

The Three Sisters

Exploring an Iroquois Garden

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Human culture and horticulture—they are so closely tied! Horticulture is the art and science of growing fruits, flowers, and vegetables. It is a practice in which people from all cultures of the world have been absorbed for thousands of years. What better way to learn about a society than to explore the way that people grow and use food!

In this project, you will do just that. By looking at an Iroquois gardening method, you will gain a better view of Native American culture. Exploring the foods, the customs, and the stories that evolved from the planting of corn, beans, and squash—the Three Sisters—will help you understand the values that surround these crops.

Planting these three native crops will help you become familiar with a crop management system practiced by the Iroquois people. By experimenting with an Iroquois garden, you will learn some basic plant breeding concepts and see how crops respond to being planted together. You will also learn about the need for plant diversity and the importance of saving different plant species. Perhaps most importantly, you will learn about several different types of corn and why this plant has been so honored by the Iroquois.

The Iroquois people are actually a confederacy of six nations: the Mohawk, Oneida, Onondaga, Cayuga, Seneca, and Tuscarora.

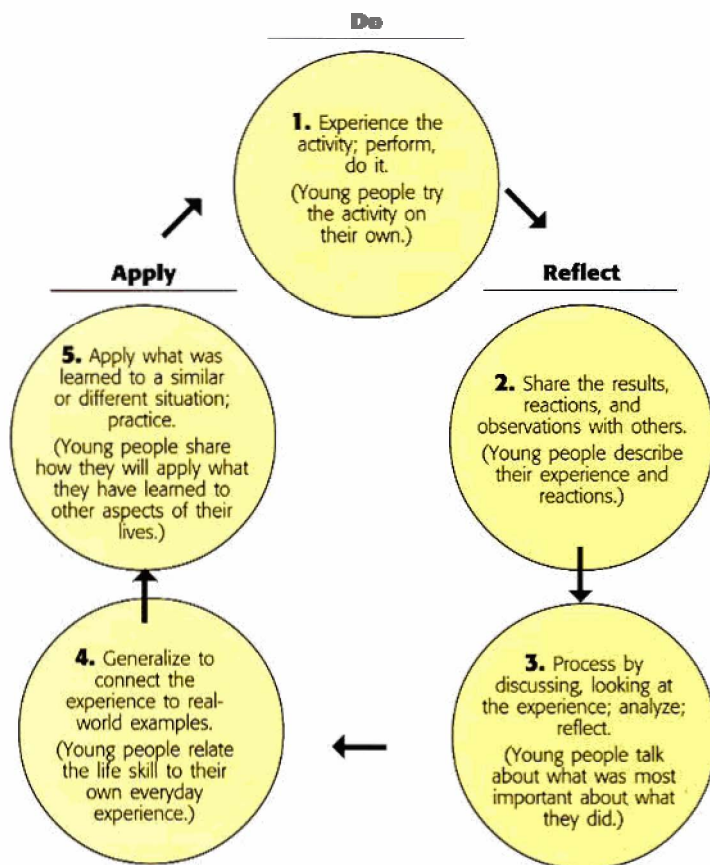
Native Americans call themselves the Haudenosaunee, meaning "people of the longhouse." The word Iroquois, which was used by the French to describe them, has become most familiar today and will be used in this publication.

Farming and plant breeding were not necessarily "men's work." In fact, among many Native Americans, such as the Seneca, the plant breeders and farmers have traditionally been women.

Experiential Learning

At the beginning of each activity you will see bulleted lists that describe the life skills and project skills to be highlighted. The activities are ideal for helping youth ages nine to twelve learn about native culture through gardening in informal groups such as 4-H clubs, school-aged child care settings, other informal educational environments, home schooling, or school classrooms. The activities were pilot tested throughout New York State in these diverse educational surroundings and in many locations across the

United States. They have been adapted to other age groups as well. Your challenge will be to lead as needed while encouraging young people to explore the activity, learn from the experience, and share their results and observations; please use the experiential learning model below as your example for this process. You will be influential in helping youth see how these life skills can be applied to other situations—an important part of this process. Most important, have fun!



Source: Adapted from *Curriculum Development for Issues Programming: A National Handbook for Extension Youth Development Professionals* (1992), Cooperative State Research, Education and Extension Service, U.S. Department of Agriculture, pp. 27–28. Also in J. W. Pfeiffer and J. E. Jones (1985), *The Reference Guide to Handbooks and Annuals*, Vol. 1–10, 1972–1985 (San Diego: University Associates Publishers and Consultants, 1985).

The Three Sisters

A Planting System

Corn, beans, and squash are considered by the Iroquois to be special gifts from the Great Spirit. The well-being of each crop is believed to be protected by one of the Three Sisters, spirits that are collectively called De-o-ha-ko. This word means "our sustainers," or "those who support us."

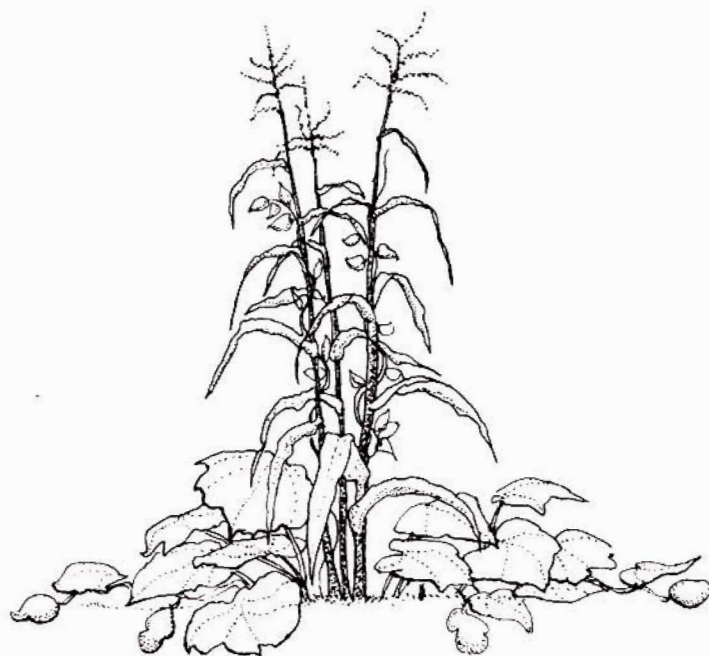
The Three Sisters system refers to the planting of corn, pole beans, and squash or pumpkins together in hills. The practice of planting more than one type of crop together is called interplanting. Although this planting system is not common in the United States today, it is in fact a well-thought-out growing method that is used extensively in other countries such as Mexico. Interplanting is coming back into favor for some crops because farmers are finding that large plantings of one crop can have some major disadvantages.

In the Three Sisters planting system, raised areas are made about 3 feet apart, both within and between rows. Several seeds of corn are planted in small holes and covered. As the emerging corn plants are weeded, the soil is gently mounded,

or hilled, around the corn plants. When the corn is about 4 to 6 inches high, bean and squash seeds are planted in the hills. Bean seeds are placed in each hill, and squash is planted in about every seventh hill. The three crops grow together for the remainder of the season.

