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Autumn Equinox 1996

the Seedhead News

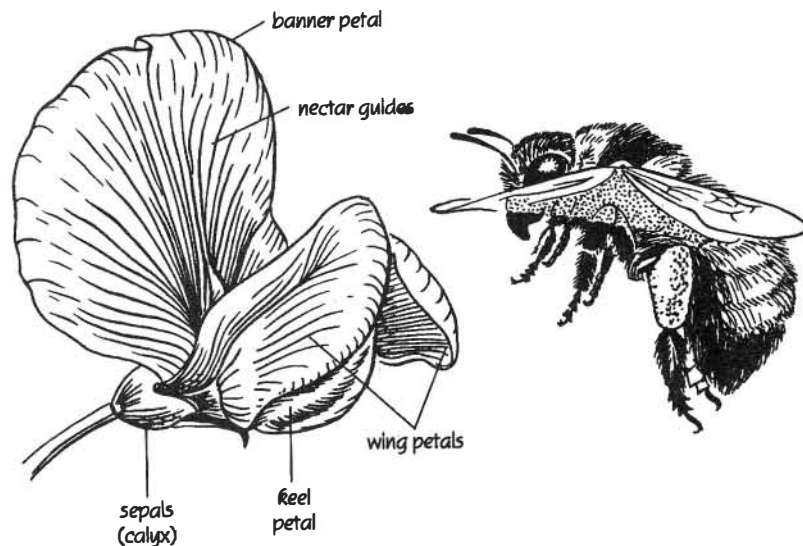
From *The Forgotten Pollinators:* The Survival of Mayan Beekeeping

By Stephen L. Buchmann
and Gary Paul Nabhan

Illustrations by Paul Mirocha

The Mayan tending of stingless bees -- and the symbolism associated with this tradition of animal husbandry -- is a remarkable testament to their ecological insights into the often hidden or forgotten relationships between crops and pollinators. The Mayans of the Yucatan peninsula and adjacent states have long hunted honey from at least 17 different species of native stingless bees. More to the point, four species of native bees have also been kept in their dooryard gardens as semi-domesticates. These four stingless bees, known collectively as *xunan kab* in the Mayan language, pollinate over 200 species of plants around indigenous villages in the Mexican states of Yucatan, Campeche, Quintana Roo, Tobasco, and Vera Cruz. They are effective pollinators for no fewer than 16 agricultural crops grown in the area, too, including coffee, cardamon, avocado, lime, mango, nance, and several additional tropical fruits and nuts.

Gardeners no doubt achieve higher fruit yields when they keep hundreds of stingless bees as managed colonies. Most managed colonies of these bees are kept inside 10-inch-diameter hollow tree trunks in Mayan dooryard gardens. These gardens are rich genetic reserves of folk crop varieties of at least three dozen fruits and tubers, four dozen herbs, six fiber and utensil plants, ten trees yielding stakes and poles,



A bumblebee (Bombus sp.) about to visit the bilaterally symmetric flower of the garden pea (Pisum sativum).

and twenty ornamentals.

The Mayan tradition of caring for native bees was well established in prehistoric times, as the sacred Mayan texts known as the *Chilam Bilam* attest. The fate of humans and bees are often intertwined in Mayan stories and rituals. When a beekeeper dies, for example, the inheritor of his hives must immediately go to the bees and tell them of the death, assuring them that they will remain cared for. The new beekeeper must not visit the cemetery, or help prepare the corpse for burial, for fear that he will bring sadness back to the hive. Any incidental contact with death must be followed by a ritual washing of the beekeeper's hands and arms before he dares to touch the

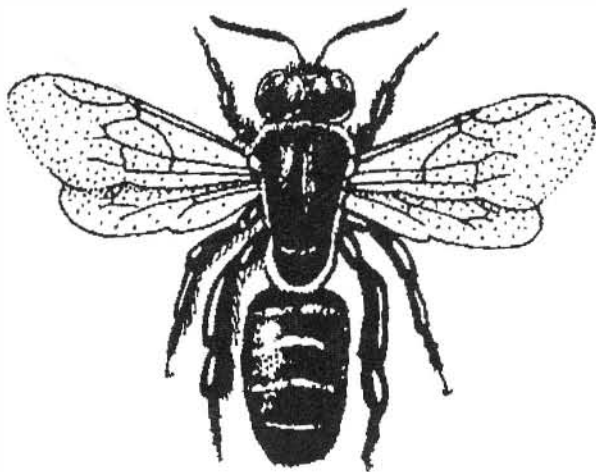
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Mayan Beekeeping continued from front page

hives. And if a bee is accidentally killed, it is tenderly folded into a leaf, then buried. Of all the natural resources stewarded by the Mayans, only maize is regarded with more elaborate ritualistic outpourings of affection and respect than are the stingless bees.

Even though Columbus marveled at the wax derived from these stingless bees, other European colonists felt that Native Americans were missing something vital by lacking domestic honeybees. By the 1620s, honeybees had been intentionally imported to several places in the Western Hemisphere numerous times. Before long the introduced bees began to compete ecologically with the native *Melipona* and *Trigona* bees, but they did not become a major economic resource in the Yucatan peninsula until the twentieth century. Despite this competition from apiculture, meliponiculture, the cultivation of stingless bees, has persisted among the Mayans, including the vanilla-growing Totnacas of the Vera Cruz region.

