Planting Three Sisters Beans

Edible Schoolyard Pittsburgh





MATERIALS

- Hand trowels (1 per student group)
- Yardsticks (1 per student group)
- Bean seed
- Watering can or hose

PREPARATION

- Place buckets full of garden gloves and hand trowels by "Three Sisters" bed(s)
- Place a pre-filled watering can or hose by bed(s)

PROCEDURE

Part 1: Examine Corn and Beans; Remove Weeds

- As a class, gather around Three Sisters bed. "Two weeks ago, we planted the first round of seeds for our Three Sisters bed. By now, those seeds have grown pretty tall. Do you know/remember what we planted? (Corn) One week ago, we planted the second round of seeds. By now, those seeds have germinated. Do you know/remember what we planted? (Squash)"
- "Today, we will plant the third and final round of seeds to complete our Three Sisters beans." If students planted corn or squash during the previous weeks, have them break off into their respective work groups gather around "their" mound. If not, divide the class into groups of three and arrange them evenly around the garden bed so that each work group is placed in front of an existing mound.
- "First, let's measure how tall our corn plants have grown since they were planted." Pass out rulers to student groups and have them measure corn plants. Wait until all groups have finished, then encourage student responses. Remind students to listen and take note of the highest and lowest measurements. "What is our range of measurements?" For the bean plants, count the number of leaves. Do any of the squash have their true leaves?
- Now that students have identified the corn and squash plants, scan the garden bed for any weeds that have popped up in the meantime. Remove weeds and select a student to transport them to the compost pile.

Part 2: Plant Beans

- "Now, we are going to prepare the soil for planting. Since we are planting bean seeds directly next to the corn plants, we have to be very careful as we prepare the soil for planting." Select a corn mound to serve as an example. Point out the two tallest plants. Select a location about 6 inches away from each plant for the beans. Make these locations by poking a small hole in the soil. Instruct student groups to do the same.
- Demonstrate how to use a hand trowel to lightly loosen the surface of the soil. Pass out hand trowels and have students do the same (remind them to work carefully). Collect hand trowels then poke a hole in the loose soil about as deep as your pinky finger (about 2"). Students repeat. Check students' work then distribute two seeds to each group. Students plant seeds then lightly cover them 2" of soil. Gently pat soil down and water well. Pass a watering can around the group so that each student can water their seed. Collect materials.

ENGAGE

Gather around the Three Sisters bed(s). "Beans are the second seed to go in the ground. The botanical name for the common bean is *Phaseolus vulgaris*. This specific variety, or *cultivar*, of bean is known as 'True Red Cranberry'". Introduce container of bean seed and pass it around for students to examine. "True Red Cranberry is an heirloom bean seed, which means it has been saved and passed down through generations of farmers. True Red Cranberry is one of the oldest varieties of American bean seed and is said to have first originated in the northeastern United States."

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 bean 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. Squash, another shallow-rooted plant, 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. 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.

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 its seeds contains essential fatty acids that corn and beans lack.

ADDITIONAL CONTENT INTEGRATION (see previous page)

After students examine corn growth, discuss recent weather patterns. "What has the temperature been like over the past week? How many times has it rained? Did we receive any hard rainstorms or hail? Consult max/min thermometer, if present. "Corn requires temperatures between 60°F – 75°F for germination and growth. Did recent temperatures fall within that range?" As a class, discuss how recent weather patterns might have affected corn growth.

Additional Materials

- Small container of bean seed
- Max/min thermometer

EVALUATE

Journal prompt: How does the corn and beans work together to help each other grow?