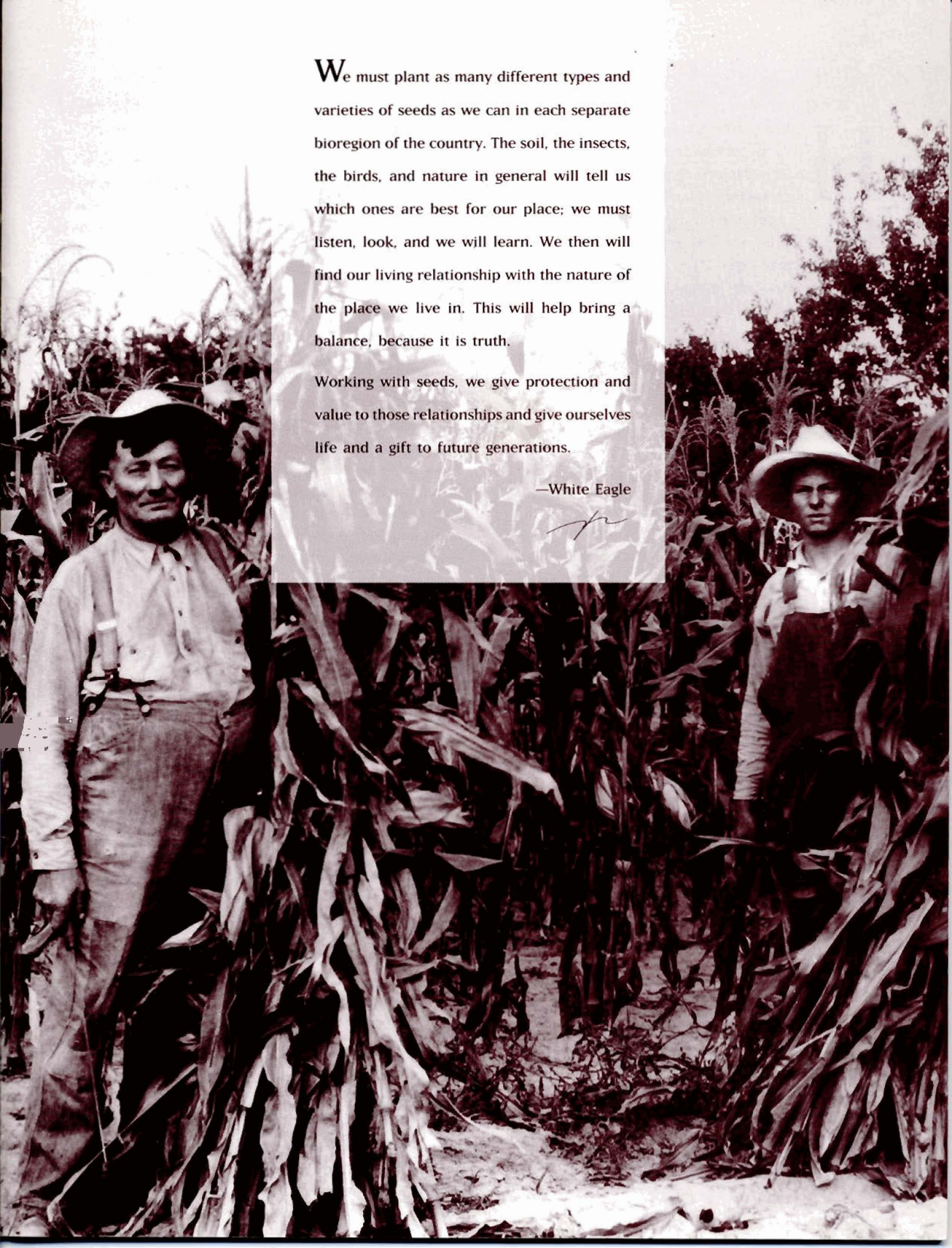
Interplanting has many advantages. Iroquois farmers adapted this ecological planting method to meet the needs of their crops and their people. Interplanted crops are not as attractive to pests, while large plantings of one crop tend to have more pest problems. The hills provide support around the base of the plants, so they are not as prone to damage from wind. Also, interplanting helps create a uniform stand of corn. The corn forms a support for the beans, and the squash covers the soil, helping to control weeds.

Beans are in the legume family, and legumes take nitrogen from the air and convert it into a form that plants can use. This is important, because corn demands a fairly high amount of nitrogen. The nitrogen "left" in the hill by the beans is available for next year's corn crop. This is one reason the Iroquois planted in the same hills for several years.



The planting of corn, beans, and squash has been more than a gardening activity for the Iroquois. The Three Sisters system also has provided a varied diet, keeping the people healthy for hundreds of years.

Customs, stories, myths, and legends have surrounded the agriculture of the Iroquois. Many customs have been carried on as a means of respecting and honoring the plants that have given life to the Iroquois culture. In short, the Three Sisters system has helped support a culture whose people have used the land without destroying it.



We must plant as many different types and varieties of seeds as we can in each separate bioregion of the country. The soil, the insects, the birds, and nature in general will tell us which ones are best for our place; we must listen, look, and we will learn. We then will find our living relationship with the nature of the place we live in. This will help bring a balance, because it is truth.

Working with seeds, we give protection and value to those relationships and give ourselves life and a gift to future generations.

—White Eagle



A Legend

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 courtesy 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 awhile 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 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 her 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.

Every child of today knows these sisters and needs them just as much as the little Indian boy did. For the little sister in green is the bean. Her sister in yellow is the squash, and the elder sister with long flowing hair of yellow and the green shawl is the corn.

—A Mohawk legend

Think about the following questions:

- How did you feel when the sisters left, one by one?
- Did you notice anything significant about the order in which the sisters left?
- Can you remember the legend and share it with a friend?

The Need for Diversity

Marvin Pritts, professor, Department of Fruit and Vegetable Science, Cornell University

As a planting system, the Three Sisters has more variety, or diversity, than a planting of a single crop. In addition, native peoples traditionally plant many varieties of each "Sister." How is this different from contemporary agriculture? Why might this matter?

- In 1970 the United States lost nearly half of its corn crop to a disease called southern leaf blight. This happened because most of the planted varieties shared a single female parent from Texas. The parent passed along to each offspring a trait that made it susceptible to this disease.

- In 1845, 75 percent of Ireland's potato crop rotted in just weeks from a disease, and a million people starved. Although more than 100 species of potato exist in Central and South America, explorers brought back a single variety to Ireland. At

that time, its susceptibility to disease was unknown. Even today the world depends on twelve varieties from a single species for 85 percent of the potato harvest.

- In 1946 in the United States a blight destroyed nearly all the oat crop. Although thirty varieties were planted, all shared a single parent.

Each of these examples demonstrates the importance to agriculture of maintaining plant *diversity*.

What is plant diversity? Basically, it is the differences among groups of plants, which are determined by the

traits each plant group inherits. Groups of plants are classified into varieties, races, or species, depending on the degree of differences among them. Scientists have described more than 250,000 species of flowering plants and hundreds to thousands of species of conifers, ferns, fungi, and other plants.

Scientists estimate that there are more than 250 races of corn in the world, and they have described thousands of varieties. Only a few of the best varieties, however, are widely planted. When a large amount of land is planted to a single variety to ensure

uniformity, the risk of a disease or insect destroying the entire crop becomes greater. This is because no variety is resistant to all potential pests.

Hundreds of plant species are eaten for food throughout the world, but the majority of food comes from only four: corn, wheat, rice, and potatoes. With the increasing world population and the decreasing use of pesticides, the species and races that can give improved yield, nutritional quality, and pest resistance must be preserved.



Diversity All around You

Wouldn't it be boring if everyone looked alike?

Humans are lucky to be such diverse creatures! To help you think of diversity in familiar terms, look at the people around you. Although you, your friends, and your family are members of the same species, you each are unique individuals with traits that are different from those of any other human. This is an example of diversity among humans.

You can learn about diversity among plants in your own backyard. All you need are paper and a pencil.

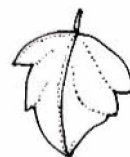
Go outside and select a single plant species of which you can find a sizable number. Choose from wild plants such as sugar maple, dandelion, ground ivy, or goldenrod—there are many to select from!

When you have decided on a plant species, begin tracing on paper the shapes of the leaves from different plants of that species. As you do this, note the different characteristics of the leaves. Are each of the leaves exactly alike? Compare the drawings of leaf shapes. Some leaves may have fewer lobes or divisions, and some may be more deeply serrated, or toothed. Some may be much larger than others.

You may note differences in other leaf characteristics as well. Look for subtle changes in color. A soft fuzz may occur on some of the leaves and not on others. All of these subtle differences represent plant diversity!

Now, back to the Three Sisters. The Iroquois grow many types and varieties of corn, beans, and squash in one planting.

- How does this growing system differ from commercial agriculture today?
- What are the advantages of growing a few high-yielding varieties of corn in large plantings?
- Which system is best in terms of diversity?
- If a new strain of a disease were to appear, which system would be better for long-term survival of the planting?



