

Seedhead News



NATIVE SEEDS
S.E.A.R.C.H
S I N C E 1 9 8 3

Celebrating 40 Years of Seed Conservation

No. 129

nativeseeds.org



Dear Friend,

For over 40 years Native Seeds/SEARCH (NS/S) has been conserving and growing seeds from our desert region stretching from Chihuahua, Sinaloa, Durango, and Sonora, Mexico to Arizona, New Mexico and into Colorado and Utah. What started as a dream between four friends who saved and grew seeds across Tucson in small gardens, sprouted into an internationally recognized seed conservation organization.

Seeds are generational gifts passed within families, shared between neighbors and farmers, and spread through trading. Each exchange of seeds connects us to our past and, in many cases, connects us to ancestors who cared for them on these same lands. NS/S works to continue this tradition by reconnecting and reintroducing gardeners and farmers to these seeds – seeds that have been lost, and seeds that are uniquely adapted to our region and climate. Our goal is for these seeds to be vibrantly present now and into the future across our region and, especially, in the communities who stewarded them before us.

Seed saving is communal and requires the support of many hands. At NS/S, we would not be here today if it wasn't for the many individuals and communities who support this effort: the founders, their friends, board members, the seed donors who shared and continue to share their seeds, loyal members, donors and customers who provide ongoing support, and our staff and volunteers who carry the day-to-day work of planting, harvesting, cleaning and distributing these seeds. Lastly, we could not do this work without the partnerships we have with growers and community organizations who also care, save, and distribute these seeds.

In these pages, you'll hear from voices that support NS/S and have been part of our history. Like a bountiful garden, NS/S relies on a large, diverse and representative community for its success.

With immense gratitude,



Alexandra Zamecnik
Executive Director



My Reflections on 40 years

By Karen Reichhardt, Co-founder & NS/S Board Member

How did you find the seed that contributed to the Native Seeds/SEARCH seedbank? Who were the gardeners and farmers keeping traditional seedstocks? Can you still find people farming according to the traditional methods? These are the types of questions I am asked as board member and co-founder of our nonprofit that is now 40 years old. When asked, my mind pictures the communities we visited and the connections and friendships we made in the early days.

The seedbank idea and effort started at Meals for Millions by Mahina Drees and Gary Nabhan to meet the demand for garden seed on the Tohono O'odham reservation. In truth our NS/S story begins even earlier, in the late 1970s and early 1980s, when the four of us founders were participating in a vibrant community of academic and cultural exchange at the University of Arizona and other Tucson organizations.

An ad hoc university seminar called the Tepary Burrito Society provided a sounding board for topics ranging from ethnobotany to astronomy. Lively potlucks featuring tepary beans, blue corn, saguaro syrup, chiltepins and mezcal bacanora were common. We were mentored by scholars of ethnobotany who shared their knowledge and introduced us to their close friends who were farmers in villages and Indigenous communities. I recall several instances where new friends helped us find rare varieties that are represented in our seedbank today.

When we founded NS/S, we chipped in \$100 each for start-up expenses. With \$400 we paid for publishing articles of incorporation, submitting our 501c3 application, and mailing letters to potential donors and members. Our first seed listing offered 47 different ancient crop varieties and crop wild relatives from the Southwest and NW Mexico for a \$1.00 donation per packet. In 1985, our sister organization, Seed Savers Exchange, published a survey of seed catalogues which stated 93% of NS/S seed was not marketed anywhere else in the world.

The Seedhead News, first published in 1983, has recorded major accomplishments and NS/S stories over the past four decades. The newsletter communicated about changes in agriculture and biodiversity conservation. There are accounts in the early issues about saving seed from near extinction. To learn more about our history and how we were able to find and share seed, check out our newsletter archive: nativeseeds.org/shn

Our success continues because of dedicated friends, a devoted multi-cultural board, staff and supporters who keep the organization current and connected with the living seeds. Our current Seed Policy recognizes the tradition of sharing seed. We are reminded that seeds are our living relatives. By growing, saving, and sharing seed, we are keeping them in the public domain for future generations.



Seed Savers Speak



Voices of NS/S: A Mosaic of Memories from Friends Old & New

Martha “Muffin” Burgess, Former Education Director, Former Board Member

Known to many as “Muffin”, she is a good friend of the founders and involved with NS/S from the start. She remembers hosting festivals such as La Fiesta de los Chiles. “Chiles were iconic and could bring people together over food.” The annual festival would teach people about the many varieties of chiles, and the concept of selection based on plant qualities such as heat tolerance and taste. “It represented a message of diversity, and the spice would excite people to learn new things.”

There was also Dia de San Juan, a festival traditionally celebrated by the Tohono O’odham to welcome the monsoon season. Muffin learned of this festival from her friend and mentor, Juanita Ahil, a Tohono O’odham elder who led desert plant workshops for NS/S. According to Muffin, the festival NS/S hosted at the Tucson Botanical Gardens was the first time the celebration was brought to the general public of Tucson, and hundreds of people showed up.

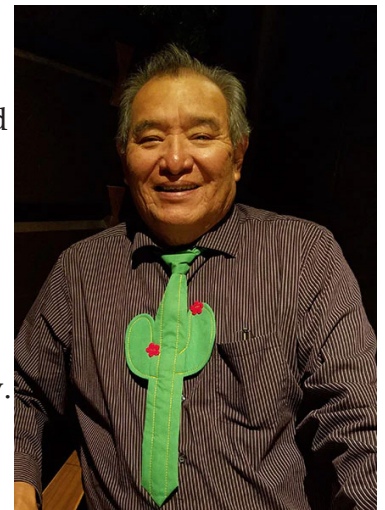
Educating and engaging people with traditional foods and their seeds was at the core of these gatherings. In those days when Muffin thought about the future of NS/S she says, “I had a feeling we were hoping to get the seeds out to every community that could use them.”



Angelo Joaquin Jr. (1952-2021), Former Board Member, Native American Outreach Coordinator and Diabetes Project Director, Executive Director

A quote from a video interview Angelo did with Arizona Experience in 2013:

“NS/S was an experience that was different for me because we are looking at seeds from two different standpoints. One was from the scientific perspective, and one from the cultural perspective. The people who collected the seeds and are taking properties from these seeds to create new species, are doing this in a lab, and they’re doing it very quickly. Native farmers did the same thing, but over generations. They have attached songs, prayers, ceremonies and other relative activities to these seeds. So while some people can understand, strictly scientific aspect, for me as an O’odham, and for O’odham in general, the seeds from the desert are the most valuable.”