There are a number of cultural reasons why the Mayans did not abandon their native bees, even though domestic honeybees produce more honey. For one, the native honey was considered to be more effective in treating cataracts, conjunctivitis, chills, fevers, heartburn, laryngitis, and complications at childbirth. Mixtures of pollen and honey from stingless bees have a distinctively sweet yet acidic flavor favored over that of *Apis*-produced honey. The native honey is routinely added to *atole* porridges and squash seed condiments; introduced *Apis* honey is not. The native honey neither ferments nor is crystallized under rustic storage conditions, so it may



Melipona beecheii

keep its flavor in storage for two to three years without special precautions.

Most important, perhaps, were the ceremonial uses of honey from stingless bees, ceremonies for which honey from European bees simply would not do. Nevin and Elizabeth Weaver were perhaps the last outsiders to witness a Mayan rite to regenerate stingless bees, a ceremony called the *Hanli Kol*. Formerly enacted every four years under the alternating sponsorship of various beekeepers in a village, its celebration has become very infrequent in recent decades. To reinstate this custom, the Weavers had to sponsor a shaman from another village to come and perform the 24-hour-long rite. Once he arrived, however, hundreds of local Yucatecan Mayan residents were eager to participate. To be performed properly, the *Hanli Kol* exacted more than a hundred hours of preparatory work and required the donation of dozens of products from native plants and animals.

This ceremony, intended to allow a local beekeeping family to double the number of colonies it kept, alternated between ritual preparation, the sharing of native foods, and the chanting of an ancient prayer seven times. The prayers in the rite had been directed toward *Noyum Kab*, the Great God of Bees, who came from the traditional home of native bees, *Yal Koba*, a classic Mayan temple. Ironically, when European honeybees were first introduced to the village decades before, they caused great excitement, for many of the local Mayans mistook them for the envoys of the Great God of Bees mentioned in the ceremony. Gradually, however, they realized that honey from European bees had none of the curative properties ascribed to native honey. From then on, keeping European honeybee hives was considered an economic pursuit devoid of any redeeming cultural value. Traditional Mayan ceremonies have no power over the introduced apiaries of European honeybees, or over the omnipresent Africanized race now dominating the area.

Historically, there was indirect suppression of Mayan beekeeping because of the Spanish distrust of the "witchcraft" that went along with it. Mexican-American poet Francisco Alarcon reminds us of this: "Bees are godly servants of the flowers/they keep for themselves/they make the wax we burn to our Lord/for that we love them we revere them"/said Miguel the bee seeker after being tricked to recite/the incantations of the beehives he knew better than his Ave Marias."

Unfortunately, the number of stingless bee colonies tended by the Mayans has declined as more people pursue the purely economic rewards of European honeybees, investing less time in the native bees. The number of tended colonies of stingless bees is now half of what it was in 1980. Today, there remain only 350 families tending stingless bees on the Yucatan peninsula, and these Mayans collectively maintain fewer than 5,000 colonies, largely of the most easily "tamed" species, *Melipona beecheii*. Deforestation has opened up sugarcane and henequen plantations in surrounding areas,



Today, in the Mexican states of Yucatan and Quintana Roo, the contemporary Mayan Indians practice meliponiculture -- the keeping of stingless bees (Melipona beechei, Trigona spp.) -- as they have done for hundreds of years. Here a beekeeper tends to his Melipona bees in hollow logs by hanging a dish of honey as an offering to them.

plantations which use insecticides that have virtually eliminated stingless bees from certain stretches of the coastal plains. The gene pools of these bees are in steep decline, and so is the traditional pool of cultural knowledge about them.

In the midst of deforested areas, some Mayan farmers who have yet to abandon this ancient beekeeping tradition are realizing that their honey yields and crop yields are now unusually low. Some blame the decline in honey on the scarcity of floral resources in the logged-over forests adjacent to home gardens. Others blame both crop and honey declines on local droughts, which follow in the wake of deforestation. Curiously, certain Mayan farmers blame this lack of rain on their own failure to continue the rain-bringing ceremonies their forefathers had always offered -- ceremonies which require that honey from the *xunan kab*, the stingless bee, be left in their fields. Without that ritual observance, the harvests will suffer.

Mayan gardeners must therefore maintain the native stingless bees -- honeybees are not enough -- in order to sustain the rituals that ensure good harvests. Metaphorically, at least, the Mayans have recognized the critical connection between native pollinators and fruitful harvests. When deforestation wipes out nectar plants, and the few select trees that offer trunks suitable for beekeeping, the feedback loop unravels. It is frayed, too, by cultural changes that keep younger Mayans from becoming gardeners and farmers who maintain the ancient thanksgiving rites associated with stingless bee honey.

Today, as never before, Mayan meliponiculture is at a crossroads. With the arrival of Africanized honeybees in

the Yucatan, the peninsula's sizable industry based on European honeybees is in peril. In recent decades, Yucatan had become the largest honey producer in Mexico. Today, however, crops that depend on European honeybees for pollination are in a precarious position. If native stingless bees ever had an opportunity for revival, it is now. Yet few Mayan youth see the tradition as attractive, even if innovative technologies make it less labor-intensive. In their eyes, it is too reminiscent of the "old ways" from which they are attempting to escape.

Even against such stiff odds, the Mayan beekeeping traditions are entering an era of revitalization. Through the urging of a remarkable young ethnobiologist, Sergio Medellin Morales, the MacArthur Foundation has recently funded the formation of a new nonprofit organization, the *Asociación Civil Yik'el Kab*, named for the "native insects that produce honey." In February 1991, Medellin convened this dynamic coalition of Mayan beekeepers and scientists to draft a strategic plan with several objectives: to conserve and expand stingless bee production, to open new markets among health food stores and herbal medicine outlets, to sponsor the planting of more dooryard gardens and rainforest restoration

plots filled with nectar plants, and to protect old-growth trees suitable for feral bees and the elaboration of colony-bearing containers.