Digging Deeper: Getting to Know Sister Corn

When the word *corn* is mentioned, what do you think of? Most likely you first think of sweet corn, that favorite food of summer. Corn chips and other foods such as tortillas also may come to mind. You are less likely to think of corn as "the most important American Indian contribution to world civilization. . . appearing in Christopher Columbus's log at least twice during his first voyage."^{*}

Corn is more than a sweet summer delight and a snack food. It is a crop rich in history. In Iroquois culture, raising corn is an essential part of life.

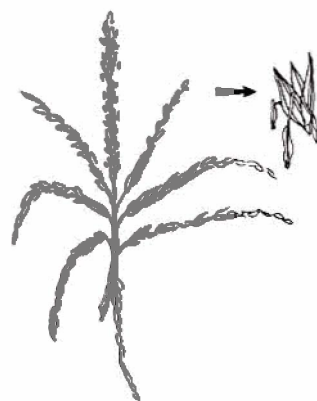
Corn is our most important native crop. Called *mahiz* by Taino, the first Native Americans to meet Columbus, this member of the grass family is known by much of the world as maize and by scientists as *Zea mays*.

The corn that we know today has a rich and well-developed history in many different Native American cultures. Its origins can be traced to Mexico, where corn was first raised about 7,000 years ago. Farmers in Mesoamerica probably crossed wild grasses to

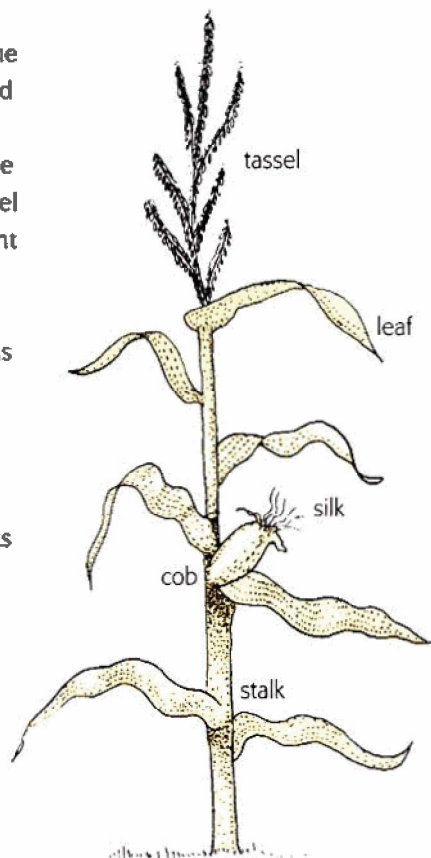
develop a new type of grain. They saved the best seed to replant and nurtured the young maize plants by weeding and watering. Aztecs, Incas, and Mayas used this grain as a staple crop, learning ways to prepare and preserve it. Eventually, maize spread throughout Central America and into both South and North America. All these native cultures regarded maize as a gift from their creator.

Corn is monoecious (mon-ee-shuss), which means that there are both male and female flowers on each corn plant. While many flowering plants contain male and female parts within the same flower, in corn the male and female flowers are in different locations. The male flower is known as the tassel and rests on top of the plant in the form of a branching head. The female flower is located between the sheaths of the leaf and stem. It consists of a collection of hairs, called silks, enclosed in the husks of what will become the ears. These silks are pollen-receiving tubes.

Because corn fruits the year it is planted and has both male and female flowers, it is well suited for breeding work. The pollen that is transferred from the male to the female flowers generally travels with the wind, and much cross-pollination occurs. Breeders cover young ears with bags to prevent random pollination. When the silks appear, breeders uncover the ears and place on the silks pollen from plants with desired qualities, such as disease resistance, earliness, or large size. This keeps unwanted pollen from mixing up the cross.



Tassels with individual flower (male)



^{*} José Barreiro. A Season of Corn. In: *Indian Corn of the Americas, Gift to the World, Northeast Indian Quarterly*. Ithaca, N.Y.: Cornell University American Indian Program, spring/summer 1989, p. 9.

Although there is one botanical species of corn, many types, or races, exist, and each race consists of many varieties. These varieties freely cross-pollinate. The types of corn frequently grown in the United States include flint, flour, dent, and sweet corn and popcorn. There is also a pod corn often referred to as "grandfather corn." This ancient corn has an unusual appearance; each kernel is covered in its own husk.







Different types of corn have various uses. For example, the hard, flinty kernels of flint corn are best suited for use in foods such as hominy or grits. Flour or soft corn is so-named because it makes an excellent-quality flour. Much of the corn grown today in the United States is yellow dent. Although dent corn is often fed to animals in this country, it is well suited to grinding and is used as cornmeal in many foods. Sweet corn and popcorn speak for themselves!

Despite all the corn products on our grocery shelves, we eat only about fourteen or fifteen of every hundred bushels grown in the United States. Most is fed to live-stock or used in products such as explosives and paper products. More than a thousand modern items come from corn!

The decorative corn associated with Halloween and other harvest celebrations is often called Indian corn, but in fact all corn is American Indian corn. American Indians developed the types

mentioned above long before Europeans came to the Americas. American Indian farmers were good plant breeders. They kept types separate by preventing cross-pollination. Uniform, vigorous, high-yielding seed was saved and deliberately crossed to generate higher-yielding hybrids. Iroquois white corn is still grown and enjoyed today. Its nutrition and flavor make it an important ingredient in many foods, such as tortillas, breakfast cereal, and corn bread.

Corn Types or Races

Pop	Flint	Dent	Sweet	Soft or flour	Pod or "grandfather"
					
Kernels are hard and flinty throughout.	Each kernel is enclosed in a hard, flinty coat and has a soft, starchy substance in the center. Flint corn is best suited to the Northeast.	Kernels consist of a hard, flinty matter on the outside and a soft center; center "dents" are due to shrinking of the soft part of the kernel. Nearly all corn in the Midwest corn belt belongs to this race, as well as all silage and grain corns in New York.	Kernels consist of a translucent, homy material containing considerable sugar instead of starch.	The entire kernel is starchy and soft. This form of corn is frequently grown by Native Americans. The American Indian Agriculture Project at Cornell University is currently conducting research with Iroquois white flour corn.	Each kernel may be enclosed in a small husk, while the whole ear is enclosed in large external husks. When planted, pod corn often gives a crop of both podded and unpodded ears.

Corn varieties

Strawberry
Pretty Pops

Purple Husk
Vermont Yellow

Bloody Butcher
Truckers Favorite White

Golden Bantam
Sugar Buns

Hopi Blue
Iroquois White

Delaware Grandfather

An A-MAIZE-ing Grain

How many different types of corn and corn products can you find? Autumn is a good time to look for corn. Stores and roadside stands carry many decorative corns, particularly around Halloween. What type do you think they are? Many times, what is sold as Indian corn is dent corn, flint corn, or popcorn. How many different colors of corn can you find? If you collect them, save them for the diversity activity ("Diversity All around You") in the section "The Need for Diversity."

Which corn products are sold on the shelves of your family grocery store? Can you find blue cornmeal? Jars of baby or miniature corn?

Corn tamales or tortillas?
Flours made from corn?

Young children love to handle different-colored kernels of corn. The staff at a child care center in central New York built a low table with sides and filled the table with corn and beans of many colors. The children use it during the long winter months as an indoor activity center. They scoop up the grain in their hands and in containers, see the many colors, and let their imaginations run free! Young people also love to glue colored corn to construction paper to create corn mosaics.

Grandfather Corn

Carol Cornelius, assistant professor of humanistic studies and chair of American Indian Studies, University of Wisconsin at Green Bay

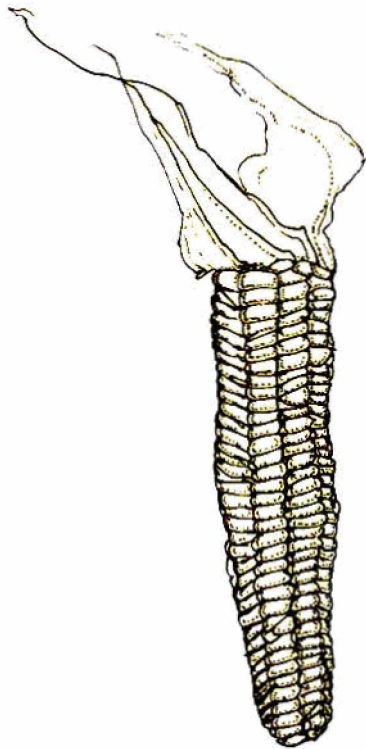
Sitting at the kitchen table at Crows Hill Farm [a Native American homestead just outside Ithaca, New York], I spotted many ears of grandfather corn hanging from the ceiling beams. Several years ago, José [Barreiro] showed me a partial ear of this dark, almost purple corn, which had a husk surrounding each individual kernel. He said a traveler had given it to him and asked him to plant it to preserve the seed. The ear was called Delaware grandfather corn.

