

Agricultural Development and Promotion Funds Program, New Mexico
NM Indigenous Food Plants for Agronomic Development: July 2016–May 2017

FINAL REPORT — May 29, 2017

Principal Investigators / Main Participants:

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Richard Felger has studied arid-land food plants worldwide, with intensified investigation of New Mexico food plants for agronomic development. His writings include more than 100 peer-review publications in addition to books and popular articles on new food crops, botany, and ethnobiology (listed on the University of Arizona Herbarium website; also see ResearchGate).

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Adrienne Booth earned a BA at Harvard with honors, in Visual & Environmental Studies. She did graduate work in Geography at Texas State University, and served as Managing Director of the Gila Conservation Education Center. She has worked with the SW New Mexico Green Chamber of Commerce and is interested in all aspects of creating sustainable communities in the rural Southwest, including supporting food-based cultural festivals, community gardens, farmers' markets, and cultivation of climate-adapted native new crops.

Gabriel Feldman and Chelsea Rittchen, Honey Hawk Farm
Mimbres, NM

Gabriel Feldman and Chelsea Rittchen are the owners and operators of Honey Hawk Farm in the Mimbres River Valley of southwestern New Mexico, where they live in harmony with the land. In conjunction with the NM Indigenous Food Plants project, they are planting, harvesting, and utilizing native food crops, with special focus on big sacaton and Apache redgrass. Gabriel has created mechanical equipment for threshing and winnowing sacaton and redgrass grain, although he finds that, at our scale, manual methods still work best. In addition to working the farm with Gabriel, Chelsea explores ways to bake and cook with indigenous food crops including big sacaton and redgrass grain, mesquite flour, gray oak flour, and more.

Xavier Khera

Silver City, NM

Xavier Khera is a student at the Aldo Leopold High School in Silver City. He has been working with Richard Felger and others in the New Crops project as part of the mentoring program at the high school. Xavier intends to continue new crops research, looking forward to university and graduate studies.

Tsama Parsons-Pineda, Mimbres Hot Springs Ranch

Mimbres, NM

Tsama Parsons-Pineda is a designer/builder with a passion for botany. He has a BS degree in mechanical engineering and is licensed in electrical engineering, which brings a unique skill set to the team. His background includes solar photovoltaic design at Solar City, radio astronomy at the NRAO, and cycling advocacy on the local level. Currently, with fellow members of the Gila chapter of the Native Plant Society of New Mexico, he is conducting a botanical survey of the 400-acre community where he lives. He is restoring fallow fields in the community by farming with Apache redgrass, big sacaton, and other native food plants.

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BACKGROUND

Building on our current and previous ADPPF funded New Crops projects, during 2016–2017 we have initiated successful farming of big sacaton (*Sporobolus wrightii*) and Apache redgrass (*Zuloagaea bulbosa*, = *Panicum bulbosum*). This is the first farming of New Mexico native grasses as grain crops for food. Big sacaton holds promise as a major food crop for western North America.

The Gila Region of New Mexico has a richness of plants used by Native Americans. More than 100 species of these native wild plants were utilized for food, and about 20 provided staples. From this richness of edible plants, our project has selected and initiated development of ones suitable for present-day agriculture. The basic concept is: Fit the crop to the land, not the land to the crop—develop resilient crops with predicted high yields. The concept includes no-till agriculture based on perennial native Southwest food plants. These perennials also have value for the nursery trade as landscaping and home-garden plants. Implications for energy, water conservation, and local food resiliency are significant.

Our current ADPPF project focuses primarily on big sacaton and Apache redgrass. We have established test plots, as farming models, at two sites in the Mimbres Valley region of Grant County. Both sites are carefully maintained by young and capable farmers/growers. We have designed and set up these farming models for more expansive farming. In addition we have established test plots in Silver City and made available plants for public and home landscaping and gardens.

