

Abenaki Seeds Project Growing Guide

April 2024

Created by the Abenaki Trails Project
A project of the Nulhegan Band
of the Coosuk-Abenaki Nation

with support from
Hopkinton Historical Society
Kearsarge Food Hub
Colby-Sawyer College

Illustrations by Francine Poitras Jones



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Introduction

The purpose of this guide is to provide basic information to assist you, growers, in planting tribally-provided seeds, and to whet your appetites to learn more about Abenaki foodways, past and present. Our hope is that you will successfully grow specific varieties of corn, beans, and squash – the Abenaki word for which is *wawicakasotijik*, which means “those who are sisters together.” We further hope that, should you have harvest to share, it will be donated back to the project.

Any donated harvest will be:

- donated to the Abenaki Helping Abenaki Food Shelf and/or
- distributed by the Kearsarge Food Hub (KFH) as needed to area food pantries and local markets.

This guide includes a description of traditional mound planting, as well as adaptations of commercially-available descriptions for row planting. Either method may be used for this project. Additionally, growers may plant any number of the seed varieties.

Those Who Are Sisters Together: the planting of corn, beans, and squash in mounds

The Abenaki word, *bedegwaskika*, means to “plant in round mounds or hills.” This describes the traditional gardening method for planting corn, beans, and squash, a tradition that has been used in *N’dakinna* (Abenaki homeland) for over 1,000 years (Wiseman 2020; Wali 2016).

Abenaki tradition tells us to plant corn when the oak leaves are the size of a mouse’s ear. When the corn plants get knee high, plant the beans. The squash can be planted when all danger of frost is past. Planting the three varieties together is the perfect companion planting design. The beans provide the nitrogen the corn needs and the corn stalks provide the surface for the beans to climb up. The squash plants cover the ground below the corn and beans to help keep the weeds down. And nutritionally, the three vegetables provide well-balanced proteins in combination.

Prepare your garden mounds in April. Use a hoe and rake to draw topsoil to a mound approximately 2-6 feet in diameter and then shape the mound by hand while kneeling. After the mounds are prepared, one or more holes are dug by hand into each mound, between six inches and a foot deep. Traditional Abenaki fertilizer was sucker fish speared when they ran in the spring and buried in the mounds the corn would be planted in. That gave time for the fish to rot long enough to perfectly fertilize the mound for the corn. Fertilize and plant seeds in late May or early June.

The Abenaki corn harvest is a bit complex. Traditionally, the first harvest is small and very dependent on the maturation of the corn. Once it reaches the "Green Corn" or corn-on-the-cob stage, there is a first harvest for the Green Corn Ceremony, which must rapidly follow the harvest. The second, or dry corn harvest, is when the corn is entirely mature, so that it can be dried properly and then be made into cornmeal, flour, or hominy. (Much of the information in this section is from Fred Wiseman’s Seeds of Renewal Project; *Wliwni* to Fred for his work on the Seeds of Renewal Project and so much knowledge about our surviving traditional seeds.)



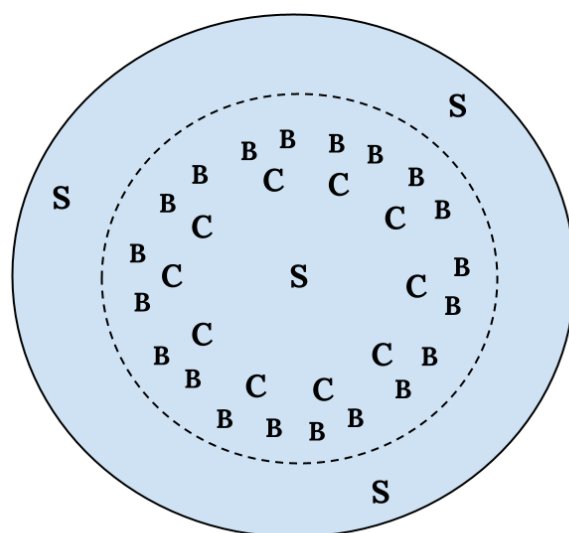
Suggested Mound Layouts

There is no one right way to plant the three sisters in a mound. Mounds can vary in size, and so they will support a different number of plants.