Now, several growing seasons later, a wondrous phenomenon has developed, for the grandfather corn has yielded the dark purple ears of the original as well as beige or light-colored ears. The kernels on some ears are naked, that is, the kernels do not have individual husks, and on others individual husks surround each kernel. This unique corn has ears with kernels of red, white, yellow, deep navy, blue purple, and mixed colors, or calico. The stalks of this corn are much thicker than those of white or ordinary yellow corn, are extremely sturdy, and have purple streaks throughout. Grandfather corn grows much taller than regular corn.

Everyone who has seen the grandfather corn has asked where it came from and what it meant that so many [colors] came from one little half ear of corn. Repeatedly, the opinion has surfaced that the grandfather corn was an ancient genetic seed bank.

Traveling in Wisconsin and visiting with corn growers gave me the opportunity to tell them about the wondrous grandfather corn. At the Oneida reservation, a friend said he had grown the same corn. His description fit exactly. I asked where he had gotten the seed and he referred me to another friend who had gotten it from her mother. The story was that the mother's brother worked construction, and when digging up a site for a new highway in southern Wisconsin, he uncovered a small, sealed pottery bowl. Inside this bowl was the grandfather corn, which he gave to his sister, who gave it to her daughter, who gave it to the friend who planted it.

We wondered if the wandering traveler could have gotten the grandfather corn from Oneida and if that was the small ear that arrived in New York at Crows Hill Farm. The traveler originally told Barreiro that he had gotten the corn from a Seneca elder, but when asked, that elder said no, it wasn't from him, and we had a mystery. If the traveler ever wanders through again we'll be eager to ask him where he found that little half ear of this vigorous corn.



Foods Prepared from Corn

Corn has been enjoyed in its many growing stages for a long time. Sweet corn is typically harvested for peak sweetness in the milk stage, which occurs when the juice in the kernel is milky in color. Contemporary farmers often harvest corn for canning in the "dough" stage, when the sugar in the kernel is converting to starch and the kernel is more chewy and less sweet. Dent, flint, and flour corn and popcorn are harvested at the end of the season, when the kernels are mature and dry.

Much of Iroquois life has revolved around the planting, care, and harvesting of corn. It is not surprising, then, that many Iroquois dishes feature corn. Native American people have used corn for everything from beverages to puddings, casseroles, and soups. The Iroquois have been very creative in finding so many ways to prepare corn.

The following is a list of some common Iroquois fare of old. It was adapted from an extensive record of Iroquois uses of corn assembled in the early 1900s

by Arthur C. Parker, an archaeologist and an authority on Iroquois culture. Many of the foods will probably be familiar to you, such as boiled green corn (this is corn in the milk stage, in which we usually enjoy sweet corn), but some are very unusual. Although the text is true to Parker and refers to the use of these foods in the past tense, many are still enjoyed by Iroquois people today.

Leaf bread tamales: This dish was prepared from green corn. The kernels were scraped from the cob, beaten to a milky paste, patted into shape, and laid in a strip on one end of a broad corn leaf. After folding in a special way, the tamales were boiled.

Baked green corn: Sweet corn was scraped from the cob, beaten to a paste, and baked slowly overnight in a kettle.

Boiled green corn: This dish is the same as corn on the cob, with which you are familiar. Green corn means the kernels are in the milk stage. Tuscarora corn and sweet corn were used with equal favor. The kernels were eaten on the cob or scraped off and eaten in dishes.

Fried green corn: This dish was prepared by scraping the kernels of green corn from the cob, mashing it in a mortar, and either patting it into cakes or tossing it in a basket to make a loose, light mass. It was then fried.

Succotash: Green corn was mixed with cooked beans and seasonings and simmered.

Baked cob corn in the husk: This was a popular way of preparing green corn on the cob. The ashes from the camp or hearth fire were brushed aside and a row of unhusked ears were laid on the hot stones or the ground. The ears were then covered with cold ashes, and embers were heaped over them. A hot fire was built and maintained until the corn beneath was thought to be sufficiently baked. Corn baked in this manner had a fine flavor and never became scorched.

Baked scraped corn: The kernels of green corn were scraped from the cob, pounded in a mortar or mashed in a wooden bowl with a stone, patted into cakes, sprinkled with dry meal, and baked in small dishes.

Cracked undried corn: This dish used ripened but not dry corn. The kernels were crushed, kernel by kernel, on a flat stone, mixed with beans, and boiled for several hours.

Boiled corn bread: Purple, calico, and hominy corns were used to make this bread. The corn kernels were boiled for fifteen to twenty minutes in a weak lye bath made of hardwood ashes and water. When the hulls loosened, the corn was placed in a hulling basket. The corn was rinsed to wash away the loosened hulls and the ashes, then drained and ground in a mortar. After sifting, the resulting meal was moistened with water, molded into a cake, and boiled.

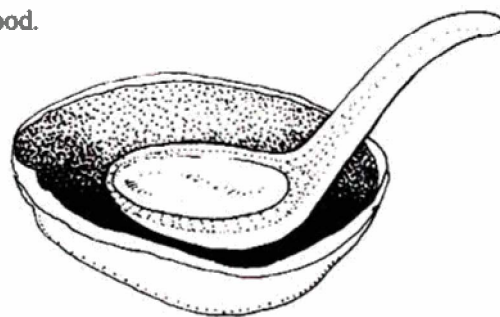
Early bread: Before the corn was thoroughly dry in the autumn, it was plucked for making early bread. The unhulled corn kernels were mixed with a little water in a mortar and ground into a paste. The paste was molded into loaves, which were boiled.

Early corn pudding: A paste was made, as described for preparing early bread. Then it was drained, sifted, tossed into a wet meal, and boiled down into a pudding.

Dumplings: Dumplings were cooked with boiling meats, especially game birds. Corn meal was moistened with boiling water, quickly molded into cakes, and dropped into boiling stock or water.

Hominy: Hominy was prepared from flint corn. The corn kernels were mixed in a mortar with a little water and white ashes to make pounding easier. The cracked kernels were sifted, pounded, sifted again, and winnowed. The coarse, granular meal that resulted was cooked and eaten as a cereal-like dish.

Hulled corn: This favorite dish was made from soft corn, prepared in the same way described for boiled corn bread. The kernels were washed until free of hulls, then boiled for several hours until they were tender and burst. This was a favorite feast food.



Dried corn soup: For winter's use, the kernels of green, white, or sweet corn were cut from the cob and dried before a fire, taking care that the drying was rapid enough to prevent the milk from souring. To make soup, the dried corn was boiled for three-quarters of an hour, or until tender. Dried corn was sometimes roasted and pounded for pudding meal.

Corn pudding: White corn was roasted brown, pounded slowly in a mortar, and sifted. The coarser granules were pounded and resifted until all the granules were uniform. The meal was then thrown into boiling water and cooked until tender. A small bag of corn pudding was often carried by hunters.

Nut and corn pottage: This dish was prepared by mixing nut meal or nut milk with parched corn meal and boiling the mixture with meat, pumpkin, beans, and chestnuts. It was sometimes sweetened with maple sugar.

Corn and pumpkin pudding: This favorite pudding was made with parched or yellow corn meal mixed with sugar and boiled pumpkin or squash. The corn meal mixture was cooked.

Samp: This dish was made the same way boiled corn bread was made, except the corn was not ground so finely in a mortar. Often berries or meat were mixed and cooked with samp.