LESSONS LEARNED, NEW FARMS ESTABLISHED

We gained experience and knowledge in previous years from farming experiments at sites in Grant County including at the Runyan farm in Gila and Townside Farm near Silver City. However, it became clear by June 2016 that neither Runyan nor Townside would be able to deliver sustained production farming; Runyan has discontinued plantings due to personal health issues, and although we continue to monitor the condition of the plantings at Townside, there are limitations regarding the level of control we can exercise at that site regarding maintenance and development. During 2016–2017, we established working relationships with high-quality growers in the Mimbres Valley (Gabriel Feldman and Chelsea Rittchen of Honey Hawk Farm, and Tsama Parsons-Pindea of Mimbres Hot Springs Ranch), who are enthusiastic and dedicated to growing, maintaining, and successfully producing native New Crops.

MAIN FOCUS CROPS

Big Sacaton (*Sporobolus wrightii*)

Richard writes: I have been studying potential aridland food crops worldwide for more than five decades. Among all potential aridland candidates worldwide, big sacaton is the

winner. I predict it will become a major grain crop for the arid and semi-arid western United States and northern Mexico.

Across much of the Southwest, this large, hardy, native perennial generally will not need supplemental watering once established and thrives on salinized soils and poor-quality water. We found that it out-competes most weeds when densely planted—simulating natural stands of 100% ground cover. After four years of planting at Townside Farm in Silver City, big sacaton has thrived in a weed-infested field with no adverse effects. And we have similar results in our other local plantings. Although fully grown individual plants can be more than five feet across, we have learned that planting should be only 2.5 to 3 foot centers, simulating natural, 100 percent cover. As with the redgrass, the large panicles extend above the plant, facilitating harvest.

Sporobolus wrightii is currently grown commercially, mainly for revegetation and as windbreaks for chile fields in southern New Mexico. However, our focus is for the grain as a food resource. Because we are focusing on big sacaton as a food crop and especially because we are interested in organic food production, we have avoided using commercial seed sources. We have also focused on locally adapted germplasm.

We have found that greenhouse propagation of big sacaton and Apache redgrass yields much better results than direct seeding. During 2016–2017, we grew several thousand big sacaton and Apache redgrass plants in our greenhouse, using seed we collected from Grant County sources. These plants were grown in plastic pots in the greenhouse over the fall and winter. Although aphids and some other insects were a problem with the Apache redgrass, the big sacaton plants remained pest-free. Sacaton leaves are tougher than those of most local grasses, and cattle generally avoid the mature foliage (the leaf blades are scabrous). The sacaton seedlings and young plants respond best to high temperatures and long-day seasons, which is not surprising for a C4 grass. During May 2017 the remaining plants in the greenhouse were moved out-of-doors. New plants will be germinated in the greenhouse during June 2017.

We established farming test plots with easily transplanted divisions of plants from wild stands and as well as with seed-grown young plants. Both are showing excellent results, with nearly every plant thriving. In late winter and spring 2017 we set up drip irrigation in order to have grain production as soon as possible: we expect a modest harvest in fall 2017 and a mature-stand harvest in 2018. Mulching with wood chips and sacaton straw, leaves, and inflorescences left over from threshing was done to reduce water loss, impede weeds, and improve water retention, and some seeds still attached to the chaff are expected to grow in early summer. The test plots are designed to be suitable for harvesting with a combine. With these newly established test plots, we can closely monitor and experiment with optimum harvest time. With wild harvests it was difficult to know optimum time for grain ripening and to organize a harvest crew.

During fall 2016 we obtained approximately 500 pounds of wild-harvested grain-bearing stalks (panicles). The harvest was mainly in October at the McCauley Ranch south of Silver City. The dates varied depending on local conditions, ripeness of grain, and availability of crew. We also harvested smaller amounts of grain from public and residential “community garden” plantings. After harvest we thoroughly dried the whole stalks and grain in a warm, dry attic room in Silver City. We stored the dried harvest material in large feed-bags (air porous to

prevent possible mold). We filled 20 of these bags, each bag averaged approximately 25 pounds. These were stored in a cold, dry commercial storage until we began threshing and winnowing in late winter and early spring, which yielded nearly 150 pounds of cleaned grain. New Mexico Gila River farmer Eric Leahy, who has extensive background in seed collecting and processing, guided in direct, manual methods for threshing and winnowing the grain. We are carefully storing the threshed and winnowed grain in a temperature-controlled modified refrigerator-freezer and suitable closed containers in a local cool-dry basement environment.