This project has had the technical assistance of some of Mexico's finest experts on sustainable development, including Arturo Gomez-Pompa, Enrique Campos-Lopez, and Jorge Gonzalez-Acereto. More important, perhaps, at least 20 Mayan beekeepers have served as consultants at training and planning workshops, while hundreds of others have been surveyed to voice the problems and their solutions. If any ancient ecological practice has a chance of persisting in the face of current challenges, Mayan meliponiculture may be it.

But, as the Weavers realized while living among their Mayan neighbors, "the actual work with [native stingless] bees cannot be separated from the rituals which accompany it." It is not merely a novel biotechnology; it is a living culture. Should anyone fail to honor the rituals to which the bees have become accustomed, the bees may lapse into an unproductive state. That is why talking with the bees in their dooryard gardens is the Mayan beekeepers' most time-intensive activity; staying in touch, keeping an ancient flame -- the dialogue between different species -- well kindled and burning into the future.

The Forgotten Pollinators is available from Native Seeds/SEARCH for \$25, hardback, plus postage. It is the centerpiece of a nationwide campaign sponsored by the Arizona-Sonora Desert Museum (2021 N. Kinney Road, Tucson, AZ 85743) to raise awareness of pollinators and threatened plants dependent on them.

Summer 1996 Grow-Out Project Success

By Henry Soto

It's 9:00 a.m. as my wife and I make passes up each row of corn, collecting pollen as we go. This same time each morning is when we form the union between male and female to ensure life into the next generation. What we are doing is transferring pollen from the male (tassel) part of the plant to the female (silk) part to ensure pollination. We place bags over the silk to keep out unwanted pollen that would cross this corn with any other nearby variety.

These plants are just a part of an extensive grow-out we have undertaken to regenerate old seed stock this summer. Many seeds in our seed bank, including the seeds in this grow-out, were collected more than a decade ago from the Mt. Pima and Tarahumara regions in the northern Sierra Madre. Poor weather and road conditions have made it difficult to return to these areas in the past few years for recollecting trips. In addition, the severe drought has forced many native farmers there into the cities to find work to support their families. With a decreasing number of farmers planting each growing season, we fear that many of these crop varieties will be lost from the area. Our goal is to make sure these varieties don't disappear forever.

Through the cooperative efforts of staff, members, and friends we have started eight additional gardens for the summer growing season. The crops we are growing include 14 different varieties of corn, as well as beans, squash, and watermelons. These crops were selected from a list of more than 100 crops that, with increasing age and decreasing germination rates, are in need of being grown out. Some varieties had only 10% germination. With one watermelon variety, we had to plant literally handfuls of seed in each hole to obtain one or two plants.

The growing conditions this summer seemed to match the seeds' unwillingness to reach out and grab life. Our grow-outs began amidst a drought. The summer rains came, only later than usual. The various gardens faced just about every problem you can imagine with desert gardening: birds, rabbits, aphids, caterpillars, whiteflies, nematodes, virus, and strong winds blowing down the corn. The drought causes animals to suffer as much as people, and our gardens seemed to be their only sanctuary. In one garden the corn "lodged" or blew over four times, and received more than 4½ inches of rain in two weeks.

The harsh conditions this year caused me to reflect on Hopi Prophecies for the future. Some Hopi predict that unless we make drastic changes in how we live and treat our mother earth, we will be confronted with severe weather and the natural world will turn on all people. This can be seen through severe droughts followed by



At the NS/S Demonstration Garden, tall corn flanks the Soto family -- Dee, Gabe and Henry -- and watermelon plants lap at their feet.

intense rains, wind, lightning, etc. This seems to be the pattern farmers around the world currently face.

Despite all we are confronted with, we work on to do what we have set out to do. These crop varieties gain importance as the environment changes. Now is the time when everyone needs to plant these native seeds and carry on their traditions. So when our gardens are suffering and the corn does not want to grow anymore, this is the time for prayers and songs that will make the corn grow strong so it can dance in the wind.

(Henry Soto maintains the NS/S demonstration garden at the Tucson Botanical Gardens as well as the summer growout. See report on page 9.)

Publication Party to Benefit Native Seeds/ SEARCH

Wednesday, October 2
5:30 - 7:30 p.m.

Sylvester House, 2130 N. Alvernon

Help us celebrate the publication of *Grassroots Grants: An Activist's Guide to Proposal Writing* by Andy Robinson, our former development director.

Grassroots Grants is a complete guide to winning grants for conservation and social justice. The book includes several examples and stories from Native Seeds/SEARCH. While working at NS/S, Andy wrote more than 75 successful grant proposals.

"My friends and co-workers at Native Seeds/SEARCH," he writes, "gave me the freedom to experiment as I worked to combine fundraising, community organizing and sales in the real world."

Refreshments will be provided and copies of Andy's book will be available for sale, along with a selection of native foods, crafts, and other books. All sales will benefit our conservation programs.

If you can't make it to the book-signing, Grassroots Grants is available by mail. Consult the new Fall Harvest catalog, or send \$25 plus \$4 shipping to 2509 N. Campbell #325, Tucson, AZ 85719. Thanks!

An excerpt from Grassroots Grants:

Once the grant proposal outline has been passed around among the staff, edited, and approved, make sure to involve the project managers in designing a specific work plan. They will be responsible for carrying out the plan and are probably the best people to figure out the tasks and timing. This is also a good stage to involve your constituency, through your program committee or board members with relevant expertise.