Parched corn coffee: Corn was roasted on coals, then mixed with boiling water to make a beverage.

If you are not inclined to eat parched corn coffee, samp, or nut and corn pottage, try some of the ideas included in the next section, or refer to a cookbook. Grind your own corn, using the corn you have grown in the Three Sisters planting system discussed at the end of this guide.



Wedding bread:

The corn for this cake was prepared the same way it was for boiled corn bread. Then it was wrapped in a corn husk and the husk was tied in the middle. It looked like two balls with a short connecting neck, or a handleless dumbbell. Then it was boiled for about one hour. The name of this dish in the Seneca language is *go'ia'ta' oä'kwa*. The pronunciation is quite different from the languages to which we are accustomed!

Twenty-four wedding bread cakes were taken by the girl's maternal grandmother (by blood, or by clan appointment if the maternal grandmother was dead) to the door of the maternal grandmother of an eligible male. If the recipient, who had previously conferred with the donor, favored the alliance suggested by the gift, she tasted the bread and notified her daughter that the grandmother of a certain young woman wanted the son to unite with that young woman in marriage.

The mother of the boy had to submit to her mother's wish if she could offer no substantial objection. The boy's grandmother then made twenty-four wedding bread cakes and carried them to the girl's grandmother, who notified her daughter that the girl must marry a certain man. If the suit was rejected at the first proposal, the wedding cakes were left untouched, and the humiliated donor had to creep back and reclaim the cakes.

Some have said that the rejected cakes were never eaten, but probably were reserved by the boy's family as ammunition to pelt the offending old dowager who had led them to believe that the suit was smiled upon.

Iroquois White Corn in My Kitchen

Carol Cornelius, assistant professor of humanistic studies and chair of American Indian Studies, University of Wisconsin at Green Bay

In our family, planting, harvesting, and preparing white corn involves everyone. The family works together, often with other families, to plant and harvest the corn. When it comes time to prepare the corn and eat it, everyone joins in.

When we make corn soup, the family sits around the kitchen table to sort the shelled corn. We remove any corn silk, questionable kernels, or corn husks that might still be mixed in with the corn. Then we add the corn to boiling water along with clean wood stove ashes. The corn turns a brilliant orange, which tells us that we have used enough ashes. After the corn boils for about thirty minutes, we take it down to the stream, where we pour it into the corn washing basket. We dip the basket into the stream to wash away all the ashes and hulls. This is fun to watch because little fish dart to the surface to catch the hulls.

There are many foods we can make now. For corn soup, we add the washed corn to a pot of boiling water and cook the corn for several hours before adding salt pork.

Or instead of boiling the corn, we allow it to dry to use for corn bread. In the old days we would have pounded dried corn with a mortar and pestle, but today we use a metal hand grinder. Each person in the family takes a turn at the grinder because it's hard work turning the crank by hand!

After the corn is ground into flour and sifted, we add beans and hot water and form the mixture into cakes about five inches in diameter and two inches thick. After plunging our hands in cold water, we smooth the surface of the cake, which helps hold it together. We place the cakes in a kettle of boiling water for about an hour. When they rise to the surface, the corn bread is done. Everyone comes running when we announce the corn bread is ready. It's so good!

Another food we prepare from white corn is mush. One person (usually an adult) handles the cast iron skillet in which the corn is parched until it is toasted and brown. The rest of the family takes turns grinding the corn with the metal grinder, and the children sift the ground corn flour. The ground corn flour is added to water and cooked as a cereal. We eat it with real maple syrup and salt pork.

During August the family likes to prepare roast corn. The boys dig a fire pit outside and put a metal grate over it. The ears of husked corn are then toasted over the fire until they brown. We scrape the corn kernels off the cob after they are roasted and then dry them. In the winter we make roast corn into soup by cooking it in water.

Each way of preparing white corn involves the entire family. Another family told us they bought an electric grinder to replace their hand-cranked metal grinder because they wanted to save time and energy. But they discovered that they missed the time they spent together while they used the hand grinder. So they put the electric grinder away and only use it to make large quantities of corn flour when company is expected.

As the family works together, the children ask questions. Many times their questions can be answered by telling a story. One time, the young folks asked why corn had so many husks on it and why it was such hard work pulling off all the husks. We told the story that answered their questions:

At one time people didn't take care of the corn. They didn't appreciate the gift of corn. This made the corn sad, and it went away. Only then did the people discover how much they depended on the corn. When the people promised to be thankful once again for the corn, the corn came back, but with many husks. The people had to work harder to enjoy the corn.

The children responded that they were truly thankful for corn!

The time spent preparing white corn is a great way to share cultural knowledge and time together as a family.

Other Uses of Corn

Corn has been used in many ways for food in Iroquois culture. The use of corn has not ended in the kitchen, however. The Iroquois have used various parts of the plant in many other ways.

Stalks: Stalk tubes were used to store medicine. Corn syrup was extracted by boiling or evaporating the juice of young, green corn-stalks. Cornstalk "war clubs" and "spears" were used by boys in mock battles. "Counting" straws were cut from the tassel stems and used to teach children how to count.

Corn husks: Corn husks had many uses. Single strips were pressed or folded together and used as short-term lamps when matches were scarce. A larger quantity of husks were used for kindling a fire. Husks were shredded and used as filling for pillows, cushions, mattresses, and lounging mats. Husks were even braided in long strands and used as clothes-lines.

Husks were used to wrap corn pudding or green corn; the bundles were then boiled or baked to make wedding bread.

Husk bottles, trays, baskets, moccasins, and sandals were woven as well. Husk door mats were braided so that the tufts of the husk were left protruding from the top of the braid. The braid was then coiled to form an oval mat. The thick tufts were trimmed evenly, and the flat braids were sewn securely with threads of husk.

Many items such as corn husk mattresses, although unfamiliar to most people, are still created by Iroquois today.

Have you ever seen or made a corn husk doll?



Activities

A Living History: Conduct an Interview

Youth will

- demonstrate awareness of differences and similarities among people, their cultures, and their age groups; demonstrate sensitivity to or identify with another person's situation, feelings and ideas.
- learn to conduct an interview.



Oral history has played a major role in the transfer of information in Native American culture. The story about grandfather corn relates the strong sense of community and the awe people experience when they share wisdom and when they affirm a link to their past. The process of building a living history of oral traditions is a valuable way to experience the transfer of knowledge firsthand. It also reminds you that history is not simply what you read in a book or study in a classroom.

Set up a time to take a pad of paper and pencil and talk with a senior member of your community. Your grandparent or other elder relative, a neighbor, a resident of an adult home, or a community historian can be a wealth of information. If you have access to old photographs, local paintings, or newspaper articles, all the better! Ask some of the following questions, but do not feel limited to them:

- What is your earliest memory?
- When you were a child, what was your diet like? What were your favorite foods?
- How did you shop for food?

- How did you store food?
- Did you grow fruits and vegetables at home?
- Did you follow any special gardening practices, such as planting by the phases of the moon or interplanting?
- Did you ever work on a farm?
- What are the biggest changes that you have seen in the food you eat and the way it's grown?
- What was life like before the use of machinery?
- How has your life changed as society has become more technological? How has it **not** changed? What do and don't you like about it?

After the interview discuss the following questions:

How willing was your friend to share his or her experiences? Were you surprised by any of the observations? After you warmed up, did the interview pass quickly? Although you may have studied history, did you learn things from the interview that you have not read in a book? How has agriculture changed? How have gardening practices changed? What did you learn from the experience?

Corn Husk Dolls

Youth will

- learn an aspect of history through creating a product and enjoy working on a task with others.
- learn to produce a corn husk doll.

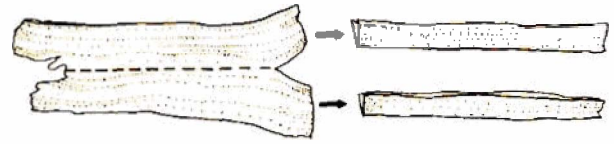
Corn husk dolls are familiar to many people, but some of the beliefs and customs behind them are not. For example, most Iroquois chose to make faceless dolls. They felt that if a child were to mistreat or damage a doll with a face, the doll could bring harm to the child. Pretty-faced dolls were associated with conceit by this culture that encourages humility.