- Note: **Dotted lines** in the graphics below represent a flattening or crater-like plateau in the mound, which holds water. Check out “[Starting a Three Sisters Garden](https://kearsargefoodhub.org/abenaki-seeds-project)” at kearsargefoodhub.org/abenaki-seeds-project to see an example of how to shape your mound.
- **C = corn plant; B = bean plant, S = squash plant**

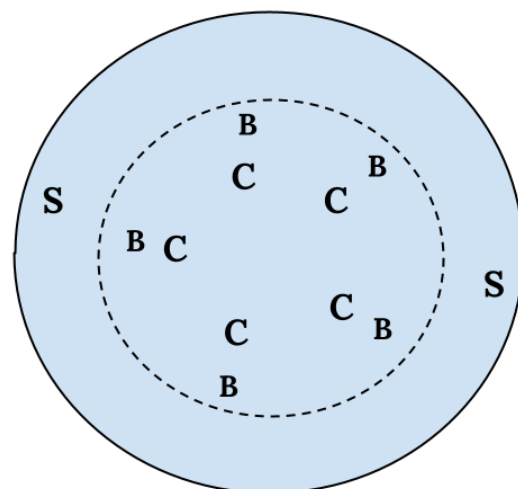
This way, using a **large 5’ - 6’ diameter mound**, is the way that Sherry and Bill Gould, local Abenaki collaborators on this project, plant their mounds.

- 10 ears of corn, spaced 10” or so apart
- 1 or 2 bean plants per corn, 3-4” away, to the inside or outside of corn plants
- 3 or more squash plants per mound, placed approximately halfway down the mound and one, if there’s room, in the center



This way, using a **smaller 3’ - 4’ diameter mound**, is also suggested by Sherry and Bill and is similar to the mounds Leon plants in “[Starting a Three Sisters Garden](https://kearsargefoodhub.org/abenaki-seeds-project)” (find the video at kearsargefoodhub.org/abenaki-seeds-project.)

- 4 or 5 corn plants, spaced more tightly, about 6” apart
- 1 bean plant per corn, 3-4” away, to outside of corn plants
- 2 or 3 squash plants per mound, placed approximately halfway down the mound



Another layout option can be found [here](https://nativeseeds.org/blogs/blog-news/how-to-grow-a-three-sisters-garden), provided by Native Seed / SEARCH

(nativeseeds.org/blogs/blog-news/how-to-grow-a-three-sisters-garden)

Planting Rhythm

I. Plant Sister Corn first.

- Abenaki tradition tells us to plant corn when the oak leaves are the size of a mouse's ear. Using this method ensures that you are planting at the right time for your microclimate.
 - Alternatively, you can use your last frost date (find it here: almanac.com/gardening/frostdates). Corn is sensitive to frost, so whether you are planting seeds or transplanting out corn you started indoors, put them outside after the danger of frost has passed.
2. **When the corn plants get knee high, plant Sister Bean.** Beans don't like to be transplanted, so plant these seeds directly into the soil.
 3. **Plant Sister Squash third.** Usually it is recommended to wait until bean seeds have emerged to plant squash seeds, but they can be started earlier. If you are planting squash transplants, wait until bean seeds have emerged.

Tip #1: These plants are not frost tolerant, so keep an eye on the weather, especially the lows at night. Plan to cover your plants with row cover or bed sheets (with supports, to avoid squashing them) if the temperature is going to dip near freezing.

Tip #2: Though Sister Corn acts as a natural trellis for Sister Bean, we recommend additional trellising (such as bamboo stakes positioned at the base of the beans and lashed together at the top) to ensure vigorous beans don't pull down corn stalks.

Seeds

(with commercially-available row planting suggestions)

Abenaki Rose Flint Corn

NOTE: Corn varieties can cross pollinate! For this project, plant only one type, or plant different varieties far (500 feet or more) apart.

Abenaki Rose Flint Corn is a traditional Abenaki flint corn. It has much larger cobs and a pink wash over yellow kernels. This variety did not prove to be a good corn to eat off the cob at the green corn stage. However, it is an excellent corn for the dry corn stage when it can be made into cornmeal or hominy.