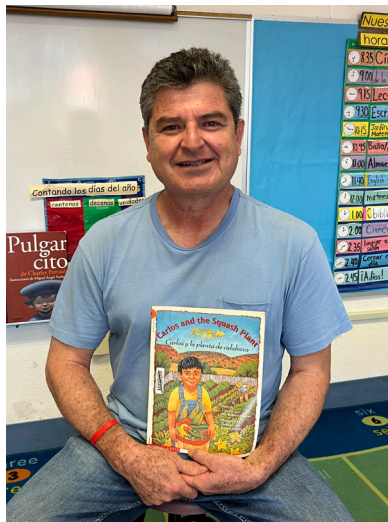
The [NS/S] founders were concerned that the crops were endangered, because of the fact that farmers weren’t producing as much as they had in the past, some of it was due to the environment changing and some of it was simply disinterest. The founders recognized that it was these unique seeds—these human

varieties—that could serve as a safeguard against losing species of foods through a number of catastrophes...and the fact that these specific genes allow them to be drought resistant. If all of these seeds are put into a seed bank then future generations would be able to go and not only collect that seed, but also put it back in the ground so it didn't disappear totally..."

Julian Barcelo, Community Seed Grant recipient, First Grade Teacher, Davis Bilingual Elementary Magnet School in Tucson, Arizona.

Julian is from the village of Huásabas on the Rio Bavispe in Sonora. He grew up growing and eating food that followed the seasons and the rains. He remembers that in the verano, during the monsoon, families grew sandias, watermelons, and in the second rains, they planted calabazas. He remembers his Tio growing a special variety of corn for making a delicious pinole. When Julian became familiar with NS/S in the early 2000s, he learned about Chapalote corn, and realized this was the corn his Tio grew!

As a first-grade teacher, Julian wants to create a connection between his students and gardening and the relationship of plants to the seasons, as well as cooking. "By using these seeds, the students learn about the concept of what is native and how a seed adapts and survives." The students have journals and make observations in the garden, they learn about pollination and female and male flowers. "I tell them they are scientists, científicos, and that they can go to college to keep learning and observing." They grow the calabazas



with the monsoon, and once harvested, cook multiple dishes, including: quesadillas de flor de calabaza, calabacita with veggies and cheese, atole de calabaza for the Dia de los Muertos and finally, they eat the seeds and candy the rinds.

"We are forgetting the good things from our past. These students connect with traditional seeds and recipes and go home and tell their parents and this brings a great sense of pride among families. What I do here with the students is what I used to do when I was a little boy. I grew up using the calabazas."

Dr. Sandra E. Nordmark, Member & Donor from Ceresco, Michigan

"As a long time supporter of Native Seeds/SEARCH, I value their mission and dedication to conserve and promote the unique values of heritage seeds. The working partnerships and educational outreach to Indigenous communities enhances the ongoing preservation of culturally important and rare genetics. In these days of rapidly escalating climate challenges, arid adaptive seeds will become even more essential to helping secure a sustainable food system."





Brandon Merchant - NS/S Board Member; Garden Coordinator at the Community Food Bank of Southern Arizona and Community Member/Gardener at Barrio Kroeger Lane Community Garden.

“Arid adapted and traditional crops are the best crops to start with for a new gardener. You’ll have success and it will be some of the most nutritious food you could possibly eat. My first garden experience was with my tata. He is a charro, a Mexican horse trainer. Just like where this garden (Barrio Kroeger Lane) is, my nana and tata lived on the river. On the other side was the Colorado River. I wanted to plant a garden one day so my tata told me to take some horse manure and mix it into the soil. He had some radish seeds so we planted those. Putting some manure in first and planting some seeds. It was so simple, yet it worked!

Seed saving is important for millions of reasons but for me it is the connection you feel when you save seeds and plant seeds you have saved. Part of you goes into that plant, you eat it, then part of it goes into you. It is a cyclical connection.”

Charles Bernholz, Lifetime Member, Donor from Lincoln, Nebraska

“The 40th anniversary of NS/S calls for abundant celebration, not only for the sustained crop gifts that NS/S has encouraged and worked hard to preserve, but also for the continued enthusiasm of those interested in nourishing the important future of original plant diversity and Indigenous heritage and culture in the Southwest.”

Robert (Bobby) Stone - Former Lt. Governor of Gila River Indian Community and NS/S Board Member

Our friendship with Bobby Stone started in the early 90s, when he started working for NS/S when the organization was at the Tucson Botanical Gardens. When working in the garden, one of Bobby’s earliest memories was a grow-out of Tohono O’odham gourds that climbed up a big mesquite tree in the gardens, so they had to climb the tree to harvest the gourds!

Bobby has been growing food his entire life. Most of his childhood was spent working on his mother’s 10 acre plot in Gila River. Working with his Dad and siblings, they’d grow tepary beans, Ha:l squash, O’odham Ke:li Ba:so melons, sugarcane, and what they called “milo grains” or grain sorghum. They’d harvest the grain by hand, thresh it with horses, loaded it in 50-100 lbs sacks and traded it at the local post for groceries.

While he worked at NS/S, he recognized most of the seeds in the collection from the seeds he had back in Gila River. But what amazed Bobby was the diversity of seeds that came from various tribes. He saw seeds of colors which he had never seen before. Not soon after, he recognized a beige lima from Gila River and noticed it was donated by his great uncle, Burt Cooley! Bobby’s Dad also had donated the Gila River sugarcane that is in the collection today.



NS/S’s Andrea Carter with a plant donation for Point of Choice Behavior Clinic, a youth social services center where Bobby educates children on traditional foodways and culture.



Helena Gonzales, Seed Conservation Associate

“My family has known about NS/S for many years. We have received seeds and my relatives have even donated seeds. I enjoy working here, everyone is amazing and so nice. I love learning all about the crops and also getting to know the crops personally. Agriculture is my passion and learning to responsibly steward native seeds is truly an honor for me.”

Betsy Armstrong, Fulfilment Coordinator,
Longest serving NS/S staff member

“NS/S became official in 1983 in the last century. Junie Hostetler, former Distribution Manager, asked me to volunteer in 1989 and I joined the staff in September 1991. As of this year, I will have been here 32 years! I’ve seen many changes of location as well as staff. I hesitate to ponder retirement from the best and most rewarding job I’ve had (aside from motherhood) with some of my favorite people!”



Then & Now: Wild Chile Conservation

By Justin Risley, Communications Coordinator

Chiltepins are the wild progenitors of domesticated chiles in the *Capsicum annuum* species including jalapeños and bell peppers. They grow wild from southern Arizona and Texas through Mexico and all the way to South America. Wild chiles have been intensively utilized by people for 10,000 years.