Work plans sound boring, but they don't have to be. When preparing a proposal to increase the endangered crop collections at Native Seeds/SEARCH, I asked Brett Bakker, our New Mexico field manager, to create a seed collection itinerary. He took out a map, a calculator, and his contact list and spent a few hours mapping his routes and dreaming about the journeys ahead. His enthusiasm for the project is reflected in the detailed itinerary below, which undoubtedly impressed and intrigued foundation staff. I'd like to visit these places; wouldn't you?

Proposed itinerary, New Mexico & Colorado
(Minimum goal: 6 trips)

1. Rio Chama Valley & Tierra Amarilla. Espanola, Ojo Caliente, La Madera, El Rito, Canijilon, Ensenada, Los Ojos, La Puente, Abiquiu. 450 miles, 3-4 days.

"If you work for social change and you write proposals, this is the book to buy."
— Gary Delgado, co-founder, Center for Third World Organizing

Grassroots Grants

AN ACTIVIST'S GUIDE TO PROPOSAL WRITING

Andy Robinson
Foreword by Kim Klein

2. Northwest New Mexico & Southwest Colorado.

Laguna Pueblo, Acoma Pueblo, Navajo, Ute, Cortez, Dove Creek, Farmington, Shiprock, Chuska Mountains. 750 miles, 4-5 days.

3. Taos Region/East Slope, Sangre de Christo.

Ranchos de Taos, Penasco, Mora, Las Vegas, Ribera, Pecos. 450 miles, 3-4 days.

4. South-Central Colorado/San Luis Valley.

Raton, Trinidad, Walsenberg, Alamosa, Mosca, San Luis, Conejos. 750 miles, 4-5 days.

5. Alamo Navajo & Middle Rio Grande Valley.

Tome, Belen, Socorro, Magdalena, Alamo. 350 miles, 3-4 days.

6. Mescalero Apache.

Socorro, Carrizozo, Mescalero, Tularosa. 500 miles, 3-4 days.

7. Ramah Navajo.

Ramah. 250 miles, 2-3 days.

8. Manzano Mountains.

Tijeras, Chilili, Torreon, Manzano, Mountainair, Belen. 200 miles. 2-3 days.

9. Rio Arriba Valley/Chimayo.

San Juan Pueblo, Dixon, Picuris Pueblo, Penasco, Las Trampas, Chimayo, Nambe Pueblo, Santa Fe. 350 miles, 3 days.

Total miles: 4050

Total travel days 30-35

Editor's note: Brett completed seven trips and collected more than 75 crop varieties for our seed bank. He has more adventures planned for this fall.

It's the 10th ANNUAL LA FIESTA DE LOS CHILES!

The shape of the Chile Fiesta has been changing. This summer TBG has expanded their gardens to encompass more of what has always been the site of this, the hottest event of the season.

Once again an irresistible array of chile cuisines, crafts and crowd-pleasing entertainment will make for an unbeatable family weekend at the Botanical Gardens, 2150 N. Alvernon. Admission is only \$2 for members of NS/S or TBG, and free for volunteers (contact Jan if you're interested at 327-9123). General non-member admission tickets will be \$3 in advance at the TBG gift shop after Oct. 2 (or call then for other ticket outlets), and \$5 at the gate. Children under 12 are admitted free.

Our co-sponsor, the *Tucson Weekly*, will be publishing previews of the new Nancy Lenches Chile Fiesta design, "Chiles Encantado", in each issue of the Weekly starting September 19. For a sneak preview of what's in store, the *Weekly* will publish the entire Chile Fiesta program in their Thursday, October 17th edition.

This year we continue to offer special childrens' programs at no charge in the shady, and somewhat quieter, Reception Garden area and Porter Hall. Face-painting, story-telling and various song, dance and plant-craft activities will be offered. Don't miss storyteller Herminia Valenzuela on Saturday.

We are very fortunate that Barbara Mocking, whose constantly rising popularity is leading her far afield these days, was able to squeeze us into her schedule. She will perform her famous "Chile Rap" puppet show on Saturday, on the Main Stage, after opening the fiesta with a



chile processional! (We're hoping she will also do the "Cockroach Blues".)

New to the Fiesta this year is the Barbea Williams Performing Company, who will bring us African harvest dances and drumming. We are pleased to welcome them.

On Sunday, we are happy to present another special treat -- the Indian Oasis Dancers, a group of school children from Sells, Arizona. Our thanks to the De Grazia Art and Cultural Foundation for making it possible to bring these guests and their beautiful traditional dances to the Fiesta.

Gutierrez Farms will return with those to-die-for red chile ristras and their signature scent, "Roasting Fresh Green Chiles" which always permeates the Fiesta atmosphere all day, both days. The best part is that the roasted chiles will be available for consumption on the spot or for your take-home pleasure.

Speaking of consumption, we have a favor to ask. We've had a lot of trouble this summer with people taking the fruits of our Demonstration Garden. We know the stuff is delicious, but we are growing these crops in order to save the seeds (see article, page 9). Historically, this problems hits us the hardest during the Chile Fiesta, so please help. If you have a chance to gently discourage the casual harvesting, please do. We need those seeds!

Of course there will be more chile-crafts than you can shake a pepper at, and chile plants from the TBG nursery too, providing y'all with a great chance to get some holiday shopping done early. See you there -- and remember to bring your dancing shoes!

For more information, contact Jan Waterman, NS/S Chile Fiesta Coordinator.