To make a corn husk doll, you will need scissors, twine, and dried corn husks, which can be softened by soaking in warm water. Use newspaper to cover the surface you are working on.

A corn husk doll is made in three pieces to create the head, arms, and shoulders and body. To make the head, rip off a piece of husk and roll it into a ball. Fold a piece of husk over this ball and tie it with a thin strip of husk.

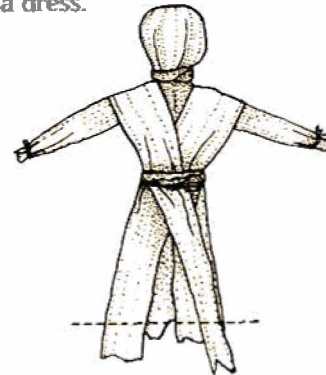
Take another piece of husk and roll it tubelike, lengthwise. Attach this below the neck, and tie it off at the ends to create wrists. Trim the edges.

Split a piece of husk in half.
Fold each piece in half.

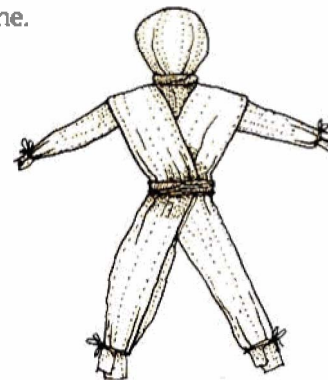


Lay these over the doll's arms to form the shoulders.

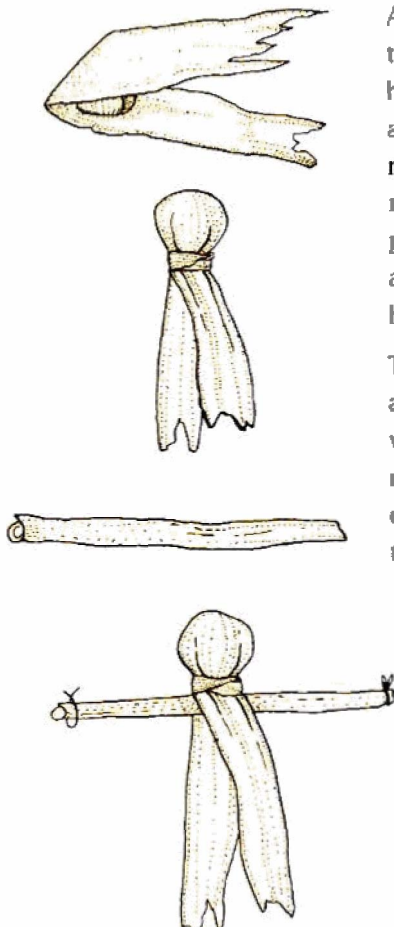
Take another strip of husk and use it to tie off the waist. Trim the bottom, and you have a doll who is wearing a dress.



If you would like a doll with pants, divide the bottom in half and tie off the ankles with twine.



Experiment with other designs of your own!



Exploring Corn

Through the activities in this section youth will

- gather information for improved problem solving.
- use concrete thinking skills and enjoy discovery learning.
- learn to share use of a tool while working together.

produce cornmeal and make measurements and observations about seeds and plant growth.

Shelling and Grinding Corn

If there were one activity to do with youth in the fall, related to the Three Sisters, this might be it! Young people enjoy the very active nature of grinding corn into cornmeal.

For this activity, use corn that has completely dried down on the cob. You can use a sheller to remove the dry corn kernels from the cob or remove them by hand. Then, put the corn kernels in a grain mill and grind to the degree of fineness that you prefer, from a fine flour to coarse meal. Grinding with a mortar and pestle is effective but very time-consuming and can add interest to the activity.

Try to choose at least two different types of corn for comparison. For example, grind blue flint and yellow dent. How do the two compare in texture? In color and aroma?

Another variation is to roast some of the kernels gently over low heat in an iron frying pan until they are golden. If you grind these roasted corn kernels into meal and then cook them with water (much as you would oatmeal or cream of wheat), you can make a good tasting corn cereal.

Old shellers and grain mills can be purchased inexpensively at "junk" and antique shops. New ones are more expensive. Cooking supply stores sell grain mills, and some farm stores still carry corn shellers. See the resource section for a supply source.

Monocots and Dicots

Sprout some corn, bean, and squash seeds. How do they differ in appearance as they begin to swell and take up water? Grasses, including corn, are monocots, and beans and squash are dicots. Can you see the single cotyledon (cot-ill-EE-dun) of the corn seeds and the two cotyledons of each of the bean and squash seeds? These meaty plant parts provide nutrition to the young plant until it can make its own food. Examine the sprouts with a hand lens or magnifying glass. Can you see the tiny root hairs?

Observe Corn or Bean Seeds Absorb Water

Weigh two tablespoons of corn or bean seeds, then place them in a jar; cover the seeds with a measured amount of water and let them stand overnight. Drain the water and measure the amount left. How did the seeds change in size? In weight? How much water did they absorb?

Measure Growth of Corn Plants

How does a corn plant grow—from the top or from the bottom? After corn plants are established, place marks with a permanent marker at the top, middle, and bottom of each plant. Measure the distances between the marks at weekly intervals; chart the results. Where does the greatest growth take place?

Three Sisters Math

Youth will

- identify and solve problems; gather information for improved decision making.
- create a planting plan.

Using graph paper, design a plan for a Three Sisters garden. Use as your scale one block = one foot.

First measure 13' x 13' for the outside borders of the garden square. Within the garden square, measure out 3' x 3' hills for planting, and a 2' path between each hill. How many hills can you plant?

From your seed collection, count out:

- 27 corn seeds
- 45 bean seeds
- 9 squash seeds

Divide the seeds so that an equal number of each seed goes into each hill. How many of each seed can go into each hill?

Next, choose a way to arrange the three kinds of seeds in each hill. You might want to experiment by placing the seeds on the paper plot. Think about the characteristics of each sister. How does the way each sister grows help you decide where to place it in the hill? How will you arrange the seeds in each hill? Why?

Color code the spots where the seeds go with the crayons and add a key to show which color equals which seed.

Corn Relay

Youth will

- contribute a cooperative effort toward a common interest and enjoy participating with others.
- demonstrate ability to spend time on a task wisely and follow through on ground rules.

This is a lively, highly engaging activity that relies on reading and teamwork, as opposed to speed.

The objective of this activity is to discover how much corn appears in many of the foods that we eat and to read very carefully.

For this activity, you will need to go to the grocery store and get a variety of foods (or raid your cupboard or pantry). Read the ingredients to find which contain corn products such as corn starch or corn syrup. Cereals, juices, sauces, salad dressing, drinking sodas, baby foods, baby formulas, pet foods, prepared and frozen foods, and many other products contain corn syrup or starch. There are also corn oil, popcorn, corn tortillas, and others.

Choose several relay teams or groups of young people. For each relay team, you will need a product for each member plus an additional item (so, seven products for a six-member team). All of those products *except for one* should contain corn in some form. Examples of products that typically do

not contain a corn product are tapioca, white milk (chocolate milk is likely to contain corn syrup), diet soda, pasta, and coffee.

For each team, lay a pile of products at a given distance, remembering to include only one product that does not contain corn. When you say **START!**, the first member of each team is to go to the food products, choose one that contains corn, and bring it back. The next person goes to the pile, chooses a corn product, and brings it back. This process continues until the first team finishes, and they all yell **CORN!** to indicate that they have finished. Check the winning team's pile of products. If they mistakenly brought back the one product that does not contain corn, they are disqualified.

After the activity, discuss the number of products that contain corn. Most young people are surprised to find that they are eating corn when they drink soda or eat spaghetti sauce. Talk about the importance of listening to instructions, reading carefully, and teamwork. Since most relays are based on speed, this often takes young people by surprise.

Special hint: if you do not like the emphasis on competition, you can simply set it up so that all teams are bringing back products, and the activity is over when the last team finishes—and then all teams yell **CORN!** together.