NS/S has had an active role in the conservation of the chiltepin for decades. In 1999, NS/S helped establish the Wild Chile Botanical Area in Tumacacori, AZ. This preserve holds the largest population of wild chiltepins in Arizona.

Today, we conserve 32 varieties of chiltepin. In the past year NS/S has facilitated community grow-out partnerships with local organizations such as the Drawing Studio, the Nature Conservancy, and Pima County Libraries to establish chiltepin in the Tucson community.

This is a piece from Seedhead News No. 66 written in 1999 by former Director of Conservation and Seed Bank Manager, Suzanne Nelson, celebrating the official establishment of the Wild Chile Botanical Area.

On June 3, 1999, the Wild Chile Botanical Area was officially designated a special management area within the Coronado National Forest (CNF). The 2500-acre area is home to perhaps the largest and healthiest population of wild chiles (*Capsicum annuum* var. *aviculare*) north of the Arizona-Sonora border. With fewer than 10 populations of wild chiles documented in the state, this designation recognizes the importance of the site as a region rich in genetic resources, in particular, wild crop relatives.

Native Seeds/SEARCH's involvement with the wild chiles began nearly 10 years ago. The identification of wild chiles growing in canyons just north of the border attracted the interest of a number of intrepid plant folks, who, being well-versed in plant geography, realized that these populations occurred at the

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the Seedhead News

Toasting El Chiltepin!

Wild Chile Botanical Area Established in June
by Suzanne Nelson, Director of Conservation and Seed Bank Curator

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In 1993, NS/S entered into a Memorandum of Understanding (MOU) with the Coronado National Forest to conduct research on the site. The MOU was granted in response to the NS/S proposal seeking special designation for the Rock Corral Canyon site as an "in-situ genetic reserve for the protection of wild chiles and other plants of economic importance or of conservation concern." An *in situ* reserve for wild chiles would allow for better understanding of the ecological conditions that effect their growth and reproduction, helping ecologists or land managers develop conservation strategies for managing wild chile populations.

Over the years, research efforts have involved identifying other wild chile populations in the U.S. (wild chiles also occur in Texas), tagging and mapping individual chiles at Rock Corral Canyon (a.k.a. "The Chile Reserve" and now, Wild Chile Botanical Area), surveying the plants, birds, mammals, reptiles and amphibians (fourteen species of sensitive plants were identified at the site), constructing fenced enclosures to examine the effects of grazing, sampling the native vegetation and establishing permanent sampling plots, producing a GIS database for the area, interviewing local residents about historical use of the chile resources, studying seed dispersers and predators and the effects



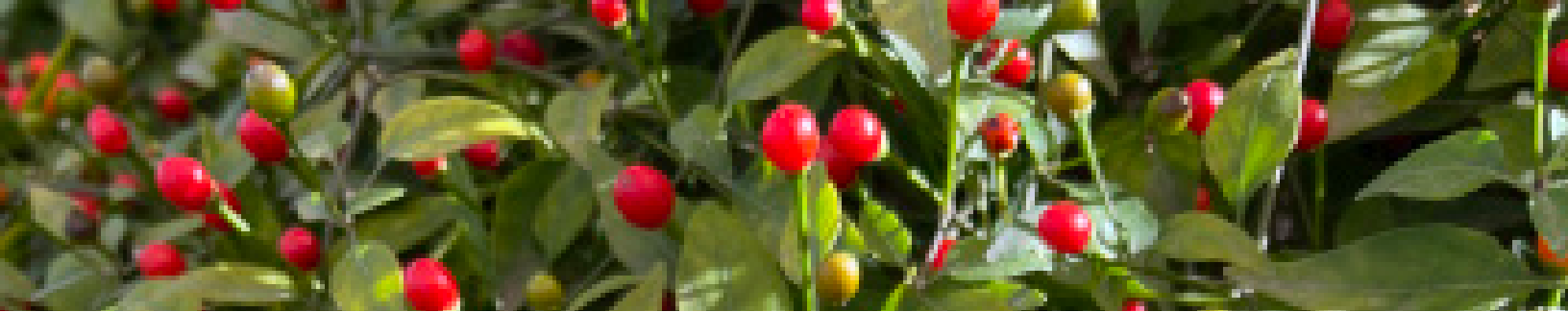
Celebrating: L to R: Angelo J. Jaajum, Jr., John McGehee and Mimi Falk of the U.S. Forest Service, and Suzanne Nelson.

Seedhead News No. 66, published in 1999, scan the QR code to read the full story.



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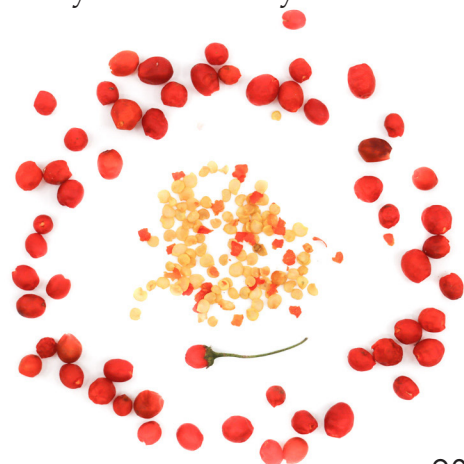
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Wild chiles, otherwise known as chiltepines, are a culturally and economically important resource south of the border. They can be found in every kitchen and restaurant in northern Mexico. In Sonora, entire communities participate in wild-harvesting chiltepines from surrounding hillsides from late September/early October to late November/early December. By some estimates, chiltepineros (chiltepin harvesters) may pick as much as thirty tons of chiltepines in a season. Prices for chiltepines vary with supply but can reach upwards of \$72/lb. During a trip to chiltepin country last December, Jesus Garcia and I came upon a room of boxed and ready-to-ship

chiltepines weighing in at 1-1/2 tons! In October, 1998, Josh Tewksbury (see side panel for more on his research), Rigoberto Lopez and I headed into the bold and beautiful chiltepin country of central Sonora. Rigoberto, from the University of Sonora in Hermosillo, had been working with ranchers in the area trying to develop a program in sustainable use of natural resources. The chiltepin figured prominently on his list of potential candidates for a model program. The economic importance of chiltepines to local communities in northern Mexico, coupled with extensive ranching activities and lack of any cohesive strategy for managing the resource makes the chiltepin industry a commercial endeavor on the brink of potential disaster. Though chiltepin is nearly ubiquitous along the flanks of the Sierra Madre Occidental, it is nonetheless vulnerable to a host of potential threats, including overharvesting, grazing pressures, fire and drought.