Planting suggestions (adapted from High Mowing Organic Seeds):

- *Soil Nutrients and Requirements:* Corn requires deep, well drained fertile soils with a pH between 6.0-6.8 and can tolerate heavy soils. It is a heavy feeder, so fertilize the ground well in the spring with high-quality compost or a complete fertilizer. For specific nutrient needs and application rate it is always best to have a soil test done before application. Side dress with fertilizer (i.e., apply fertilizer to the sides of the stems) when the corn is 12" tall, or when leaves start yellowing.
- *Seeding depth:* 1-2"
- *Plant Spacing:* 10-12"
- *Row Spacing:* 30-36"; plant in blocks of at least 4 rows for adequate wind pollination.
- *When to Direct Sow:* Plant seeds directly into soil only after soil has warmed to 65°F, after all danger of frost has passed, to ensure germination. Optimal soil temperature for germination is 85°F.
- *When to Sow Transplants:* Corn can also be transplanted, which is becoming more common in regions with shorter growing seasons. Start transplants in small cells 2-4 weeks before your intended planting date (which should be after the danger of frost has passed).

Pollination: Corn is wind pollinated, which can be spotty, especially when growing a smaller number of ears. Each silk is responsible for one kernel development; if that silk doesn't receive pollen, the

kernel will not develop. **Consider hand pollinating to ensure pollination.** Hand pollinating involves removing tassels from stalks and delivering the pollen to the silks, as shown in “[Hand Pollinating Corn](#),” found at the bottom of kearsargefoodhub.org/abenaki-seeds-project.

Harvest: Corn should be harvested when ear silks have dried down, the husks are brown and papery, and when kernels are filled to the tip and have colored up. Ears can be left on the stalks longer to begin to dry, but to keep mold down, harvest if the forecast looks especially rainy.

Drying + Storage: Take most of the husk off, leaving a few leaves. Using the remaining husk, braid or bundle 10-12 ears together. Hang them somewhere dry, with air circulation, safe from hungry mice and birds. Kernels can be removed when they have hardened and can't be dented with a fingernail.

Other Considerations:

To avoid cross pollination, separate blocks of individual varieties by at least 500 ft or plant to ensure tasseling at different times (plant varieties with different days to maturity, or use successive planting dates). Plants are in pollination mode for 2-3 weeks from the time of tassel. If planting successions of the same variety, wait until the first succession reaches 2” before planting the next. This can be continued until 80 days before expected frost. Successive plantings of different varieties (to avoid cross pollination) should be made at 8 leaf stage of last planting, i.e., wait until the first variety has at least 8 leaves.

For more details and information about common insect, fungal, and bacterial considerations, see <https://www.highmowingseeds.com/organic-non-gmo-roy-s-calais-flint-corn.html>



True Red Cranberry Beans

True Red Cranberry Beans (which are maroon, plump, and round) are old varieties from the Connecticut River Valley. They are open-pollinated pole beans, and are excellent both as young green beans and as dried beans for baking.

Planting suggestions (adapted from High Mowing Organic Seeds, and from Fedco Seeds)