Cleaned sacaton grain is minute, almost like flour, and therefore does not need milling. It has a high-protein content and is gluten-free. For most methods of preparation the chaff can be removed by threshing, winnowing, and sifting. Some chaff can be left on the grain, which adds dietary fiber. We discovered a few interesting attributes with food preparation. When moistened, or with added water, the grain becomes moderately mucilaginous, somewhat like chia, which would be nutritionally significant as well as useful for some recipes. We also found that the actual grain readily separates from the chaff in a blender, which would be applicable to larger-scale preparation. The grain can be popped to be suitable for breakfast cereal and more diverse food products.

We are using the cleaned grain for introducing sacaton grain as a food to the public and distributing to chefs for feedback. (See recipes and handouts.) The results have been positive. We anticipate reaching a more substantial public and media audience during the September 2017 Gila River Festival, as well as through open-access publications, hands-on baking/cooking and planting workshops, and a website.

Big sacaton is also suitable for the nursery trade, especially as a replacement for the non-native and generally undesirable pampas grass (*Cortaderia selloana*). We continue to distribute big sacaton plants to home gardens and other landscaping activities (including school gardens and public plantings such as the Fort Bayard native plants garden) in Silver City and nearby locations, with highly favorable results.

Apache Redgrass (*Zuloagaea bulbosa*, = *Panicum bulbosum*)

This perennial panicoid grass has long been known as *Panicum bulbosum*, with the common name “bulb panic-grass.” Recent molecular-based research has shown this species to be in a distinct clade, falling outside of the large *Panicum* genus. For this reason it now placed in its own, monotypic genus. The common name “bulb panic-grass” is unappealing for a food plant, so we have chosen to call it “Apache redgrass.” The traditional Apache name for this plant translates as “red grass” and indeed Apache elders in the San Carlos district were pleased with the new name.

This large perennial grass occurs across much of New Mexico. We agree with Apache elders who say it is the “easiest to harvest and tastes the best.” It is also an attractive landscape plant. Redgrass thrives in partial shade as well as full sun, and, as we have also demonstrated, it is suitable for intercropping in orchards.

In addition to the extensive spring 2017 Mimbres Hot Springs Ranch plantings, we have planted Apache redgrass (or supplied it to landscapers/planters) at a number of public and private sites in and near Silver City. In May 2017 Eric Leahy established a demonstration garden at the Gila Valley Library, in the town of Gila, NM, using plants provided by our project. Other

public plantings in Silver City include the orchard at the Office of Sustainability, established in 2016; The Commons (site of The Volunteer Center), with plantings between 2013 and 2016; and 10th Street Median garden established in 2016. Residential demonstration plantings include the ones at the Hedland and Winston residences, where redgrass was first planted in 2013 and continues to thrive.

Redgrass grain is a protein-rich and gluten-free small millet. We have prepared the grain as polenta and used it to make tortillas, chips, crackers, bread, cookies, pizza crust, etc. We have used the grain whole or ground the grain into flour; sprouted it and used the sprouts as a green; and popped it like other “puffed” grains. As with sacaton grain, redgrass grain provides a tasty protein-rich addition to breakfast cereals including oatmeal. We find that a ratio of 1 part redgrass grain to 3 or 4 parts oatmeal (or other cereal) adds a good flavor and increases protein content. One of our local collaborators uses the grain in pancakes; the grain is harvested from his home garden.

Confirming what we learned from Apache elders, the fresh grain is delicious. The experimental farming at the Mimbres Hot Springs Ranch is expected to provide commercial quantities of redgrass grain for local markets and distribution beginning with a small harvest in fall 2017 and a more substantial harvest in fall 2018.

OTHER TARGET CROPS

In addition to the two most important target species, big sacaton and redgrass, we continue to investigate, grow, and harvest other local, native food plants of agronomic potential. The test farm plot at Honey Hawk Farm is set up for adjacent hedgerow-like areas incorporating a diversity of these hardy, native food plants. Our plans are to install the first of these plantings with the beginning of the summer monsoon season in 2017. We are also setting up similar plantings at the Mimbres Hot Springs Ranch, and for local gardens. These plantings are a creative endeavor, with the potential for expanding into commercial farming.