This year's plans for chiltepin work in Sonora include setting up long-term plots for monitoring and investigating the effects of different harvesting strategies on chile fruit production, holding a design contest in local schools for a poster focusing on chiltepin awareness and conservation, and organizing ranchers, chiltepineros, chiltepin buyers and others interested in helping to develop harvesting protocols and management strategies that serve to protect wild chile stands while also supporting local communities both economically and culturally.



Then & Now: White Sonoran Wheat

By Alexandra Zamecnik, Executive Director & Justin Risley, Communications Coordinator

“One of NS/S’s greatest contributions was the preservation and subsequent popularity of the Sonoran White Wheat. This wheat, which had become obscure and almost disappeared, was nearly destroyed in 1996 during an outbreak of a wheat fungus called Karnal Bunt. The USDA had wanted to confiscate and destroy all of the NS/S wheat varieties and Executive Director, Angelo Joaquin Jr., and other staff convinced the USDA to not destroy these wheat seeds.

Today, thanks to NS/S’s efforts of preservation, and literal physical protection, the Sonoran White Wheat can be consumed in a variety of ways, including in breads, bagels, crackers, wheatberries, flour and beer across Southern Arizona.”

-Kevin Dahl, Tucson Ward 3 Council Member, Former NS/S Executive Director & Board Member



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Karnal Bunt: There is Fungus Among Us & Our Wheat is Off the Street

The Native Seeds/SEARCH wheat seed collection is under quarantine, as is wheat in the entire state of Arizona. Karnal bunt has been found here, both in wheat on large-scale farms and in one wheat variety in our seedbank that was never released through our catalog, and now never will be.

What is Karnal bunt, you might ask, and how did it get that name? To some, it sounds more like a play you would make during a nudist baseball game than a cereal fungus. The disease is named for the location where it was first found, back in 1931 in wheat-growing areas near the city of Karnal in India. It is caused by the smut fungus *Tilletia indica* Mitra (also called *Neovossia indica*) and is spread by spores. Infection occurs during the flowering stage of the plant, when the developing ovary of a host plant comes into contact with infectious sporidia. Infected grains show no symptoms until maturity. Even then, the disease cannot be detected in plants growing in the field: the grain must be removed from the head and examined. Three other diseases already established in the United States can be mistaken for Karnal bunt: black point, common bunt, and dwarf bunt of wheat.

Karnal bunt is not harmful to humans but will lower the quality and reduces the yield of the crop, while giving the wheat an unpleasant fishy odor.

The USDA on March 25 ordered a statewide quarantine on Arizona’s 160,000-acre wheat crop following the March 4 discovery of Karnal bunt on a sample of 1995 wheat from a farm near Gila Bend. The quarantine restricts the movement of wheat, farm equipment and soil from fields where wheat was planted. It allows wheat free of Karnal bunt to be sold normally for milling only, while infested crops may

continued on next page



Officials from the Karnal Bunt Task Force sample wheat grow out at Sylvester House before destroying the crop.

Seedhead News No. 53,
published in 1996, scan the QR
code to read the full story.

According to the Heritage Grain Trust, almost all of the grain used today for baking, brewing and distilling are from a few modern hybrid varieties. These hybrid varieties are susceptible to drought, and rely on significant inputs, including fertilizers, herbicides, and pesticides.

In 2012, a collaboration between bakers, farmers and NS/S was formed to revive the use of White Sonora wheat as an option for baked goods. The project incentivized local farmers to try this drought tolerant, heritage grain and for bakers to use it. NS/S had the seeds and shared them with local farmers who then shared the grains with bakers, including Don Guerra, owner of Barrio Bread.

Last year, Don was given the prestigious James Beard award for outstanding baker for his use of heritage grains, including the white Sonora wheat. The popularity of Barrio Bread and White Sonora Wheat would not have been possible without the conservation and stewardship of these heirloom seeds and without partnerships between seed savers, farmers, bakers and brewers.

Barrio Bread

2023 8

We had the chance to speak with Don recently, and talk about his first experience with the White Sonoran Wheat over a decade ago:

“I started working with NS/S in 2011 on the Sustainable Cultural Research Education Grant from the USDA, an effort to revitalize the grain economy and get that wheat back in production and growing. And so I was kind of recruited as a test baker. My role would be to make something with the seed. I was given the seed, milled it into a flour, and made bread with it.”

Don said how at first, the soft, white wheat may not seem ideal for bread making, but it was the first wheat of the Americas, brought by Father Kino. “So to me, that’s special. We had lost touch with the seed and lost touch with the bread that was being made with it, and the foods being made with it, so now we had this opportunity to strengthen the foodshed, and make sure this wheat is around into the future.”

Those first loaves had a strong aroma of flour that had been absent from most breads today. He describes them as, “unlike anything I had experienced, and I knew right then that this was an opportunity for agricultural, economic, and gastronomic stimulation.”

“None of this would have been possible without the acknowledgment of seeds and where food comes from.”

Not soon after, Don and NS/S got together to host a gathering with local farmers. They asked if any farmers out there were interested in farming the grain. “Thankfully, some people raised their hands and said, ‘You know what? Sure, let’s give this a shot.’”

Don also credits a majority of the impact for this whole grain revitalization to the home bakers and heritage food enthusiasts of the Tucson community, which contributed to Tucson’s City of Gastronomy designation. “It really wasn’t until 2015 when Tucson was actually awarded the City of Gastronomy that people started to pay attention.”



Don Guerra with White Sonoran Wheat

“Today, we’ve been able to develop this sustainable bread culture here in Tucson, based on what grows here, which was unheard of 20 years ago, 30 years ago, 40 years ago since it was all wiped out after 1950 with the Green Revolution. This is really the efforts of the seed saving community.”

In the near future, Don plans to host a grain gathering in Tucson, but also statewide. The gathering would acknowledge Arizona’s role in revitalizing the grain economy. It would be an opportunity to showcase this model to the rest of the world.

“Tucson is a special place for this. People want to see good in the community. It’s really made possible by places like Native Seeds/SEARCH. None of this would have been possible without the acknowledgment of seeds and where food comes from. We have to talk about it more and more to not let this slip away.”

A Short History of Mrs. Burns' Lemon Basil

By Barney T. Burns, PhD., NS/S Co-founder (1945–2014)

This article originally appeared in *The Seedhead News*, No. 103, 2009

My Mom, Janet Ann Burns, and I moved into our first real home in 1951. It was located on Tracy Place in Carlsbad, New Mexico and was one of the first houses constructed on an historic cotton field next to an earthen irrigation ditch. During my first summer at Tracy Place, the front yard weeds were so high and lush that I often stalked imaginary lions and tigers through them. The backyard became the site of Mom's new garden. She consulted with a Mrs. Clifton, one of Carlsbad's most successful gardeners. This remarkable woman sold *The Moon Book*, a small book that guided people's gardening practices according to the phases of the moon. In addition to advising Mom on gardening, Mrs. Clifton gave us lemon basil seed she had saved from her last harvest of this tasty herb.