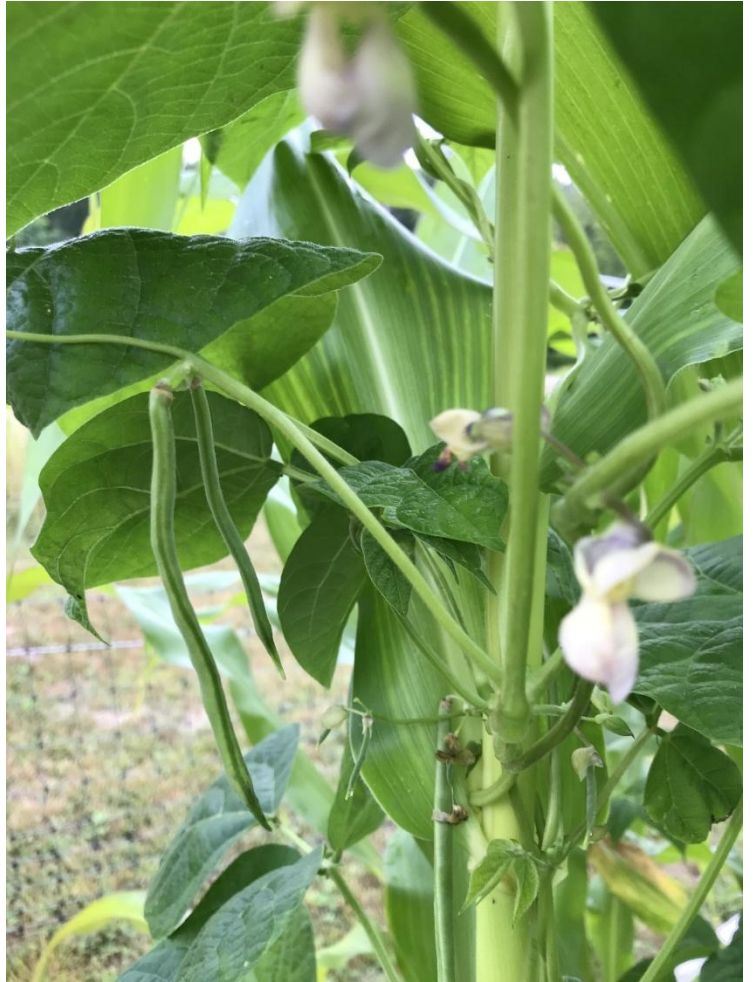
- *Soil and Nutrient Requirements:* Beans only require average fertility and prefer pH in the 6.0 - 6.8 range. Choose well drained, warm soils.
- *Plant spacing:* 3 - 4”
- *Row spacing:* 2 - 2.5”
- *When to sow:* Plant seeds directly into soil after all danger of frost has passed and soil has warmed. Minimum germination soil temperature is 60°F; the optimal range 60–80°F. Transplanting is not recommended.

Other considerations: Pole beans require something tall to grow on for support. This can be a trellis, string, etc. In Three Sisters plantings, the beans grow upon the corn plant. Some growers have found that their corn doesn’t provide quite enough support and may get pulled down by climbing beans; additional trellising can help.

Harvest: For fresh/green beans, harvest often. For dry beans, harvest once in the fall, when the beans have dried and pods have turned brown. In our short growing season, it’s ideal to leave them as long as possible while being sure to harvest before the fall frost.

Storage: Dry and store in cool, dry conditions. Beans are ready to be shucked and stored when the seed coat cannot be dented by fingernail. If they have been harvested when the beans are still dentable, let the beans continue to dry in the pods.

For more details and information about common insect, fungal, and mold considerations, see the “growing information” section at <https://www.highmowingseeds.com/organic-non-gmo-rattlesnake-bean.html>



*Skunk beans on Abenaki Rose Flint Corn.
Photo by Laura Russell
and Brick Moltz, August 5, 2022.*

Crooked Neck Squash

NOTE: Squash varieties can cross pollinate! If you plan to save seeds from this year's squash to plant next year, different varieties of the same species (*Cucurbita moschata*, which includes many types of squash and pumpkin) must be planted at least ½ mile apart. Cross pollination doesn't affect this year's fruit, but it does affect the seeds (which is why it *does* affect this year's corn – those kernels are seeds).

Crooked Neck Squash is one of the oldest varieties of squash in this region, and is said to be an ancestor of butternut squash. It is a winter squash, buff with orange flesh, and may be used for roasting, squash soup, etc.

Planting suggestions (adapted from Hudson Valley Seed Co.)