HOW TO GET TO THE CHILE FIESTA

Park in the NE corner of El Con Mall and
take the **FREE "Chile Tran"**
(an air-conditioned, easy, superior means)

Or, take the **Sun Tran bus**,
route #9-Grant or route #11-Alvernon
Or, **ride your bicycle**

Or, wear your hiking boots, try to find
parking on the neighborhood side streets and
walk from there.

Remember, there's **NO** parking at the Fiesta --
the little TBG lot will be full of vendors!

Chile Fiesta Entertainment Will Make For One Hot Time!

Here's the (almost for-sure, but still subject to change) schedule of entertainment events for the 1996 La Fiesta de los Chiles, October 19 & 20, 10 am - 5 pm: (as of September 17)

SATURDAY: MAIN STAGE

10:00 - 10:30: The fiesta opening processional a la chiles! Plus that inimitable Chile Fiesta tradition -- "The Chile Rap", performed by Barbara Mocking of the New Kiva Motions Puppet Theater. Back by popular demand.

10:45 - 11:45: Los Primos Ronstadt return to share the rich musical heritage of pioneer Tucson through songs of the Old West and Old Mexico.

12:00 - 12:45: Ballet Folklorico Arizona lights up the stage with a vivacious flurry of color and costumes in motion.

1:00 - 2:00: Los Hermanos Cuatro, from Pascua Village, easily one of Tucson's best Norteño bands.

2:15 - 2:45: Tucson's own Barbea Williams Performing Company brings us African harvest dances and drumming.

3:00 - 4:00: Petey Mesquitey and the Endangered Species Act brings us Tex-Mex, toe-tapping, good ole hot dancing tunes! Another great Chile Fiesta tradition.

SUNDAY: MAIN STAGE

10:30 - 11:15: The Indian Oasis Dancers, a group of school children from Sells, return to the Fiesta with beautiful traditional and seasonal dances.

11:30 - 12:15: Manteca brings us lively instrumental Brazilian and Latin Jazz.

12:20 - 12:30: Barbara Mocking's "Chile Rap" one more time, for those who couldn't make it on Saturday, or can never get enough.

12:45 - 1:45: Bwiya Toli bring their sounds of nature and songs of the heart to you via pan pipe, flute, charango, guitar, bass and bombo.

2:00 - 3:00: The T.O. Combo, a terrific waila band hailing from our neighboring Tohono O'odham Nation.

3:15 - 4:15: Descarga with Rafael Moreno closes down the '96 Fiesta with Salsa and Latin Jazz and a beat so strong you'll be bopping all the way home.

Added attractions: (For time & location, check the program when you arrive.)

Chile Ristra Stringing, a highlight of every Chile Fiesta, will be demonstrated daily; and don't miss "Taming the Wild Cactus" -- how to create those delicious and healthful "nopalitos" from prickly pear cactus pads.

PORTER HALL/RECEPTION GARDEN:

Saturday, 11:00 - 11:45: Herminia Valenzuela engages her audiences with traditional Yoeme (Yaqui) stories she learned from her family. (In Porter Hall.)

Sunday, 11:00 - 12:00: Alice Pringle's dance and song workshop for families.

Throughout the day, both days: Demonstrations of papier-mache chile making and face-painting and plant-craft activities for children in the **Reception Garden**. A display of the vivid, beautiful and often humorous chile art of Ron Genta can be seen in **Porter Hall**; the artist will be present.

Ten Reasons to Spend Ten Years Celebrating the Chile Pepper

By Brooke Gebow

It was a numerological challenge that had to be met. You can probably think of more or better possibilities. (Send them in, and we'll save them for the next significant anniversary.) Here goes:

1. Chile peppers are a hometown food; chiltepinos are native to Southern Arizona.
2. Chile peppers pleasure the palate *without* major calories (but *with* major vitamins).
3. Chile peppers are one of the New World's finest gifts to the Old World. (Diplomatic salsas balance New World and Old World ingredients: Chile peppers+tomatoes balance onion+garlic, for example.)
4. Chile peppers keep well dried, so you can take them camping without needing refrigeration (and make the stew or freeze-dried dinner stuff actually edible).
5. Chile peppers add color -- reds, yellows, greens, oranges and purples -- to your garden and food.
6. Chile peppers are bird favorites.
7. Chile peppers ease sore muscles. Look for *capsaicin*, the source of chile-zing, in the list of ingredients on your tube of burning-soothing salve.
8. Chile peppers are now found in all the *best* cuisines of both Worlds. Sample a bunch of them at the Fiesta.
9. Chile peppers offer full employment for plant breeders, who are always busy creating chile varieties. Look for a couple dozen kinds for sale at the Chile Fiesta.
10. Chile peppers just have a lot of character and inspire us artistically in a crazy kind of way. What a great excuse for a party!