I never discovered how Mrs. Clifton came to be the steward of this truly unique variety of *Ocimum basilicum*. Some years after we started growing it, Mom learned that Mrs. Clifton had been planting this variety since the 1920s. Prior to the introduction of Mrs. Burns' Famous Lemon Basil in NS/S's Seedlisting, it was generally believed that lemon basil varieties were first introduced to the U.S. public via collections made in the early 1940s by the U.S. Department of Agriculture from Thailand. This widely held belief was first conveyed to me by Thomas DeBaggio and Susan Belsinger, while researching their book, *Basil, an Herb Lover's Guide*. Pat Kenny, a well-known and highly recognized herbalist from the Washington, D.C. area, reaffirmed this idea during an herb workshop sponsored by NS/S in March 2008. Interestingly, in an herb pamphlet prepared for the U.S. National Herb Garden in 1989, she notes that lemon basil was native to northwestern India as well as Thailand. John Parkinson, in his famous 1621 tome, *A Garden of Pleasant Flowers*, notes that lemon basil was widely grown in England and was, in fact, England's "common basil." John Gerard in his *The Herbal or General History of Plants* also states that lemon basil was present in England prior to 1633. The Laurel Hill Herb Farm, owned by the renowned herbalist Gertrude Foster and her husband Philip, was the first documented U.S. public outlet for lemon basil seed, and/or seedlings, some time after the 1940s.

When Thomas DeBaggio and Susan Belsinger asked me: "Why did this unique and worldclass lemon basil end up in Carlsbad, New Mexico, and only in Carlsbad, New Mexico?" I could not answer their question. Possibly Mrs. Clifton got it from Thailand, India, or England while visiting one of these locales or she could have swapped the lemon basil seed with some other ardent gardener or herbalist. Perhaps, but improbable, another more common form of basil originally grown by Mrs. Clifton was changed over the years by southeastern New Mexico's hot and dry climate into our lemon basil. The answer to DeBaggio and Belsinger's question remains a mystery, while the lemon basil itself is a culinary miracle.

Mom and I continued to plant our basil each spring in our Tracy Place garden during the 1950s and 1960s. Sometime in the late 1950s, Mrs. Clifton called Mom to ask if she had any of the lemon basil seed to share. Somehow, Mrs. Clifton had lost her last viable seed and was devastated. Mom, of course, gladly returned this basil seed to Mrs. Clifton. Each fall, Mom and I uprooted our patch of lemon basil plants, washed the soil from the roots, and hung bundles of whole plants from the rafters of our front storeroom where they slowly dried. When they were ready, we took down the bundles and removed the dried leaves from the stiff stalks. The dried leaves were stored in cookie tins to retain the essential oils and aroma of the lemon basil. Every Saturday evening we mixed a handful of crushed up leaves into a bowl of ground beef. Hamburger patties with bits of lemon basil throughout were cooked into "Barney's Basil Burgers." Our Sunday noon meal also included dried lemon basil. Mom used it as a "secret herb," along with salt, pepper, and flour in which to shake our weekly fried chicken. Dried lemon basil was an integral ingredient in our homemade soups and enchilada suppers. Overall, the dried lemon basil became an essential element for the Burns' cuisine. It even was incorporated into the all-too-rare homemade pizzas we shared.

In 1963, I entered the University of Arizona as an anthropology major. Several years later, I had my own apartment on Elm Street. As a personal touch, I constructed two small planters out of mahogany wood scavenged from motorcycle crates. As soon as I



Barney in a field of lemon basil

completed my two three-foot planters, I sowed lemon basil seeds in them—my first solo gardening effort. Sometime in the late 1960s, I received an urgent phone call from Mom. All the seedlings of her lemon basil had been killed by a late frost and she had no backup seed set aside in her storeroom. Luckily, I had extra seed from my last harvest, so I quickly

mailed her some, which she immediately planted in her herb garden next to her grape arbor and long asparagus bed.

The loss of this unique basil variety by both Mrs. Clifton and my Mom demonstrates how a rare plant variety is at great risk. Without a backup source of seed, this unique type of basil would have been lost forever. The sharing of seed with other gardeners or even seed banks helps keep varietal extinction to a minimum.

I helped form NS/S in 1983. One of the first things I did was to get Mom's—by now—"famous" lemon basil into our newly-created seed bank. NS/S soon included it in our small seed listing as "Mrs. Burns' Famous Lemon Basil." It quickly became one of our most popular seed offerings. Over the years, it has remained very popular; its name has changed to Mrs. Burns' Lemon Basil. The responsibility of preserving this rare form of basil now rests with NS/S and its supporters and not just with me.

Mrs. Burns' Lemon Basil has been grown out at the NS/S Conservation Farm in Patagonia at least twice. Both times other crop varieties planted alongside the basil were attacked by pests, but the lemon basil plants remained untouched by bugs, perhaps because of its unique combination of essential oils.

Wars and Seedbanks

By Alexandra Zamecnik, Executive Director

During wars and conflicts, seedbanks face profound impacts including infrastructure damage, loss of staff and disruptions of traditional farming practices that may lead to the loss of locally adapted crop varieties. Unfortunately, there are countless examples from around the world of the impacts of wars and conflicts on seeds, seed saving, and seedbanks:

Colonization profoundly impacted agriculture in the United States and across the world by introducing exotic species, displacing and destroying Indigenous farming practices, crops and seed saving traditions, and promoting commercialization and monoculture through plantations.

World War II: Many seedbanks across Europe were disrupted or damaged during World War II. The Vavilov Institute of Plant Industry in St. Petersburg lost a significant portion of its collection.

Somali Civil War (ongoing since 1991): The conflict in Somalia has disrupted agriculture and affected seedbanks, leading to a decline in crop diversity and agricultural productivity.

Iraq War (2003): The Iraq National Seed Bank, located near Baghdad, was looted and its valuable seed collection was damaged during the aftermath of the invasion. This loss had a direct impact on Iraq's agricultural heritage and ability to maintain crop diversity.

Syrian Civil War (ongoing since 2011): The International Center for Agricultural Research in the Dry Areas (ICARDA), based in Aleppo, Syria, was forced to relocate to Lebanon.

War in Ukraine (ongoing since 2014): Conflict in Eastern Ukraine has threatened the Kharkiv National Gene Bank, which was in imminent danger during shelling in May 2022. The Food and Agriculture Organization of the United Nations (FAO), helped move plant samples and seeds to a safe location in the west of the country.