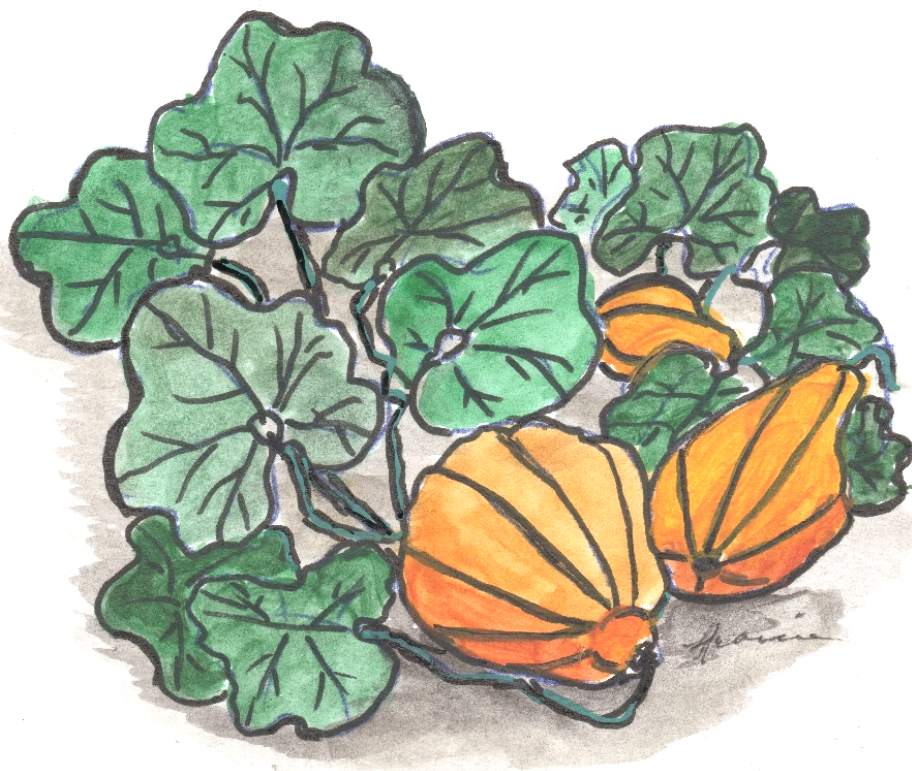
- *Soil and nutritional requirements:* Plants need loose, fertile, well-drained soil with plenty of organic matter and nitrogen and a pH of 5.8-6.8.
- *Plant / row spacing:* Plant in hills spaced 6' apart, 3 plants per hill, or 2' apart in rows 4-6' apart.
- *When to sow:* Direct sow ½ -1" deep, after the danger of frost has passed, or start indoors 2-4 weeks earlier. Winter squash has a long season, requiring 90-120 frost-free days to reach maturity, so it is usually transplanted in northern climates.

Harvest: Harvest when squash are buff colored with no trace of green and have hard rinds that can't be easily dented with a fingernail. Another indicator of ripeness is when the "ground spot" (the part of the squash that has been in contact with the ground) changes color from yellow to cream, gold, or orange. Another indicator is a stem that has become thick and woody. To harvest, cut the stem at least 2" from the fruit; a short or broken stem can lead to rot.

Curing / storage: Winter squash can be eaten immediately or cured in order to vastly improve shelf life. Cure indoors in a dry, warm place (80 - 85°F is ideal) with good air circulation or outside in the sun (move them inside if it's going to rain) for about a week or two, turning them over every few days or halfway through the curing period. Then store in a cool (55°F is ideal; lower than 50°F can cause injury), dry, dark place; allow air circulation among stored squash.

Other considerations: To save seeds, scoop them out when you eat the fruit. Rinse off and dry.

For more details and information about common insect, fungal, and mildew considerations, see the “growing information” section at <https://www.highmowingseeds.com/organic-non-gmo-nutterbutter-bnut-squash.html>



Sources Consulted

“Abenaki Heritage Garden,” brochure by a partnership of several organizations, including St. Francis / Sokoki Band of the Abenaki Nation at Missisquoi, n.d.

“Vermont Abenaki Agriculture,” by Frederick Matthew Wiseman, 2020 (gives date for corn & beans grown together as approx. 1,000 years ago)

“The Amazing Journey of Maize,” Field Museum blog, by Alaka Wali, November 23, 2016. (gives date for corn’s arrival as approx. 2,100 years ago)

Fedco Seeds Catalog

High Mowing Organic Seeds Catalog

Hudson Valley Seed Co. Catalog

Traditional knowledge

Abenaki language consultation with Jesse Bruchac



Preparing Abenaki Rose Corn for braiding for the winter. Photo of Bill Gould by Sherry Gould.

2024 Donating Your Harvest

You are welcome to enjoy the fruits of your harvest, and if you'd like you can also choose to donate some or all of it back to the Abenaki Helping Abenaki Food Pantry via the Kearsarge Food Hub.

A little bit on each crop:

- If you can, please cure your squash before donating; this will allow it to keep longer throughout the fall & winter season.
 - See the Crooked Neck Squash section of this Grower's Guide on how to cure your squash.
- This year we will only accept donations of dried beans and dried corn.
 - While fresh beans and corn are delicious, they are at high risk of becoming moldy.
 - Please see the True Red Cranberry Bean section and the Abenaki Rose Flint Corn section of this Grower's Guide for information on best drying practices.

