Duration
30-40 minutes

Location
North Barn on Flanders Road

Supplies
Soil. Seeds, markers, craft sticks

Standards
Teachers: Your field trip to the farm or pond easily connects to Next Generation Science and Connecticut Common Core Standards. We create an opportunity for students to compare farm life from the past to a farms contribution to our community today. We can custom design programs to meet your needs.

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THE THREE SISTERS GARDEN

Grade Level/Range: Grades K-5

Teachers: Growing a Three Sisters garden is a wonderful way to feel more connected to the history of this land, regardless of our ancestry. The Three Sisters are common vegetable crops to many Native American tribes. Corn, beans and squash grow well together, benefit each other while growing and are a great way to introduce companion gardening to your students.

OBJECTIVE

- Students will investigate the traditional Native American practice of planting “three sisters" crops (corn, beans, and squash) together in mounds and understand the benefit to planting these crops together.
- Students will learn about Native American history and legends.
- Students will understand companion planting concepts and how the diverse growth habits and biology of certain plants can complement each other to form a symbiotic or mutually beneficial relationship

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SUGGESTED READING PRIOR TO FIELD TRIP

Corn is Maize: the Gift of the Indians by Aliki
Students can read a simple description of how corn was discovered and used by Native Americans and how it came to be an important food throughout the world. Popcorn, corn on the cob, cornbread, tacos, tamales, tortillas, and more are all made from this amazing plant.

Corn by Gail Gibbons
Perennial nonfiction favorite Gail Gibbons turns her spotlight on corn. Popcorn, corn on the cob, corn dogs, cornflakes - corn is used in many children's favorite foods. This book offers a cornucopia of information about the history of corn as well as details concerning planting, cultivation, harvesting, and its many uses.

ACTIVITIES

Students will plant beans, corn and squash together after hearing a Native American Legend about Three Sisters Garden. (See below)

Materials needed
Seeds (pole beans, corn and winter squash)
Cow pots
Soil (see S.O.I.L lesson/planting for pollinators)
3 Plant markers per student to decorate Three Sisters
Permanent markers

The History of Corn (Maize)

According to Iroquois legend, corn, beans, and squash are three inseparable sisters who only grow and thrive together. This tradition of inter-planting corn, beans and squash in the same mounds, widespread among Native American farming societies, is a sophisticated, sustainable system that provided long-term soil fertility and a healthy diet to generations. 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, prickly squash leaves shade the soil, preventing weed growth, and deter animal pests. The three sisters also complement each other nutritionally.

Native Americans had rituals, celebrations, stories and ceremonies of thanksgiving for the planting and harvesting of corn.

VOCABULARY

Companion planting- the close planting of different plants that enhance each other's growth or protect each other from pests.

Legend- a nonhistorical or unverifiable story handed down by tradition from earlier times and popularly accepted as historical

Legume- A legume is a plant in the family Fabaceae or Leguminosae. Legumes are grown agriculturally, primarily for their food grain seed (example beans and lentils, or generally pulse), for livestock forage and silage, and as soil-enhancing green manure. Most legumes have symbiotic nitrogen-fixing bacteria in structures called root nodules. Well-known legumes include alfalfa, clover, peas, beans, lentils, soybeans, and peanuts.

Nitrogen-a chemical element with symbol N and atomic number 7. It was first discovered and isolated by Scottish physician Daniel Rutherford in 1772. Nitrogen is essential to life on Earth. It is a component of all proteins and it can be found in all living systems.

EXTENSIONS

Three Sisters Journal
Students can use math and science skills during the growing season to calculate harvest time, measure plant size and collect data during observations

Culinary Discoveries
Three sisters garden provide nutritious foods when freshly picked and store well when dry. Have students research the nutritional value of each of the three sisters and the benefits of eating them in combination. They should discover that corn supplies carbohydrates and a variety of important amino acids. Beans have protein, including two essential amino acids that corn lacks. Squash contributes vitamin A. Squash seeds also contain quality fats that corn and beans lack. Encourage students to learn about some of the many ways — from grinding corn to making breads — in which different native cultures prepare and eat the three sisters.

Cornhusk Creations
Cornhusk dolls have been made by Northeastern Native Americans probably since the beginnings of corn agriculture more than a thousand years ago. Brittle dried cornhusks become soft if soaked in water and produce finished dolls sturdy enough for children's toys.
In addition to their use for amusement, some cornhusk dolls are used in sacred healing ceremonies. A type of Iroquois cornhusk doll was made in response to a dream. The doll was then discarded, put back to earth to carry away the evil of the dream.

TEACHER RESOURCES

Native American Gardening by Michael J. Caduto and Joseph Bruchac
This book provides stories, projects, and recipes that can easily be adapted for use in the classroom. Native American Gardening brings the magical world of stories together with the nurturing experience of gardening. Native stories lay the groundwork for understanding, while hands-on activities show readers how to continue the work of generations of Native farmers.

Nativetech.org The History of Corn
http://www.nativetech.org/cornhusk/cornhusk.html

Cornell Garden Based Learning
http://gardening.cals.cornell.edu/lessons/curricula/the-three-sisters-exploring-an-iroquois-garden/

A LEGEND: "THE THREE SISTERS"

Shared with respect to all Native Americans

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.

THE THREE SISTERS GARDEN

Teachers: Your field trip to the farm easily connects to Connecticut Common Core Social Studies Standards. We create an opportunity for students to compare farm life from the past to a farms contribution to our community today.

CT Common Core Science Standards

PK.1	Objects have properties that can be observed and used to describe similarities and differences
PK.2	Many different kinds of living things inhabit the earth.
PK.3	Weather conditions vary daily and seasonally
PK.4	Some objects are natural, while others have been designed and made by people to improve the quality of life.
K.1	Objects have properties that can be observed and used to describe similarities and differences
K.2	Many different kinds of living things inhabit the earth
K.4	Some objects are natural, while others have been designed and made by people to improve the quality of life.
1.2	Living things have different structures and behaviors that allow them to meet their basic needs.
1.3	Organisms change in form and behavior as part of their life cycles.
2.4	Human beings, like all other living things, have special nutritional needs for survival
3.2	Organisms can survive and reproduce only in environments that meet their basic needs.
4.2	All organisms depend on the living and nonliving features of the environment for survival.

Connecticut Core Standards: http://ctcorestandards.org/?page_id=9591

Next Generation Science Standards

Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment
K-LS1-1., K-ESS2-2., K-ESS3-1. K-ESS3-3.
Weather and Climate,
K-PS3-1. K-PS3-2. K-ESS2-1. K-ESS3-2.
From Molecules to Organisms: Structures and Processes
1-LS1
Interdependent Relationships in Ecosystems
2-LS2-1. 2-LS2-2. 2-LS4-1
Earth and Human Activity
K-ESS3-1. K-ESS3-2. K-ESS3-3.

Next Generation Science Standards: http://www.nextgenscience.org

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