Your Garden Reports

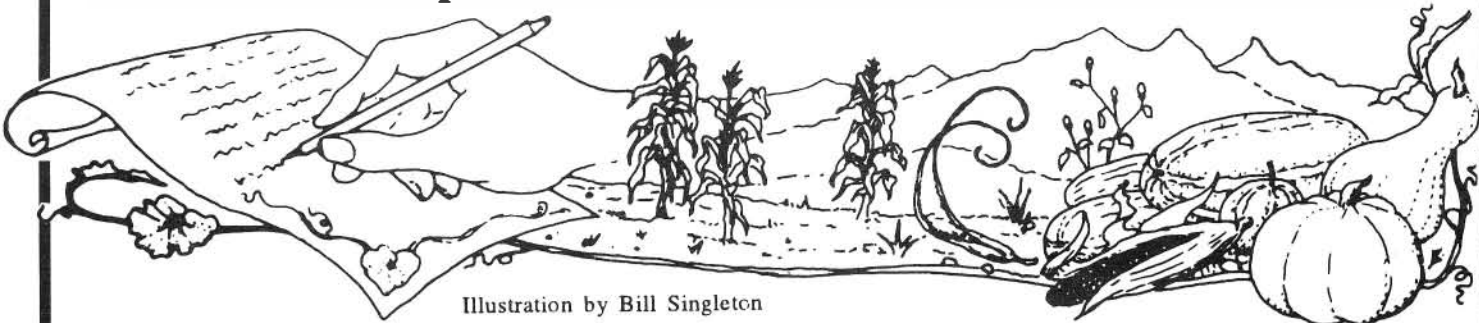


Illustration by Bill Singleton

From Edie Clepper, Red Rock State Park, Sedona, Arizona

Last March, as part of our Archaeology Month Activities, we had the public help plant a Native American Garden. We used digging sticks made by a student from the Yavapai Junior College archaeology class and seeds we obtained from you.

It was a huge success, not only the planting, but all year long as we watched the crops develop and grow. We had two types of corn, two types of beans, squash, gourds, amaranth and sunflowers.

Unfortunately, we were better at planting and weeding than we were at harvesting. Much of our crops were lost to various critters that live in our park. Squirrels learned very quickly to get through our javelina fence, and on several occasions were observed having lunch on the top of our sunflowers! We have managed to salvage enough to use as seed for next year. Our gourds and squash are still curing on the vine and it looks like they will be our most successful crops.

Many thanks to all of you who were so helpful when I called to ask questions about how to harvest or store

Lemon Poppy Seed Scones

This is one of our favorite new recipes that incorporates mesquite flour.

- 2½ C. flour
- ¾ C. mesquite meal
- 2 T. poppy seeds
- 2 tsp. baking powder
- ¼ C. maple syrup or honey
- 1 tsp. baking soda
- ½ tsp. salt
- 1 C. lemon yogurt
- ¼ C. oil

Mix flour through salt in mixing bowl. Stir together yogurt, maple syrup and oil; add to dry ingredients. Stir just until moistened. Knead on floured surface a few seconds to form into a ball. Roll out to ½" thick. Cut into diamonds or squares (about 1½ to 2"). Bake 10 minutes at 425 degrees F on ungreased baking sheets.

seeds. The garden has been such a success, we plan to do it again next year. Not only did the public become more aware of native crops, we have also learned about some of the problems faced with successful harvesting and storing of crops.

From Roland, Tucson, Arizona

When I left for the summer in the middle of May, I didn't expect my **Yoeme Kama Squash** plants, barely 2" high, to survive. Imagine my surprise when I returned on September 1 to find that one plant had grown to at least 15 feet in diameter without anyone watering it! I've harvested four 18-24" size squash, there's five more still growing, and the plant has started to flower again. Amazing!

From Danny Petrella, Louisiana

I'm sending more of my surplus seeds, hope you'll all can use them. **Mayo Blusher** is a very good squash -- sweet. We are not used to eating squash in our diet here in Louisiana, but it was a big hit with me and my family. I'll continue to grow them. My **Mayo Indigo** is nearly nine feet tall. I made gallons of dye in an experiment that turned out well. Thanks.

From Barbara J. Massar, Maryland

Hi everyone, so glad your picture is on back of catalog. Your food products are super. Whoever kept the white tepary beans going: thank you, thank you, thank you! They are the best tasting beans ever anywhere!!! The humidity here by the Chesapeake feels at least 200% so I'm afraid to try and grow them here. **[Editor's note: you are right -- teparies don't like high humidity.]**

The **Tarahumara Butter Beans** are growing but they don't look overjoyed to be subjected to sea level climate. I will let you know if they adjust.

The brown teparies are super also, just salt and chipotle will do. But you might want to try them North-east Style. Fry chopped onion until golden brown. Add drained beans and ketchup, mustard (wet), and brown sugar to taste, enough to make a little sauce, and some chipotle or hot chile to taste. Simmer until well-flavored and saucy, about 10-20 minutes. Watch out Boston, we've done it better!

NS/S Demonstration Garden thrives with monsoon rains

By Henry Soto

Our demonstration garden at the Tucson Botanical Gardens has thrived under the recent heavy monsoon rains. While most of our crops struggled early on when it was hot and dry, the ones that held on until the rains are now flourishing and producing abundantly.

Early on, the plants were infested with microscopic mites that caused excessive branching and distorted the flowers, keeping them from opening and making them turn green, as if they were leaves. The mites attacked beans and gourds, greatly reducing production and causing the beans to die in the heat. After the rains came, the mites stopped causing problems.

Nematodes infected the melons and squash, killing 75 percent of the melons. We were able to harvest just a few fruits from these plants. Next year, we'll make sure not to plant these varieties in the same place and add plenty of compost containing beneficial nematodes which will help control these pests.

As usual, the birds were attracted to our oasis in the desert, but were easily deterred with chicken wire over the young plants.