Some time in the late summer, we'll reach out to all growers and let you know what the donation process (time & place) will look like this year.

Recipes



Squash Soup with Black Trumpets

adapted by Sherry Gould from a recipe published in the NY Times

Time: About 2 hours

1 large buttercup squash, about 2 pounds

1/4 cup pumpkin seeds

4 tablespoons butter

1 clove garlic

2 leeks, white parts only, cleaned well and chopped

1 small jalapeño, seeded and diced (optional)

1 teaspoon cumin

Coarse sea salt

4 cups stock

1/2 cup light cream or half-and-half

Freshly ground white pepper

4 ounces fresh black trumpet mushrooms, washed and halved.

- Heat oven to 350 degrees. Cut squash in half, and scrape out seeds (a grapefruit spoon works best). Place cut-side down on a foil-lined baking sheet, and bake until collapsed and caramelized, about 1 hour. Toast pumpkin seeds in a small dry sauté pan over medium-high heat until they start to pop and brown lightly but not burn. Set aside.
- In a heavy soup pot, melt 2 tablespoons butter over medium heat. Add garlic, leeks and jalapeño, and cook, stirring, until softened but not browned, 10 to 15 minutes. Add cumin and salt to taste. Scrape flesh from baked squash, and add to pot. Add stock, and bring to a simmer. Cook 15 minutes, until everything is very soft. Carefully transfer to blender, and purée until smooth. Return to pot over very low heat. Stir in cream. Season with pepper and more salt if needed.
- In a large sauté pan, melt remaining butter over medium heat. Add black trumpets and salt. Cook, stirring, until tender, about 10 minutes.
- To serve, divide mushrooms among serving bowls. Ladle soup over. Sprinkle with pumpkin seeds, and serve.

Yield: 4 servings.

Abenaki Boiled Cornbread

from Liz Charlebois

Start a large pot of water to boil.

Mix equal parts of:

Corn meal

Corn flour

Crushed nuts of your choice (optional)

Crushed berries of your choice

Water

Knead until fully mixed. The mixture should stick together and be sticky. Add more water or corn flour to achieve desired consistency. Roll dough into balls about the size of your hand.

When the water is boiling, place the dough ball into the water. You may boil more than one ball at a time. Boil until the dough starts to rise, approximately 5-10 minutes. Remove from water with a slotted spoon and place on a plate until cool. Slice and enjoy.

Wonôbo – topping for Abenaki Cornbread

Ingredients

4 cups blueberries or chokecherries, fresh or frozen (any berry)

1-2 tablespoons cornstarch

Maple syrup

¼ cup water

Directions

- In a saucepan, simmer berries and water over low heat, stirring occasionally. (If using fresh berries, you may need more water to keep them from scorching.)
- Once the berries are broken down into a sauce, spoon out some sauce and whisk in the cornstarch.
- Fresh berries should need 1 tablespoon, frozen might need 2 tablespoons of cornstarch.
- Whisk until completely dissolved, then add back to the rest of the sauce.
- Sweeten to taste with maple syrup.
- Serve on cornbread or ice cream.

Three Sisters Recipe

from Sterling College Magazine (Craftsbury, VT)

This past summer I had the pleasure to cook for the celebration of trustee Don Stevens. Chief of the Nulhegan Band of the Coosuk Abenaki Nation. When initially tasked with creating a menu for the event, I knew I wanted to cook something special and fitting for the occasion. While we were deep in the war on cucumbers and summer squash, I opted out of the classic summer repertoire, and went with a simple dish honoring the Three Sisters. The Three Sisters are the three main agricultural crops of the indigenous peoples that stewarded our land long before we came along.

I make a valiant attempt at cultivating my own garden every year, but as a cook, summer does not lend itself to much time tending said garden, so inevitably weeds overtake most of it. The beauty of the Three Sisters is that they work together as they grow, the corn provides structure for beans to climb, the beans add nitrogen to the soil. and the squash provides competitive ground cover. As someone who simply does not weed, this is great news.

When coming up with this dish I thought of a lot of really interesting ways I could adapt the Three Sisters, but I realized very quickly it was not necessary to fuss with something so simple and so good - and better to amplify the ingredients and let them speak for themselves. The Three Sisters are also great storage crops. which means this dish can be enjoyed any season of the year.