Embracing Tradition and Opportunity

By Jacob Butler, NS/S Board Chair

One of the memories that I hold most near and dear to my heart was during an interview.

As a young man, my mindset was very different from what it is today. I really didn't want to work or have a job. My only aspiration was to build my modest little homesite, grow our traditional foods and explore all the traditional aspects of daily life our people once practiced. I share this because it helps to understand the impact this moment had on my life.

I was asked to apply for the Community Garden Coordinator position with my tribe. I was very resistant at first. Thinking I had life all figured out, I turned down the request to be interviewed for the job (twice!). I didn't realize how accommodating my tribe was being. You see, they weren't asking me to apply, they were asking me to interview, without the application process!

Rather than giving up on me, the HR Director, well into her 80's, knocked on my door and asked to talk. That conversation was the catalyst to a lifetime of events that would never have happened without her.

She explained to me what this opportunity would provide for my family. But I still wasn't interested. What changed my mind was her comments of how I could be of service to my people.

She asked me why I was growing traditional foods. I told her "it was a way to be more connected to who we are as O'odham our Himdag (our way of life) and to feed my family". She smiled and said "you know that word means more than just doing the things we did." She went on to explain that a

big part of Himdag is helping people and when we have an opportunity to serve, we do it. She shared that what I was doing [farming] was something not many people were or even knew how to do anymore in Salt River. Then she asked if I would "just try". She told me if I didn't want to do it after the interview I could say no, but at least take the interview.

I wanted so badly to connect to my culture in a meaningful way, and her comments made me realize I didn't really truly understand the meaning of Himdag.

When the day arrived, I went into my interview with a few examples of the traditional foods, I had been growing at home. The Director asked me to name all the vegetables I had brought in and was excited to hear words she hadn't heard in many years. To be honest my confidence was pretty high, I was already envisioning the possibilities to come.

To my surprise a representative from one of the partnering universities was sitting on my interview panel. I think that's the first time I got a little nervous. You see I didn't earn a degree. My time at college was just short of two years, and my only certification was a G.E.D.

After formal introductions, we were about to start the interview process, when the university representative asked to speak. They asked what field my degree was in and what type of degree I had. Quietly I answered, saying that I only had a G.E.D., they responded by asking that the interview be stopped and a qualified applicant be considered, rather than wasting everyone's time.

In that moment, I was totally defeated. I had started to gather all of the things I had brought with me. While putting them in the old cardboard box I brought them in. I started to reflect on how stupid I must have looked coming into the interview full of confidence, when I never really belonged there in the first place.

As I was finishing up, putting my things away. The conversation about my qualifications was still going. The HR Director responded to the question. She told the representative of the university that she would decide to end the interview based on the representative's response to her question.

She asked if there was a university in the country where one could learn the knowledge I had gained from my elders about our traditions and farming practices. She offered to send me to school if there were a place that would teach me the things I learned from our people. The university representative responded by saying a place like that doesn't exist.

I was already holding my box of produce ready to apologize for wasting everyone's time so that I could leave. All I wanted to do was run out of the room and be done with the whole thing. I was really embarrassed and felt insignificant in that moment.

What this elder of my community told the university professor meant so much to me then, and still does today. She told them that if nothing like that existed then they would continue with the interview and kindly asked her to leave. She told her that they invited them as a guest but if they did not value our traditional knowledge their input was no longer needed.

The remaining panelists asked me to sit down, and we talked for over an hour about traditional foods, farming practices, and what I wanted to focus on when I started. In the end I was given the position that led to the development of not only a fully funded Tribal garden program but a Tribal seed bank that started with the little

bank of seeds I had started at home. I held that position for almost twenty years.

My connection to our people's values, our Himdag has grown over the years. It started in the little plots at my home and then bloomed in the fields of the garden program. I owe it all to the elder who didn't give up on me. She gave me an opportunity I could never imagine would mean so much to me today.



Jacob Butler, photo by C. Picciuolo, O'odham Action News

What would you like to see from NS/S in the next 40 years?

I would like to see more Seedbanks working together for everyone's benefit, and less dependency on NS/S.

I'd like to see greater participation from the Tribal communities, which are the source of a lot of the seeds in the NS/S Seed Bank. With an active presence on the NS/S board they could help cultivate lasting relationships and improve regional seed bank stewardship.

Lastly, the traditional farming methods that helped create the traits these seed varieties carry should be implemented and/or studied. We could create more sustainable farming practices based on traditional principles, but incorporate modern technology.



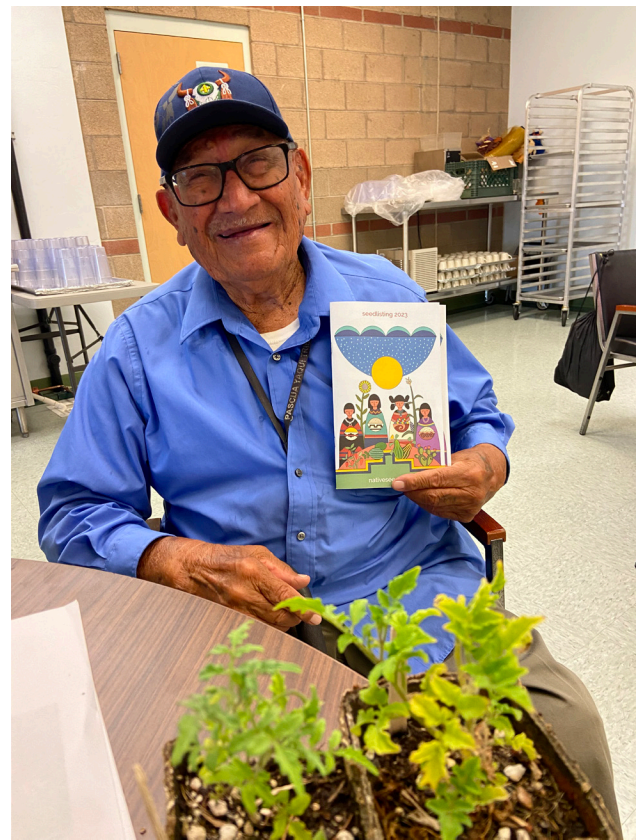
Outreach on the Road

NS/S Staff & Zuni Youth Enrichment Program members

By Dr. Andrea Carter, AG Outreach & Education Manager

NS/S has been hitting the road with visits to partner organizations and farmers across the Southwest. Outreach visits are a critical way we share knowledge, strengthen relationships, and learn. We have many highlights over the past year starting with a visit with longstanding Community Seed Grant recipient Zuni Youth Enrichment Program. NS/S staff member Claire Meuschke and I had the opportunity to spend a few days visiting their headquarters and satellite gardens. Whether conversing over shared meals or over garden beds, time spent together is paramount to creating community rooted programs.

