



OAS Oasis

Sometimes answers show up in the form of the darkest blue corn you've ever seen.

BY SCOTT JAQUITH

In early January 2017, I posed what turned out to be a fruitful question: Could Pueblo Indian edible crops grow and thrive at the Center for New Mexico Archaeology? I asked this of ethnobotanists Pam McBride and Mollie Toll, of the Office of Archaeological Studies (OAS), and although Pam and Mollie weren't quite certain, they said that it would be interesting to find out.

My goal for this garden project was to explore the connections between humans and the plants that give life in the form of their fruits. As the OAS's mission is equal parts education and archaeological research, I thought caring for a garden would be a perfect (and very tangible) introduction to native lifeways, and a new way to connect with Native American visitors to the Center.

I knew I'd need to start growing seedlings for transplant very early in the season. I purchased Crimson Sweet watermelon seeds and Anaheim, Big Jim, and Hatch Medium green chile seeds from Payne's Nursery in Santa Fe. Then I started the seedlings in the Center's kitchen in late February, where southern exposure ensured more light throughout the day. In two weeks, the first green shoots appeared, and by the beginning of April, I could safely and gradually introduce the maturing melons and chiles to fresh air in the warming days without fear of frost nip.

At around the same time, a good friend of mine from Cochiti Pueblo, Chuck Naranjo, gave me an ear of heirloom Cochiti blue corn; the kernels would serve as seeds. He also helped me to amend the garden beds at the Center with horse manure from Bernalillo. I soaked Chuck's blue corn in a small bowl of water overnight on Thursday, April 6, and planted the kernels the following evening. In a little less than a week, the ground had warmed up sufficiently for the corn to sprout. By the end of two weeks, I had two full beds sprouting heirloom Cochiti blue corn.

In the meantime, I had contacted my Hopi friends, the Lalos, from the Third Mesa village of Hotevilla, Arizona, to see if they would be willing to demonstrate their planting techniques at the Center, and they agreed. Mollie Toll then contacted

The first ripe ear of blue corn at CNMA. Photograph by Scott Jaquith.



Cochiti blue corn and Santo Domingo tobacco in late June. Photograph by Scott Jaquith.

Native Seeds/SEARCH in Tucson, and obtained a variety of seeds, including Hopi blue corn, Cocopah sweet corn, Hopi red watermelon, Santo Domingo ceremonial tobacco, Hopi black pinto beans, and Hopi white tepary beans. We scheduled a Friends of Archaeology event in May, and the entire Lalo family demonstrated traditional Hopi planting methods to a large group of participants on a clear Saturday afternoon.

As the Lalo family showed, Hopi men and women grow their plants in separate garden plots according to the needs of the particular plants. Hopi men plant corn, beans, squash, and melons in their fields below the mesas and Hopi women plant their gardens adjacent to natural springs to utilize those permanent water sources. The Hopi traditionally plant with a *tepsoya* (greasewood planting stick) in the soft soil below the mesas and near the springs. Hopi men and women take advantage of every drop of available moisture in the soil, and the garden plots and fields that benefit from the most regular watering are, naturally, the most valuable and belong to the most prominent Hopi clans.

The OAS archaeologists were also very interested in the possibility of growing plants using the cobble-mulched, grid garden method that prehistoric farmers commonly employed throughout the Southwest, most notably within the Chama River valley northwest of Española. As an experiment,

archaeologist Chuck Hannaford, former head of the OAS Education Outreach program, laid out a dozen one-meter-square grids within a sandy patch of barren ground at the Center, then lined each grid with large river cobbles, and spread small pebbles inside the grids to act as water-retaining mulch. This dry farming method maximizes all the available water in the air by condensing airborne moisture and forcing it towards plants' roots. Chuck selected a hardy variety of popcorn to act as the catalyst for the experiment. Once Chuck planted the corn in the grid garden, it was left to grow according to the dictates of the natural elements; aside from early hand watering, these plants would need to survive on their own, without the constant care we showed to the rest of the plants in the garden.

My Pueblo Indian friends made sure to impress upon me the importance of my interactions with my plants as they grew. They encouraged me to talk with my corn, to care for it as if it were a child, and to sing to it regularly. They made sure to tell me that whenever I worked in my garden it was imperative that I leave all negative thoughts behind before I entered the garden to work.

Nature proved to be the most fickle element in the entire farming equation. Three weeks after I planted the Cochiti blue corn, on April 29, a heavy snowstorm dropped between four and six inches of wet snow. With Chuck's assistance, I



Desert cottontail kits at CNMA. Photograph by Scott Jaquith.

managed to cover the new corn shoots before the heaviest snow fell, but I had little hope the corn would survive the freezing nighttime temperatures. When I lifted the thick, black plastic tarp the following Monday morning, to my surprise, they had all survived and had been growing comfortably. It wouldn't be the last time the Cochiti blue corn plants would surprise me with their hardiness and resilience.

Chuck enthusiastically helped me water and weed the plants as they grew through the hot and windy late spring and early summer. We devised a schedule to water the plants during the early morning and late evening hours, when water was more easily absorbed by the plants' roots, and not lost to evaporation during the heat of the day.

But the watering was the easy part. We found that controlling pests was a never ending task. Desert cottontail rabbits savored the tender new shoots and overhanging corn leaves. Curve-billed thrashers seemed to relish pulling out the brand new sprouts of the Hopi black pinto beans. Once the beans had grown about ten inches high, however, they didn't bother the beans again. In order to protect the growing

plants, I sunk empty stainless steel cans in the soil around the plants. This is a common method for modern Hopi farmers to shelter their young corn and bean sprouts and serves as a windbreak against fierce springtime winds. The rabbits used the growing stand of Cochiti blue corn as shelter as they foraged in the beds of Hopi blue corn and Cocopah sweet corn... until an adult coyote began stalking through the corn looking for a meal. And so, the small patch of corn, beans, chile, and melons became an ecosystem unto itself. That small garden patch at the Center must have appeared as an oasis in an otherwise vast, arid landscape. Throughout the course of the summer, we saw roadrunners, mice, hummingbirds, ravens, blackbirds, lizards, and a wide variety of insect life were drawn to its plenty.