Other Activities

- Are there native American folklore, legends, or practices related to gardening that you can discover in your area and share with your group? Invite a local speaker to talk with your group about the subject.
- Look for nonfood items that have been made from the Three Sisters or from other plants. You may find corn husk or pine needle baskets, textiles colored with plant-based dyes, unusual papers such as rice paper, and many other items. Point out to your group that we not only eat plants but breathe their waste product (oxygen), wear them, use them for shelter, write on them, heal with them, dye fabric with them, enjoy their shade and beauty, and even heat our homes and travel with a product of their decayed remains (fuel). Where would we be without them?

Experience an Iroquois Garden

In this section you will learn how to plant the Three Sisters according to Iroquois custom. You have already learned many new things about corn and her two sisters and about Iroquois gardening. Now you can try this planting system yourself and recreate an ancient (and modern) practice.

Be aware that this system may provide some unexpected results. Interplanting without the addition of fertilizer may result in a decreased yield. The site may become more crowded than you're accustomed to when you grow single plantings. It may seem awkward at first to work around plants that have grown so closely together, especially if you

are used to tidy, wide rows. Feel free to adapt the spacings if necessary. Most importantly, enjoy this exercise as an investigation into Native American culture.

As they begin planting, Iroquois people direct their thoughts to the elements that help plants grow. What are the elements that make your garden thrive? As you prepare your garden in the Iroquois tradition, you may want to consider and appreciate these elements as well.



How to Plant the Three Sisters

Youth will

- learn to locate resources as well as develop a wider comprehension of what is required for gardening.
- produce a unique Three Sisters garden.

1. Conduct a soil test, and prepare the garden site. Add compost or other materials such as peat moss or manure to the soil. This will improve the soil structure and add nutrients. If you have grown a green manure cover crop such as winter rye, turn it under two to three weeks before planting.

2. Plant corn in late May. It is best if the ground has warmed and is no longer cold and wet. Iroquois tradition holds that planting begins when the leaves of dogwood are the size of a squirrel's ear.

Soak corn seeds for several hours, but not more than eight hours, before planting. (Soaked seed may dry out quickly, so keep the seeds well watered for the first week or two if the soil is not kept moist by rain showers.)

Prepare low hills that are 3 to 4 feet apart within and between the rows. Place five to seven corn seeds, evenly spaced to a depth of 1 to 1 1/2 inches. Cover with soil.

There are many corn varieties to choose from. Dent, flint, and flour corns are especially suited to this system, while popcorn often does not get tall enough and may be overwhelmed by the beans and pumpkins.

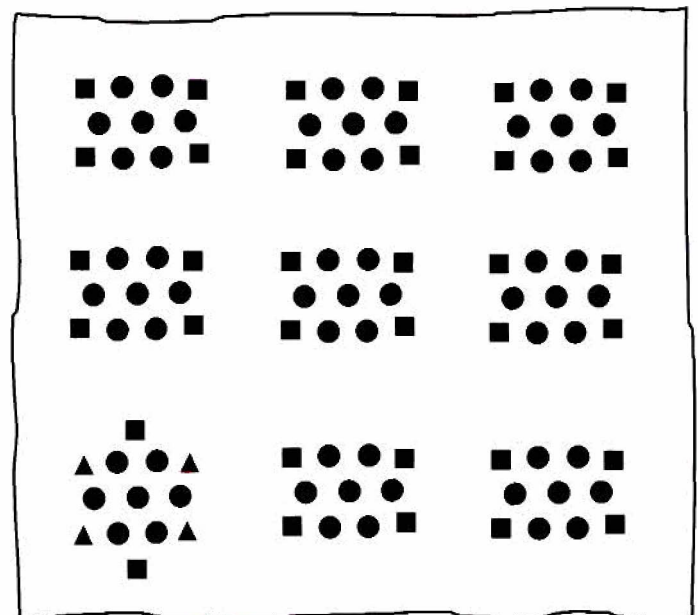
(Iroquois white flour corn is available from the American Indian Program, 450 Caldwell Hall, Cornell University, Ithaca, NY 14853, at a cost of \$2.00 per packet.)

If you care to follow Iroquois custom, plant the seeds with kind thoughts three days before the full moon.

3. After young corn plants come up, begin removing weeds. As you are weeding, gently mound, or hill, the soil around the young plants.

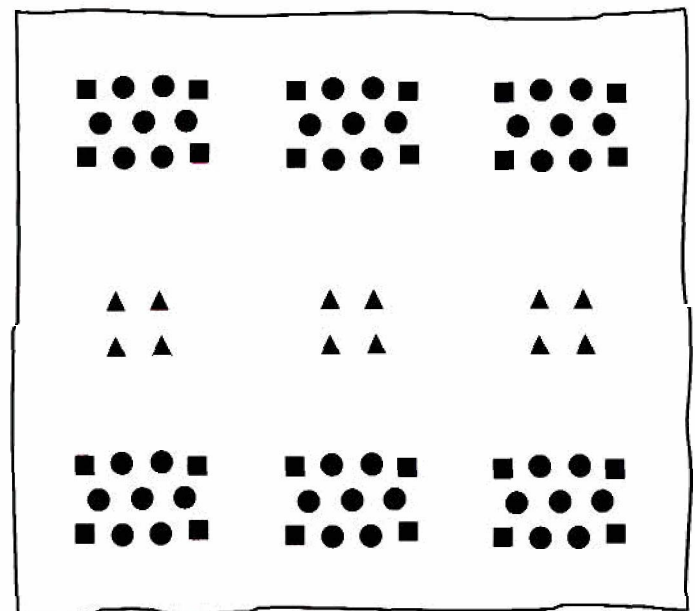
4. When the corn plants are about 6 inches high, pole beans and pumpkins can be planted around the corn plants. Genuine Cornfield or Scarlet Runner bean and Connecticut Field or Small Sugar pumpkins are heirloom, nonhybrid varieties that are readily available yet "authentic" crops for your project.

After thoroughly weeding, plant four or five bean seeds in each hill. Plant four or five pumpkin seeds in every seventh hill, placing them around the young corn plants. (Planting pumpkins in every hill would quickly overwhelm your planting site with viny growth.)



Traditional planting method: Corn and beans are planted together. Pumpkin is planted in every seventh hill. The pumpkin seeds can be planted alone, or with the corn and beans in the seventh hill.

● corn seed ■ bean seed ▲ pumpkin seed



Alternative planting method: Try planting the pumpkins in a row of hills between the corn and beans. This method is used more frequently among other native peoples, such as the Hidatsa. Do not feel limited to these designs. Feel free to try your own planting methods!

● corn seed ■ bean seed ▲ pumpkin seed

5. Your plants will need water each week. If it does not rain at least an inch per week, the plantings will need to be irrigated. If you are using presoaked seed, remember to water more frequently at first.

6. Most of the nitrogen converted by the beans will not be available to the corn and pumpkins the first year; the bean roots have to break down to release nitrogen. Corn is a heavy nitrogen feeder, so sidedressing with fertilizer is necessary to achieve satisfactory yields. You can use manure, compost, or commercial fertilizer.

7. If you are hoping to keep a variety pure—for example, an heirloom variety of corn—you will need to isolate the corn from other varieties. If isolation is not possible, you will need to hand pollinate. This is a challenge, but it is fun to experiment to see what results you can get.

To hand pollinate, place waxed paper lunch bags over the newly forming silks to keep out unwanted pollen. When the plants are tasseling out, remove the bags briefly and shake the desired pollen on the silks, then replace the bags. Your desired pollen may be that of the same variety. If you are experimenting with crosses, however, the pollen must come from another variety. You can use brown paper lunch bags to collect pollen from the tassels of the desired variety.

Be sure to keep track of which plants you have hand pollinated so you can compare them with those that have cross-pollinated.

8. Harvest and store your corn, beans, and pumpkins with care. When the corn husks are dry, pick the ears and spread them out in a dry place. To prevent mold, do not store the ears when they are first harvested. If you plan to grind the corn, let it dry for several weeks.

If you plan to save seed, choose seed from your most vigorous, uniform plants from the center of the ear. After you have shelled the kernels, keep them in a cool, dry place in covered containers or plastic bags. Following Iroquois tradition, do not let a single kernel go to waste!