Of all the crops grown this year, **Chile del Arbol** plants seemed to be least affected by the dry heat, and produced throughout the summer. Their abundant fruits have a nice bite to them. **Mayo Kama Squash** was another great producer this season. When most other

varieties of squash were suffering from the drought, these kept on producing -- despite being attacked by squash vine borers! When one of these pests would bore into a vine, the plant would quickly put down more roots at successive nodes and keep on growing. The **Tuxpeño Corn** was planted just before the rains and kept growing and growing, refusing to stop. The stalks of this dent corn got more than 10 feet tall. When visiting the garden, don't stand too close or you might hurt your neck looking up at their tassels. **Rio Mayo Sakovari Watermelons** was another successful crop, despite only 10% germination from this seedstock. Fresh seed from this growout (with much higher, 90% + germination rates) is expected to be offered in next year's seedlisting.

Chile Fiesta time is near and with it comes lots of traffic through our demonstration garden. We hope that visitors will keep in mind that the plants are grown to increase seed that we can then offer to the public. *Already this year a few watermelon and squash have been stolen.* During the crush of the Chile Fiesta, we especially need your help in making sure that these seeds are kept safe.

Rosy Corn Muffins

(makes 12 muffins)

This recipe uses a new product: corn meal made from red flour corn.

1 c. red cornmeal
1 c. unbleached flour
2 tsp. baking powder
½ tsp. baking soda
¼ tsp. salt
¼ c. olive oil
2 T. honey
2 T. mashed bananas
1 egg
½ c. plain yogurt
½ c. skim milk
cinnamon sugar

In large mixing bowl, stir together cornmeal through salt. In small bowl whisk olive oil through milk. Add to flour mixture and stir until just blended. Spoon into 12 greased muffin tins and sprinkle with cinnamon sugar. Bake 15-20 minutes at 400 degrees.



Seed curator Suzanne Nelson admires how Reventador corn has grown tall with all the rain this summer.

New Cultural Memory Bank

By Suzanne Nelson

Stemming the loss of crop diversity is a key objective of Native Seeds/SEARCH staff and supporters. Over the last 13 years, we've worked collectively to conserve and promote seeds of traditional crops from the southwestern U.S. and northwestern Mexico. Our *ex situ* seed bank currently holds approximately 1600 different accessions representing 98 species of domesticated crops and wild crop relatives, many of them rare or endangered.

A loss in crop diversity, however, results in more than just a reduction in genetic diversity. It also results in the loss of traditional knowledge and skills. Traditional farmers are a stabilizing force in many Native American communities. They keep alive traditional agriculture and culinary practices, provide crops for ceremonies and feast days, and feed extended families from their crop fields. When farmers no longer plant these crops in their fields, the how, where, when, and why's of planting and use are also lost, along with the recipes, stories, and oral histories. Thus, the human-plant relationship that existed -- the cultural context in which the crops evolved -- is irretrievably lost.

To address this issue, we have initiated a Cultural Memory Bank. The memory bank idea was first coined by Philippine ethnobotanist Virginia Nazarea-Sandoval, and combines a geneticist's concern for conserving unique crop traits with a folklorist's concern for conserving oral histories associated with the crops. The goal of this project is to record and document cultural as well as biological information about the crops, seeds, and farming methods used by traditional farmers.

We plan to record and document as much knowledge and cultural information regarding the seeds in the NS/S seedbank as possible through interviews with farmers who know and cultivate the crops. Generous support from the Southwestern Foundation and Harris Foundation has enabled us to obtain state-of-the-art audio recording and computer equipment we'll use to accomplish the interviews and create a database. When we are finished, an individual will be able to use a CD-ROM disk to access a crop name and see photographs of the seed or crop, see and/or hear a traditional farmer -- in both native and English languages -- describe the crop and how it is planted, harvested, or cooked, telling its stories, or perhaps singing a planting or harvesting song. Of course, the farmer will have full control over who ultimately has access to the information, and it is possible to restrict access to family, clan, tribal members, or allow it to be shared with anyone interested in the crop.

The Cultural Memory Bank will help us preserve agricultural traditions and knowledge that have accumulated over many hundreds of years, and make sure it gets passed down to future generations of Native American farmers.

Native American farmers, especially those of you who have contributed seeds to Native Seeds/SEARCH, who wish to participate in interviews, please contact us. Travel expense reimbursements and small stipends are available to those we interview.

Notes & News

Unplug America, October 13. A coalition of Native American environmental organizations have called for a day to turn out the lights, shut off the taps, cut off your engines and celebrate your freedom from consumption. October 13 is a day to reflect on ways to achieve sustainability -- a plan for taking what we need, giving back what we can, and leaving the rest to provide for generations to come. For more information contact the Seventh Generation Fund at (218) 573-3049 or (707) 825-7640.

Wish List. We could sure use:

- deep shelving for office junk
- telephone maintenance and equipment (2 or 3 sets of 6-12 line T.I.E.)
- frost free refrigerator
- copy machine for Sylvester House
- handy person on call for occasional maintenance and repair work (leaky faucets, broken shelves, etc.)

Tucson Botanical Gardens. For more than 10 years, TBG has been host to our public offices and demonstration gardens, partner on the Chile Fiesta, and just a great place to be. Next time you come to visit NS/S, plan for an extra hour or two to tour the gardens. At \$4 admission, it's a bargain. Recent improvements at TBG include a

AN INVITATION TO HELP

Every Thursday, we invite volunteers to come in after 10 am and stay as long as they like until 4 pm. Depending on the time of the year and the status of our inventory, the volunteer jobs available could be: preparing items for our catalog like cleaning/packaging seeds or food; addressing, stuffing, sealing or stamping envelopes; assembling heirloom bean soup mix; or helping at bulk mailing parties. A few times during the year we appreciate help in the garden, and usually during the winter months we have gourds to cut open.

We also have some regular weekend events where we rely heavily on volunteers...not only for preparation, but staffing sales tables as well. The Chile Fiesta is held in late October and Spring Seed Day is early March. There are plenty of ways to contribute!