Following Zuni, we made our way up to Jemez Pueblo, with a stop at Santo Domingo to deliver seedlistings to the new Community Health Center. In Jemez, we met with Bryn Fragua of Flower Hill Institute, whose objectives as a native-owned non-profit include improving economic self-sufficiency, agriculture, and food sovereignty of tribal communities. Visiting the Fragua family field, a plan was made to collaborate on growing out Hopi Short Staple Cotton and a high elevation Rarámuri Pumpkin.



Don Pedro, leader of the garden project at the Pascua Yaqui Tribe's Liogue Senior Center.



Pasqua Yaqui seniors receive Mayo/Yoeme Basil seed packets, and Chiapas Wild tomato plant starts from the Conservation Center's greenhouse.

Locally, our outreach has strived to strengthen outreach within the Pascua Yaqui Nation whose traditional homelands include the Tucson area. This has started with the development of crop fact sheets on traditional Yaqui foods including Alvaaka/Yaqui basil, chile, as well as Onaveño and Chapalote maize. Now developed, Claire and I have partnered with Pascua Yaqui Cultural Center, Senior Center, and Boys and Girls Club to share seeds, plants, and crop information.

Such outreach is a part of Native Seeds' dynamic seed stewardship that not only ensures crops of the past are conserved for future generations but that today we are connected with our agricultural heritage and traditional foods.



Spring cover crop of barley coming up in the Fragua family fields. The Fragua's run Flower Hill Institute out of Jemez Pueblo, NM.

Seeds Support New Diné Nonprofit

By Claire Meuschke, Community Seed Programs Coordinator

Hozho Center is a Spring 2023 Community Seed Grant recipient. The new non-profit got their deed to the property June 15, 2022 in Borrego Pass, New Mexico. They have 1,722 acres of land to revitalize using traditional Diné stewardship practices, which includes gardening and animal husbandry. They have matriarchal leadership with 3 Diné women serving as board directors.

Joshua Toddy is the On-site Manager at Hozho Center. He has been gardening for over 30 years. “I’ve always been gardening, since I was a little one. I don’t remember having toys. I always had sprinklers, plants, seeds, and a hose. That was what I had.”

Josh said that growing up in Many Farms, AZ, they only planted by seed, not transplants. They would take the biggest pumpkin and save the seeds for next season. “I was seed saving without even realizing it.”

Hozho Center has a traditional dry farm area on their hillside that at the time of this interview had only seeds from the NS/S Seed Bank growing. Five community members from the Navajo Nation came to plant the corn, “Constellation Corn” as Josh refers to it (Navajo Robin’s Egg Corn). Josh planned to plant Hopi Beans (Either Black String Bean from Hopiland or Mawiwjwa).

There were many infrastructure successes in the last year, since the organization was founded. Those who visited a year ago just saw fields of weeds, which have now transformed to market-scale, cover-cropped rows with fencing and the dry farming hillside. They were able to install two greenhouses. Josh spoke to me from inside one of them that used to be a “dark and dingy” coal storage. They repurposed panels from a chicken coop and installed clear corrugated sheets, transforming the coal storage room into a functioning, light-filled space to nurture plants.



*Joshua Toddy at Hozho Center
right: Hozho Center gardens*

95% of the seeds that NS/S provided were grown on the dry farm hillside, and will be saved to go towards increasing their growout for next year. Then the plan is to share seeds with the community, becoming a seed bank and seed library by 2025, using and revamping three root cellars on site. Ideally, they will be a back-up site for other growers who will hold a portion of their seeds as well in case of a disaster. Eventually Josh aspires to do the bulk seed exchange with NS/S.

They prepped and planted cover crops for their market garden plot rows, but rabbits completely annihilated the cover crop. When they tried to plant garlic, critters dug them up. Now they have rabbit fencing, but face other challenges like a surprise frost at the end of May that destroyed their cabbage and squash. At 7,300 ft elevation, it is a challenging climate to grow food. Their water pump house is across the road from the site and runs under the road. It has ruptured three times. Just recently, Josh ordered fittings for drip irrigation that didn’t fit correctly and caused water to leak. Mentioning the delayed summer rains, Josh summed it up, “Between faulty fittings, rabbits, and delayed rain, we’re adapting as best we can.”



In addition to unpredictable weather and garden challenges, Josh mentions the wide range of responsibilities in his job. Beginning a year ago as a gardener, Josh has shifted to becoming an on-site manager, supervisor, grant writer, outreach liaison, website designer, and supply runner. He notes that he recently went through all the photos from the year. Being there every day, it can be difficult to notice the successes, but through the photos, Josh could really see the transformation.

“I know I’m doing more than I should be, but I think it’s worth it, and I think once we finally get to that point, I can let my hair down and maybe take a vacation. As growers here, it’s nonstop from April to October.”

“That’s what pushes me, people and learning.”

“Navajos, especially with the onset of the pandemic, want to garden, but the only information out there is mainstream, suburban gardening using Miracle Grow and quick fixes. That doesn’t work here. I want to blend our traditional side, the Diné way with gardening.” Josh explains that he too needs to learn. He says that for Hozho Center to be a Navajo organization, he has to learn traditional prayers and songs. “That’s what pushes me, people and learning.”

“It’s what our community needs. To move away from big agriculture and shipping fruit. I want to get back to eating seasonally, teaching people how to forage wild onions, wild asparagus, wild potatoes, and how to cultivate these. If I can get this knowledge into the people’s hands, this’ll be a first step to heal and move past generational trauma. The smell of dirt—I always pick up a handful of dirt, take a sniff, because just that smell grounds me and makes me understand I’m not alone. I’m a part of mother earth, and there’s everything else around me here. I do this at workshops too. Tell people to pick up a handful of dirt.”

To learn more about Hozho Center, visit hozhocenter.org. You can find them on social media [@hozhocenter](https://www.instagram.com/hozhocenter)

Josh is popular on on TikTok [@highdesertgardener](https://www.tiktok.com/@highdesertgardener)

Community Seed Grants are given to a variety of organizations working on education, food security, and community development projects in our region. Interested in a seed grant in your community? Apply today at nativeseeds.org/csg

Garden Update

By Joel Johnson, Conservation Garden Farmer

The Conservation Center gardens were started in 2016 as a low-desert grow-out space to supplement the Conservation Farm in Patagonia. Fast forward seven years, and the Conservation Center now serves as our primary seed production site. Thanks to the dedication of donors, volunteers, staff, and community members, the first quarter-acre garden has grown to 1.5 acres of agricultural space, including four fenced garden plots, a high tunnel nursery, rain infiltration basins, and a ramada for planting and seed processing. As the gardens continue to grow, the next projects will be to extend water out to the south and west fields, develop floodwater-fed planting fields for dry farming, and build our composting infrastructure so we can fuel the healthy growth of our soils and plants.