You can harvest your beans when they are green or after the pods have shriveled and dried.

Pick pumpkins when their color changes.

9. Try cooking a new food from the corn, such as hominy or succotash. Save the husks to make baskets or dolls. Weave a basket; create a corn mosaic. Use the plants to decorate your mailbox, a flagpole, or a tree trunk. Compost the remaining plant material. At the end of the season, have a harvest festival. Celebrate Thanksgiving with the fruits of your labor and appreciate your rich American heritage!

The Three Sisters in a Basket

If you lack space, try planting the Three Sisters in a bushel basket or other large container. Use a lightweight soil mix. Plant 2 to 3 corn seeds, allow the plants to reach 6 inches, and then plant 3 to 4 bean seeds and 2 pumpkin seeds (or experiment with different numbers of seeds).

To ensure adequate pollination, be sure to remove the male flower, or tassel, from the corn and shake it vigorously over the female silks. Otherwise, the ear will not be pollinated and will not fill out. Do this when the male flower first tassels out, or the wind will carry the pollen away before you can use it. You will know whether your efforts are effective if you can see the dustlike pollen grains adhering to the silks.

A Community Planting

Although growing the Three Sisters is popular in schools, the garden season does not often correspond to the school year. An exciting alternative is to form a partnership with a local museum, historical society, Cooperative Extension Association, or public library. One of these partners may be willing to provide space for the planting and help maintain it over the summer. This approach has worked well for many people. The children benefit by experiencing the planting in the spring and the harvest in the fall. The community partner benefits by having an attractive and unique demonstration planting to display during the summer months. The teacher benefits by being able to introduce a hands-on, unique experience without the challenges of summer maintenance.



For More Information

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Resources

Caduto, Michael J., and Joseph Bruchac. *Keepers of the Earth: Native American Stories and Environmental Activities for Children*. Golden, Colo.: Fulcrum, Inc., 1988, 1989.

Caduto, Michael J., and Joseph Bruchac. 1996. *Native American Gardening: Stories, Projects and Recipes for Families*. Golden, Colo.: Fulcrum. This book brings stories and gardening together. It focuses on planning and preparing the garden site, creating traditional native gardens, making crafts, and cooking meals.

Cooking with the Three Sisters. Recipe book available for \$3.00 from the Fruit and Vegetable Science Department, 134A Plant Science Building, Cornell University, Ithaca, NY 14853.

Cornelius, Carol. *The Six Nations Series*. Ithaca, N.Y.: Cornell University American Indian Program, 1990. (Both student and teacher guides are available.)

Dennee, Joanne, Jack Peduzzi, Julia Hand, and Carolyn Peduzzi. 1996. *In the Three Sisters Garden: Native American Stories and Seasonal Activities for the Curious Child*. Dubuque, Iowa: Kendall/Hunt. This comprehensive manual introduces children to the Three Sisters through year-long activities. There are stories, projects, and activities.

Gathering Folklore from Elderly Persons. (Part of the Missouri Gerontological Institute's *Guide on Aging*, which describes methods for collecting folklore and gives tips for interviewing elderly people.)

Contact:
Extension Publications
2800 MacGuire Boulevard
University of Missouri
Columbia, MO 65211
314-882-7216

Indian Corn of the Americas: Gift to the World. Northeast Indian Quarterly, pp. 33-39. Ithaca, N.Y.: Cornell University American Indian Program, spring/summer 1989.

Oral History in Your Community. (This guide gives detailed instructions about interviewing, taping, and writing oral histories. It is an excellent resource for older children and teachers/leaders.)

Contact:
Carolynne M. Keiffer
(c/o Dr. Leo Cramm)
Missouri Gerontology
Institute
404 Lewis Hall
University of Missouri
Columbia, MO 65211

Reminiscence: Finding Meaning in Memories. (Developed by the American Association of Retired Persons (AARP), these project materials include essays and articles about the benefits of reminiscing with elders. Included are sections that teach visiting, interviewing, and listening skills. Icebreakers and exercises are also outlined in the leader's guide. These materials are supplemented with slides and a 13-minute audiocassette.)

Contact:
AARP Program Resources
Dept/DI
P.O. Box 19269, Station R
Washington, DC 20036

Stepping Into the Past: 4-H Personal Development Special Interest Project. (A 4-H member's guide that gives valuable tips on how to interview older adults; good for children 9 years and older.)

Contact:
Charles Cox
State 4-H Program Specialist
205 Poultry Science Building
Oklahoma State University
Stillwater, OK 74078-0330

Wilson, Gilbert L. *Buffalo Bird Woman's Garden*. St. Paul, Minn.: Minnesota Historical Society Press, 1987. (Originally published as *Agriculture of the Hidatsa Indians: An Indian Interpretation*.)

Source for the sheller:
Rapid Hand Corn Sheller. Operated by a hand crank, has self-contained clamps and quickly attaches to a wooden box or barrel. Cob ejector and tipping attachment are included. For more information, get a catalog from the Cumberland General Store, #1 Highway 68, Crossville, Tenn. 38555. 1-800-334-4640.

The Three Sisters: Exploring an Iroquois Garden

Member Evaluation

As a 4-H member, you've become an expert on good ways to learn about subjects that interest you and about activities that are both fun and educational. Please answer the following questions to help us understand what you learned and enjoyed. We value your input!

1. What are the Three Sisters?

2. What do you feel you've learned by participating in the Three Sisters project? Please check all that apply.
 - ☐ I learned about native culture.
 - ☐ I learned to appreciate plants and food from another culture.
 - ☐ I learned to prepare a food.
 - ☐ I learned about diversity and why it is important.
 - ☐ I planned and carried out an activity.
 - ☐ I better understand what is needed to plan and plant a garden.

3. List three things that you learned about Iroquois culture that you didn't know before.

4. Can you name at least three types of corn?

5. Could you name these three types of corn before you did the Three Sisters project?

6. Can you draw the Three Sisters?

7. What is diversity?

8. Can you name one way that diversity relates to the Three Sisters?

9. What ideas did you learn from the Three Sisters that you could use to develop into a report or topic for a public presentation?

10. Do you have a favorite crop of the Three Sisters? If so, why is it your favorite?

11. What was your favorite activity? What did you like about it, and what did you learn from it?

12. Is there anything else about the Three Sisters project that you would like to comment on?



Oklahoma corn preservationist White Eagle (Carl Barnes) with his extensive seed collection.

Acknowledgments

The section "The Need for Diversity" was prepared by Marvin Pritts, professor, Department of Fruit and Vegetable Science, Cornell University.

The sections "Grandfather Corn" and "Iroquois White Corn in My Kitchen" were prepared by Carol Cornelius, assistant professor of humanistic studies and chair of American Indian Studies, University of Wisconsin at Green Bay.

The section "Other Uses of Corn" and the list of common Iroquois fare in the section "Foods Prepared from Corn" were edited and excerpted from *Parker on the Iroquois*, William N. Fenton, ed., Syracuse University Press, Syracuse, N.Y., 1968, pp. 66–80, by permission of the publisher.

Illustrations in the section "Corn Husk Dolls" were adapted from Brundin, Judith A., Mary C. Bradford, and Eileen A. Whalen, *The Native People of the Northeast Woodlands*, Museum of the American Indian—Heye Foundation, New York, 1990.

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The Three Sisters

Exploring an Iroquois Garden

Recipient of both the Quill & Trowel Award for Excellence in Garden Communications and an Art of Garden Communication award from the Garden Writers Association of America, *The Three Sisters: Exploring an Iroquois Garden* was written to provide a better understanding of a unique growing method, as well as the people who created it.

"The Three Sisters" system refers to the planting of corn, pole beans, and squash or pumpkins, together, in hills or mounds. By exploring this Iroquois gardening method, you can learn more about three wonderful crops, as well as gain an awareness of Native American culture.

The 24-page book includes legends, several activities, and a pattern for making corn husk dolls. It addresses the need for genetic diversity, and illustrates how and when to plant your own "Three Sisters." Foods prepared from corn are described so you can try them yourself. Useful to gardeners of any age, as well as educators in many settings.