We are propagating these plants variously from seeds, cuttings, and divisions; in greenhouse and out-of-doors. We will be using 3- and 4-inch diameter tree-pots with sufficient depth to obtain maximum root development.

The other target plants include:

Wild Tarragon (*Artemisia dracunculus*). This large New Mexico perennial herb is fast growing, easy to cultivate, and grows readily from cuttings. The young foliage has a more delicate flavor than the Old World domesticated tarragon. Plantings at The Volunteer Center and other local plantings have matured, and we are beginning to use wild tarragon in baking and cooking; cutting-grown plants will be available to the public for transplanting into home gardens.

Gray Oak (*Quercus grisea*). Acorns from the six species of local (Grant County) New Mexico oak species do not require water leaching (like those of temperate climate

oaks), and are edible directly. The gray oak produces substantial quantities of acorns, even when only 3 or 4 feet tall. This species is an easy grower, has a broad ecological range, and is more drought-resistant than other local oaks.

Native Americans and others continue to wild harvest acorns from Emory oak (*Quercus emoryi*) in substantial quantities. Emory oak acorns are eaten fresh and made into acorn meal. However, we find that the Emory oak has a relatively narrow range of ecological tolerance and is much slower growing than the local gray oak. Gray oak acorns currently are harvested in the vicinity of Silver City and, like the Emory oak, the acorns are edible directly or ground into acorn meal. There is a specialty niche market for high-quality acorn meal. Mechanical acorn-milling equipment is readily available, although we find a simple hand-cranked grain mill is suitable for smaller quantities.

More than three decades ago Richard Felger and Gary Nabhan proposed local oaks for orchard cultivation—we have now initiated this proposal. Hedgerow-like areas adjacent to our plantings of big sacaton and redgrass in the Mimbres Valley have been prepared for direct seeding of gray oak acorns toward the end of the 2017 summer monsoon season. We are also planting some gray oak plants grown from previous harvests.

Lemonade-berry (*Rhus trilobata*). This hardy, drought-resistant shrub produces large quantities of small, orange fruits that have a tart, lemon-like flavor. The berries are edible fresh or made into refreshing beverages. The plants are readily available in the nursery trade, although we are growing them from seeds from local germplasm known to have good-tasting fruits. The dried fruits should be marketable for use in beverages.

New Mexico Elderberry (*Sambucus caerulea* var. *neomexicana*). This fast-growing shrub or small tree is found from low to high elevations in New Mexico. The plants readily grow from cuttings. We are growing drought-hardy plants from lower elevations. The various related species and varieties of elderberry (or elder) yield berries that have been used since ancient times. Elderberry jam, jelly, and syrup, etc., command high prices, which seems strange since the plants are easy growers. The dark blue, ripe fruits should be cooked; unripe or uncooked fruits can be toxic. Elderberry leaves and bark are also used medicinally. It was common practice to plant elderberry shrubs at homesteads and ranches, and Native Americans also planted elderberry. One often sees the plants at abandoned homesteads and around old corrals.

Western Honey Mesquite (*Prosopis glandulosa* var. *torreyana*). High-elevation, local populations of western honey mesquite offer intriguing potentials. Richard Felger is one of the pioneer proponents promoting mesquite as a modern food resource. As a result of his early work with Clifford Pablo of the San Xavier O'odham District in Tucson, Desert Harvesters in Arizona have developed an extensive network harvesting and processing mesquite flour and other products as a local food resource. Our interest remains

selecting superior stock for cultivation. High elevation, cold-resistant genotypes have scarcely been investigated.

We have included local mesquite flour in many of our taste-tasting trials, on its own and with sacaton and redgrass; the results have been well received. We have been working in cooperation with The Volunteer Center in Silver City, which hosts a monthly group meeting promoting local wild-harvesting of mesquite and is in the process of installing a hammermill.

