Popcorn	Pima Orange Lima	
Rio Grande Blue Flour	O'odham Pink	
Tarahumara Maiz Caliente	Tarahumara Ojo de Cabra	
	Magdalena Big Cheese	SQUASH
	Navajo Hubbard	
	Tarahumara Pumpkin	
	Gila Pima Hal	
	Calabasa de las Aguas	

SUGGESTED THREE SISTERS GARDEN LAYOUTS

There are numerous configurations to Three Sisters Gardens. Below are some examples but use your creativity and find what works with the space you have. The main consideration is to give the individual plants enough space to thrive. Layout Key: C= Corn Seed B=Bean Seed S=Squash Seed

THREE SISTER MOUNDS



This is the classic three sisters layout similar to Iroquois gardens. Mound the soil approximately 4 inches high with a small well in the center. It should resemble a moon crater.

Plant 4 corn seeds in the center in the well, 6 inches apart and 1-3 inches deep. After corn is about 4 inches tall, plant 4 beans seeds halfway down the sides of the mound at least 3 inches from the corn plant, 1 inch deep. After the beans have emerged, plant 2 squash seeds 24 inches from the center of the mound on opposite sides. Train squash to vine outward from the mound and not crowd the corn and beans. Place additional mounds 3-4 feet apart from the center.

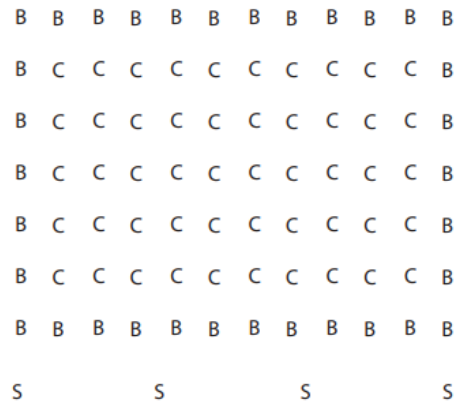
Within this layout it can be hard to harvest beans and corn at the center of the mounds, particularly if there are multiple rows of mounds. Therefore it is recommended to have a single or double row of mounds that can be approached from each side or create walking paths between mounds.

THREE SISTER FIELD

This layout is ideal for corn pollination because the corn is planted in a large block. This layout is similar to traditional Tarahumara fields.

Plant corn 1-3 inch deep, 6-12 inches apart. The size of the interior block of corn can vary but ideal is at least 5 plants on each side. The pole beans can be planted 1 inch deep and close enough to climb the corn, 3-12 inches away. Allow the corn to emerge and grow 4 inches high before planting the beans.

Plant squash in a row set back 3 feet from a bean row. Plant 2-3 seeds per location 3 feet apart. Isolating the squash to one side of the field makes access to the beans and corn easier.



THREE SISTER LANDSCAPE

In this layout, plant separate areas or fields of corn, beans, and squash. Each year shift the crops to the area to the right. Corn is a heavy feeder, meaning it requires fertile soil. Follow the beans with corn as the beans will have added nutrients to the soil. Plant corn and bean seeds 6-12 inches apart in row that are 18 inches apart. Squash can be planted in rows 3 feet apart.