New additions in the past year:

High Tunnel Nursery

The high tunnel was relocated from the Patagonia Farm and installed at the Conservation Center in the fall of 2022 and the shade house was built from scrap pieces of old isolation tents. Over the winter, garden team members installed an automatic irrigation misting system for starting seeds. In March, the plastic covering was swapped for shade cloth and more tables and irrigation added to both the high tunnel and shade house. Combined, these structures are housing over 3,000 plants for seed grow-outs, donations to community partners, and plant sales—everything from chiltepin regenerations to native plants and heritage fruit tree cuttings.

Rainwater Harvesting Spiral Basin

In January and February, with the help of volunteers, we built the final and largest section of the four infiltration basins that will capture rainwater runoff from the east parking lot and deliver it to trees and crops. The shape of the structure was inspired by NS/S Board Chair Jacob Butler's spiral planting basins in the Salt River Pima-Maricopa Indian Community Garden. The dirt removed from the center built up a road around the outside of the basin creating a vehicle roundabout at the end of the parking lot. Quitobaquito pomegranates, Desert Willow, and Desert Ironwood trees have been planted around the basin and additional native plants will be added this fall once we see how the basin functions during monsoon season.



Birds-eye view of the spiral basin



The converted high tunnel and new shade house

Pollination Experimentation

If you've ever toured the Conservation Farm or gardens, you've probably seen these large tan isolation tents. We typically use these tents to exclude pollinators to prevent outcrossing when two varieties of the same crop cannot be separated by time or distance. This works especially well for self-pollinating crops like chiles or legumes. But this winter we experimented with growing an insect-pollinated crop in the isolation tents. Keeping cilantro seed true to type requires an isolation distance of 800 feet to half a mile, which can be hard to come by on a small urban farm. Farm apprentices took the lead on researching the best pollinators to introduce and after a few different attempts, house flies were the pollinator of choice. Flies are general pollinators and were easy to capture and introduce to the isolation tents once all the holes were patched. Thanks to staff members catching and releasing flies from around the office and at home—not to mention the pollinating efforts of the flies themselves—the Magdalena Cilantro we planted in the tent yielded a great seed harvest.



Ryan and Mariia in the Conservation Garden shade house

Apprentices at NS/S

Over the last year, we've welcomed several new faces to the Conservation Center through apprenticeships facilitated through Americorps and the AZ AG Workforce Development Program. Mariia Romanchenko, Ryan Golb, and Madison Goforth have all been instrumental to the growth of the gardens while also learning about seed banking, soil stewardship, seed processing, and more.

Thanks for all your hard work!



Dear Friend,

It is with immense gratitude that we celebrate 40 years of seed conservation. We owe this remarkable achievement to people like you who have stood by us through the seasons.

Since our humble beginning, we've been entrusted with safeguarding seeds of our region. Seeds that connect us to our past and hold the promise of a resilient future.

With your help, we've conserved 1,800 rare and heirloom varieties, preserving flavors, cultures, and traditions for generations to come. But our work is far from done.

With your unwavering support, we can expand our efforts and make an even greater impact in the next chapter of our conservation story. Your generous contributions will:

- **Engage Future Stewards** to inspire the next generation of seed savers through educational programs that foster a love for gardening and farming, and empower them to become champions of conservation.
- **Make seeds available** to small, organic farmers, families and gardeners.
- **Collaborate with Indigenous partners** to honor their deep connection with the land and their traditional knowledge of seed saving.

You have the power to shape the next 40 years of seed conservation. I encourage you to take this opportunity to make a gift today using the enclosed envelope.

Your gift will not only sustain the NS/S legacy but also sow the seeds of resilient gardens for generations to come.

With gratitude,

Lissa Marinaro

P.S. You may also give online at nativeseeds.org/donate



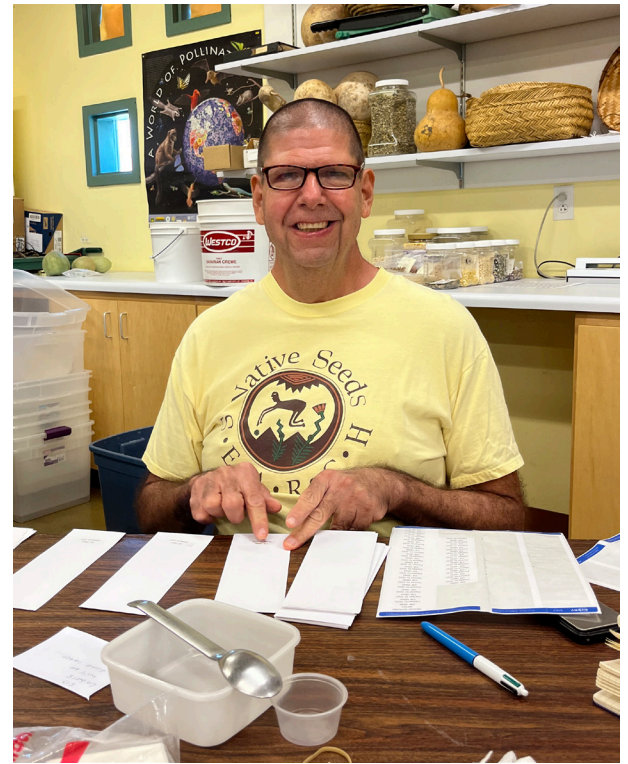
We are deeply grateful to have our remarkable volunteer, Sam, with us in our 40th year.

Samuel Michael has been a volunteer for 23 years! Many of you might have met him if you've ever attended a plant sale or volunteered in the Seed Lab. If you've purchased any chile products, Sam most definitely packed them. His role at NS/S is indispensable.

Sam has been with us since our days at Sylvester House, where he has fond memories of when we used to store the seed collection in the basement! In the years that followed, Sam was there to offer a helping hand when we were on 4th Avenue. Today you'll find him in the Seed Lab, week after week packing seeds and chiles.

"I like volunteering at NS/S because it gives me a sense of pride. It's always a challenge to pack 200 or more packets of seeds in a day." Sam estimates he packs at least 1,000 packets a month, and has probably done at least 100,000 packets throughout his time at NS/S.

Thanks Sam!



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