OUTREACH AND EDUCATION HIGHLIGHTS

- This is the first year we have harvested and winnowed/cleaned enough grain to do significant cooking experiments, and to make a substantial amount of cooked or baked goods available for public outreach and education.
- In July 2016, as part of the Silver City CLAY Festival, Richard gave a public presentation on local native New Crops, in conjunction with a native-foods luncheon at The Volunteer Center. Dishes prepared by Rita Herbst, Kristin Lundgren, and others at Nuevos Comienzos community kitchen included soup, breads, and cakes made with mesquite and other indigenous foods. Adrienne distributed sacaton and redgrass seed packets and seedlings. This was a standing-room-only event and was very well received by attendees.
- On March 17, 2017 our team gave a 2-hour presentation for Gila Native Plant Society in Silver City, titled “Gila Region Food Plants: Recipes, Tasting, and Farming for Global Sustainability.” Richard and Gabriel gave an overview of our recent farming, harvesting, and threshing; Adrienne, Chelsea, and Xavier (with assistance from Rita Herbst) prepared foods using sacaton grain and mesquite, which were eagerly sampled by the audience. We also provided recipe handouts, and distributed redgrass and sacaton seed packets and plants.
- On April 22, 2017 we had a booth at the Earth Day celebration at Gough Park in Silver City, where we offered free samples of cookies and crackers baked with sacaton and mesquite. We also distributed seed packets of redgrass and sacaton, redgrass seedlings (mainly for residential gardens), and small bags of winnowed and cleaned sacaton grain for cooking/baking. The Earth Day celebration is a large public event, offering broad community exposure.
- On May 6, 2017 we presented a “Baking with Native Foods Workshop” at The Volunteer Center’s booth at Give Grandly on the site of the Silver City Farmers Market; Give Grandly is an annual event promoting approximately 50 Grant County non-profit organizations, with broad community attendance in addition to the presence of vendors and patrons at the Farmers Market. Adrienne Booth, Chelsea Rittchen, and Rita Herbst prepared Savory Sacaton Pancakes, Yummy Mesquite-Sacaton Cookies, Sacaton Lemon Shortbread, Sacaton-Mesquite-Blue Corn Muffins, and Sacaton-Mesquite-Redgrass Crackers for free sampling. We also provided free recipe cards and other handouts, seed packets and bags

of cleaned grain, redgrass plants, and hands-on interpretive materials. During this event, many people asked if we would be selling native-foods baked goods at the Farmers Market throughout the year; they expressed a desire to purchase these baked goods if available for sale. Richard Felger was also on-site during this event to answer questions.

- Adrienne is working with Kristin Lundgren and Aldo Leopold Charter School students at The Volunteer Center in an ongoing effort to identify indigenous food plants on-site and provide interpretive signage and related educational materials.
- Adrienne is working with Chelsea Rittchen, Rita Herbst, and others to compile a local indigenous food plants recipe booklet.
- We are distributing winnowed/clean grain to chefs and bakers in and beyond our local community. Rita Herbst, a renowned chef in her own right, has helped us distribute sacaton and redgrass grain to Santa Fe-based chef-author-educator Deborah Madison; New-Mexico based baker-educator Shauna Woodworth, of Cooking with Kids; and Sarah Federman, PhD candidate in Evolutionary Biology at Yale University.
- We have purchased the domain name DesertFoodPlants.org and are in the process of constructing a website containing information about Felger's work on native New Crops.
- Richard worked with student intern Xavier Khera on Fridays throughout the 2016–2017 school year, providing classroom/herbarium/greenhouse and in-the-field education.
- Richard continues to provide relevant New Crops education on specific plants and farming techniques for the local New Mexico region through work with members of our team, including Gabriel Feldman, Xavier Khera, Eric Leahy, Tsama Parsons-Pineda, and Chelsea Rittchen.
- We continue to provide ongoing informal education via community gardens and residential landscapes, including new plantings at local schools and the Fort Bayard National Historic Site.

SUMMARY

Our ADPPF-funded New Crops projects 2014 to 2017 have provided significant results, showing that it is indeed feasible to grow selected native plants as food crops in southwestern New Mexico. We have established sustainable, productive farm sites. We continue to do wild harvest to gather germplasm and supplement farm production. Taste-tests for food products, including baked goods, from the current target species at outreach events in New Mexico and Arizona have had positive results. Taste-tests and workshops are ongoing. Previously we verified high nutritional values, although some additional analyses are warranted.