Along with pests, the lack of nutrients in the soil also affected the growth of several plants. The soil at the Center is largely clay, interspersed with numerous small river cobbles—not very conducive for healthy plant growth. Since 2012, OAS Director Dr. Eric Blinman developed a landscaping plan that includes several raised

beds that we used for the garden project. Much of the backfill in the beds is sandy, appropriate for plant growth. Fertilizing it with horse manure and commercial fertilizer granules helped to amend the soil, which led to vigorous growth. Everything outside of the beds was difficult to work with. Growth of the plants in the surrounding areas proved to be meager, especially the Hopi melons, which require a large amount of nitrogen in the soil in order to grow.

Once Chuck planted the popcorn in the cobble-lined grid garden beds, it began growing, albeit slowly, in spite of the cottontail rabbits' frequent nibbling. Chuck nurtured the fledgling popcorn throughout the summer, weeding the cobble-lined grids as the corn clung to life in the least hospitable portion of the Center's grounds. It was clear that without constant care in the form of watering and pest control, the plants in the experimental grid gardens would struggle. The little popcorn plants were wholly dependent upon rainfall, and were the last of the plants to mature, only reaching a height of about three feet. Only one corn plant grew large enough to sprout tassels. The first hard frost in October cut the grid garden

experiment short, and not long after, the cornstalks withered and dried out without bearing any ears of corn.

Watering the plants became extremely important in the late spring and early summer, before the monsoon thunderstorms arrived. The Cochiti blue corn, in particular, raised on irrigation water from the Rio Grande, would have foundered if it had to rely strictly upon rainfall. But the Hopi blue corn we sourced from Arizona is used to drier soil and less water, surviving on rain and water that runs off the mesas and slowly percolates through the porous sandstone down to the broad, sandy plains below. It would have survived on a leaner watering schedule, but it thrived with regular and thorough watering. The chile that I started in the Center's kitchen took a while to establish itself after the Lalo family planted it in late May, but it quickly took to the clay soil and flourished; I estimate that the twelve plants produced about 200 individual chiles from the middle of July until mid-October.

Talking to the Cochiti blue corn plants, and clearing my head of negative thoughts as I gardened, seemed to help. By mid-July, the Cochiti corn was extremely tall (about seven feet) and nearly all of the plants were firmly established and beginning to produce fruit. By the end of July, the chile was mature enough to be harvested, and the Cochiti blue corn plants sported large ears.

Throughout the summer, many Native American visitors came to the Center and generously shared their planting and farming knowledge. The Cochiti blue corn was the star attraction. Ultimately, the corn's stalks grew to be well over eight feet tall. The Hopi blue corn, while not nearly as tall as the Cochiti variety, made up for its height in sheer abundance of ears. The Hopi red watermelons were a big hit with everyone who tried them, and the Anaheim green chiles grew to maturity in mid-July and only stopped producing fruit after the first hard frost. As tokens of appreciation for Native visitors' help and advice, I'd often send them home with a bag full of corn, chiles, and melons.

The chile, corn, melon, bean, and tobacco plants produced an impressive amount of food and consumable material that staff, visitors, and people in the nearby Pueblo villages enjoyed. Most of the food was of excellent quality and all of it was entirely free from pesticides. Visitors remarked at how inviting the building looked with the verdant leaves of the corn swaying in the gentle summer breeze and frequently asked to be shown what we had accomplished in such an arid location.

I've asked Dr. Blinman for permission to continue the garden project in 2018 and he has graciously agreed. I've saved seeds from this year's plants, and I plan to start growing the starts in March 2018. I've also received requests from several Pueblo people to plant a few other heritage varieties of plants, including Hopi red, yellow, and white corn, as well as more tobacco and a few other varieties of native melons that have been selectively bred in the Rio Grande Pueblos.

Since watering the plants turned out to be the most time-consuming part of the project, we hope to install a simple irrigation system after preparing the soil for planting in April. Chuck and I spent an estimated twelve hours per week, combined, hand-watering the plants throughout the summer. It may not have been the most efficient way to deliver water, but it allowed Chuck and me to monitor the growth of the plants and look for pest damage. It was also a wonderful opportunity to walk through the plants and connect with them on a level that my Pueblo friends insisted was the one true reason that a farmer's plants will thrive.

By any standard, the garden project was a surprising success. It fostered numerous discussions among the archaeologists, and plenty of inquiries from our visitors. It certainly helped me to appreciate the connection that modern farmers have with their land, their plants, the seasons, and our weather in the Southwest.

The small area of sandy soil at the Center proved to be the most bountiful eighth of an acre that I'd ever encountered. With the proper attention and care, the garden beds, measuring roughly 200 feet by 50 feet, were able to support plant life that produced enough food for a family for weeks, perhaps months if the corn had been conservatively portioned. The wildlife that appeared in the garden, seemingly from nowhere, provided hours of observation and entertainment. I particularly enjoyed the connection that I'd made with the plants themselves and learned to take pleasure in spending time in the garden, completely immersed in the sound of rustling corn leaves and the sight of cornstalks swaying in the late evening light. The garden project was a labor of love, filled with all of the ups and downs of any healthy relationship—a relationship I'm certainly looking forward to growing for many years to come. ■

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