

MATERIALS

- 8 marker sticks
- Hand trowels
- 8 Yardsticks
- (2) 9" compass strings (a marker stick tied to an 9" string with a loop tied at the other end)
- Popcorn seed
- 8 small watering cans

PREPARATION

- Within the three sisters beds, use a marker stick to mark the location of each mound to be built. The center of each mound should be 3 feet from the next. A 3'x12' bed will have four mounds.
- Measure four inches up each marker stick from the soil level. Mark the four inch spot clearly with a sharpie on both sides of the marker stick.
- Tie a loop at the end of a string. Measure 9" from the loop to the other end of the string. Tie a marker stick to this end of the string.

PROCEDURE

Part 1: Make Planting Mounds

- Gather as a group around the Three Sisters beds. "In these garden beds, we are going to plant three different edible crops – corn, beans, and squash. This special combination of plants is referred to as the Three Sisters because they work in harmony with one another. Today we are going to plant the corn. Next week we will plant squash, and the following week we will plant beans."
- "The Iroquois Indian method of planting the Three Sisters involves creating mounds. Mounds provide two advantages: first, they allow water to drain from the soil more quickly, keeping the seeds from rotting. Second, they allow the soil to warm up more quickly, creating optimal conditions for the three sisters."
- Demonstrate how to create a circle around the central marker stick: Loop the compass string onto the marker stick in the ground. With one hand, hold the marker stick stable. With your other hand draw a circle in the soil around the central marker stick, keeping the string taught. Have a few student volunteers draw circles around each of the remaining sticks.
- Next, demonstrate how to build a mound. With a trowel, scoop small shovelfuls of soil from outside the circle you created to inside the circle, around the popsicle stick marker. Continue scooping the soil from all directions until the mound has reached the 4" mark on the stick. The entire top of the mound should be flat.
- Assign groups of three or four to each circle. Distribute trowels. Have students begin building mounds. As students work, make sure they are scooping soil evenly from the rest of the bed (not digging holes). When the mounds are complete, collect hand trowels. Have students smooth flat the surface of the mound. Leave the popsicle stick in the center of the mound.

Part 2: Plant Corn

- Demonstrate how to create holes for each of the seeds (four per mound): Using a ruler, measure 4.5 inches from the center stick. At this point, use your finger to create a hole 1 inch deep. Next, make three more holes in the same mound, each 4.5 inches from the center stick so that you have created the pattern of a cross. In their groups, have students create planting holes in the same manner. Check their work, especially the depth of each hole.
- Introduce the corn seeds. "Corn likes to have some room. If it senses too many other corn plants nearby, it will not grow very tall. That's why we only plant one seed per hole. To plant, drop a seed in the hole, cover it with soil, and pat it down gently." Distribute four seeds per group and have students plant their seeds.
- Each group should have a small watering can. Students take turns watering their seeds.

Planting the Three Sisters – Corn

Food & Technology

ENGAGE

Arrange students in a circle around the Three Sisters bed. “Corn is the first warm-season crop to be directly planted into the soil.” Pass around a small container of corn seed for students to examine. “What part of the plant do we harvest and eat?” (Seeds) “Corn belongs to the Grass Family and has been cultivated for centuries as a staple food crop. Depending on the variety, corn seed can be eaten on the cob, ground into flour, or processed for livestock feed. Naturally, popcorn seeds (featured in this lesson) are saved for popping.”

OBJECTIVES

- Students will be introduced to the cultural history of the Three Sisters
- Students will understand how corn, beans, and squash work together in agricultural harmony
- Students will understand the nutritional benefits of eating corn, beans, and squash
- Students will understand how to plant corn seeds

EXPLAIN

Three Sisters: Working in Agricultural and Nutritional Harmony

The Three Sisters is an ancient companion planting scheme that consists of corn, beans, and squash. This special growing system was developed by Native American farming societies and later passed onto European settlers as they arrived in the New World. Corn, beans, and squash are referred to as the “three sisters” due to the fact that they thrive when planted together, with each plant serving and benefiting the others in some way.

Under this system, the corn seed is planted first. Once the corn has reached several inches in height, the beans are planted. The growing corn plant provides a natural trellis for the bean vines. As bean vines grow up and around the corn, they return the favor by supplying it with some additional structural support. This helps to prevent the shallow-rooted corn plant from toppling over under strong winds. Also, beans are a nitrogen-fixing legume, which means that they are able to capture nitrogen from the air and “fix” it in to the soil, providing the corn and squash plants with a steady supply of nitrogen for healthy growth. Squash spreads itself out over the soil surface. Not only does the squash shade out unwanted weeds, but it also provides the corn and bean plants with an all-natural mulch. This helps conserve moisture and regulate temperature.

Corn, beans, and squash have been a crucial part of human survival for centuries. When consumed together, the three vegetables complement each other nutritionally. Corn provides plenty of carbohydrates and is full of amino acids. Beans are packed full of protein and provide two of the essential amino acids not found in corn. Squash contains vitamin A and fiber, and its seeds have essential fatty acids that corn and beans lack.

ADDITIONAL CONTENT INTEGRATION *(see previous page)*

As a class, write and act out a three sisters play. Tie in themes of community and symbiotic relationships if desired. Consider including Native American culture into the story as well as facts about each crop.

ADDITIONAL MATERIALS

- Costumes and props for skit (optional)

EVALUATE

Journal prompt: What three plants make up the “Three Sisters”? How does each plant help the others?