Occasionally someone has a particular background or interest that complements what we are doing in a unique way. Feel free to contact us regarding any possibilities for our working together. Contact our volunteer coordinator, Nancy Wilson, and let her know how you'd like to get involved. Nancy is best reached Monday through Thursday, between 10am & 4pm at 327-9123.

beautiful remodeling job for their well-stocked botanical library, a tropical forest greenhouse, and the addition of several ironwood trees near the wildflower garden. A just-started \$2 million capital campaign promises even more! Check into the benefits of a TBG membership at 326-9686.

Thank you one and all! We should all give a loud round of applause to our recent Foundation supporters. Since the last newsletter, we've received grants from the **CS Fund, Virginia Howard Foundation, McCune Foundation, Santa Fe Community Foundation, S.J. & Jessie E. Quinney Foundation,** and the **Stocker Foundation.** Needless to say, we appreciate these votes of confidence. Again, thanks.

Karnal Bunt Update. After much negotiation, the U.S. Department of Agriculture has dropped its citation against NS/S for the illegal importation of wheat seed from Mexico infected with Karnal bunt (see cover article in the *Seedhead News* No. 53). We only paid a \$500 fine imposed on Felipe Molina for crossing the border with the seed (regardless of the fact that he declared them).

Thank you to everyone who sent letters of support, and a special thanks to member Patricia C. McNeil who wrote: "Sorry you got in trouble with the feds over the karnal bunt problem -- let us know if you need bail money."

GIVE A GIFT ... GET A LIFE

(Membership, that is!)

Is there a special birthday, graduation, wedding or holiday coming up? Why not give a gift membership in Native Seeds/SEARCH? Share with your friends and family an intimate part of your life -- the belief in protecting biodiversity and celebrating cultural diversity. Gift memberships begin at \$20 per year and include:

- four seasonal catalogs
- subscription to quarterly Seedhead News
- 10% discount on all catalog items and reduced admission to all NS/S events.

Or why not treat yourself to a Lifetime Membership? For \$500 -- far less than many other organizations -- you will receive our publications for the rest of your life, without ever seeing one of those pesky renewal notices. You'll receive all the benefits of membership.

To order gift memberships for your friends and family, please use the form on the right. Let us know what to write on the gift card for gift memberships. Use the same form to sign yourself up as a Life Member. Thanks for your support.

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Membership Form

Check one: Renewal New member Gift

- Associate (\$20 per year)
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 Family (\$35 per year - Memberships at this rate and higher receive Education Director Kevin Dahl's book, *Wild Foods of the Sonoran Desert*)
 Sustaining (\$100 per year)
 Patron (\$250 per year)
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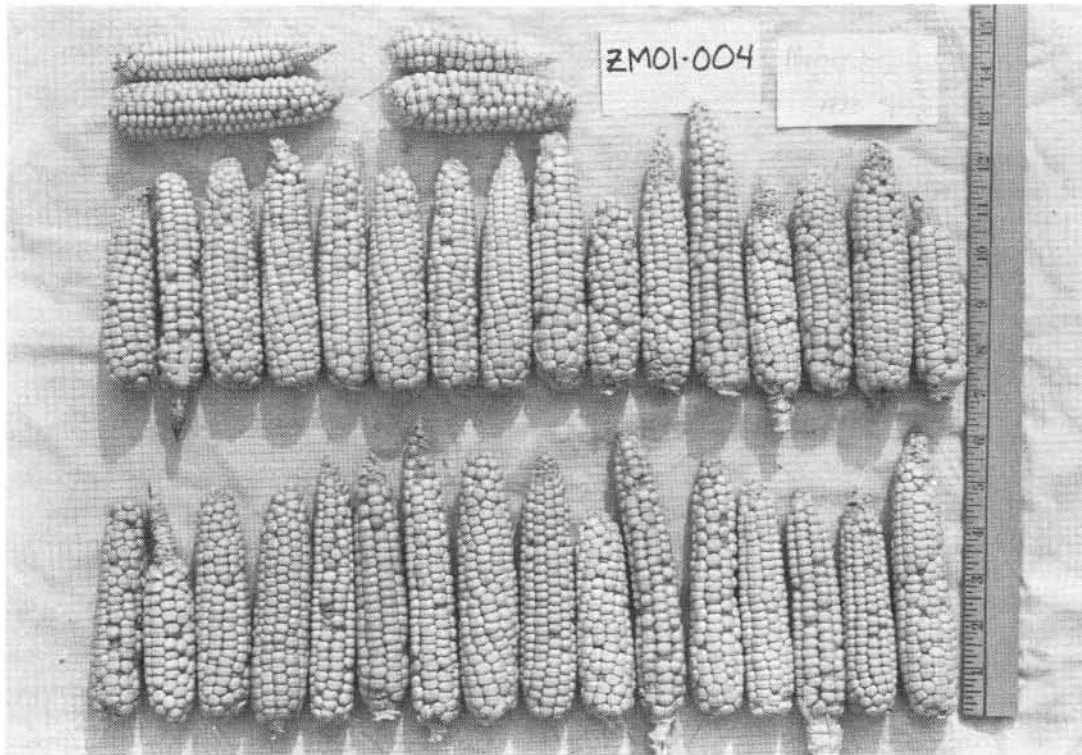
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Documentary photographs of native crop varieties such as this will accompany oral histories and other cultural information collected for Native Seeds/SEARCH's new project: a Cultural Memory Bank. See article on page 10.

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