Our varied plantings taught us: The test crops can be cultivated using common, sustainable, organic agricultural practices. Ideally these crops should be integrated into existing production. We also learned that it is essential to have test plantings situated locally, near home base with easy access for regular inspection and tending of plantings. We are having successful outcomes by partnering with local home gardeners as “citizen farmers” and utilizing public plantings for community outreach and education. Initial trial plots at existing farms had mixed results, but they gave us valuable insight as to how we could successfully move into larger-scale production, which was our focus for 2016–17. As we move forward into the production-and-distribution phase, our team includes young farmers with experience in community-supported agriculture and farm-to-market/farm-to-table distribution, along with an administrator who has valuable experience in education and outreach to diverse audiences in the rural Southwest. We are expanding local home gardens and demonstration plantings, and are now moving into actual production and additional market testing.

PHOTO GALLERY

2016–2017 NM Indigenous Food Plants for Agronomic Development

Photos by Richard Felger unless otherwise stated.



1.1 Collecting big sacaton grain-bearing stalks (panicles) at McCauley Ranch, Ridge Road, Grant County; Jeanne Martin, October 20, 2016.

1.2. Sacaton grain harvest crew at McCauley Ranch. David Pedigo, Jeanne Martin, Eric Lynch, Richard Felger, Gabriel Feldman, and Chelsea Rittchen, October 20, 2016. *Photo by Jane Spinti.*





2.1. Bags with big sacaton for drying in attic at Jane Spinti's home, Silver City; Richard, Jane, and Eric, October 20, 2016. Photo by Adrienne Booth.



3a & 3b. Bags of sacaton harvest material at storage unit. November 5, 2016. Photos by Adrienne Booth.



LEFT
4.1. Big sacaton harvested material ready for threshing; Silver City, February 7, 2017.

RIGHT
4.2. Pouring threshed big sacaton grain into storage bag; Eric and Richard, February 7, 2017. Photo by Adrienne Booth.



4.3. Big sacaton grain; Chelsea, Gabriel, Xavier Khera, Honeyhawk Farm, Mimbres Valley; November 18, 2016. Photo by Adrienne Booth.



4.4. Tsama Parsons-Pineda with newly winnowed sacaton grain, Silver City; May 9, 2017.



LEFT
5.1. Selecting a site for sacaton demonstration farming, Honeyhawk Farm; Gabriel, Chelsea, Richard, and Xavier, November 18, 2016.
Photo by Adrienne Booth.

RIGHT 6.1. Collecting big sacaton plants for transplanting, McCauley Ranch; Gabriel, April 15, 2017.

BELOW 6.2. Loading sacaton plants for transporting, McCauley Ranch; Tsama and Gabriel, April 15, 2017. Plants are layered between wet sheets and blankets to prevent drying.





LEFT
7.1. Honeyhawk Farm, portion of drip irrigation for sacaton planting; Chelsea and Gabriel, April 15, 2017.



RIGHT
7.2. Planting sacaton at Honeyhawk Farm, April 15, 2017.

BELOW
7.3. Mulching newly planted and trimmed sacaton at Honeyhawk Farm; Gabriel, Chelsea, Tsama, and Cameron (Gabriel's nephew). April 15, 2017.





LEFT
8.1. Apache redgrass and big sacaton seedlings in greenhouse, Silver City; March 3, 2017. *Photo by Adrienne Booth.*

ABOVE
8.2. Apache redgrass seedlings, March 3, 2017. *Photo by Adrienne Booth.*

BELOW
9.1. Initiating field planting for Apache redgrass at Hot Springs Ranch; Xavier, Robert Winston, and Tsama; April 28, 2017.





LEFT
9.2. Hot Springs Ranch, fallow field for next phase planting of big sacaton and Apache redgrass, April 28, 2017



RIGHT
10.1. Tsama moving redgrass and sacaton plants from Silver City greenhouse; May 9, 2017.

BELOW
10.2. Tsama with redgrass and sacaton plants, for transporting to Hot Springs Ranch and Honeyhawk Farm, May 9, 2017.





11.1. Harvesting redgrass grain, Signal Peak road, Pinos Altos Mountains, Grant County, October 5, 2016.

11.2 Harvesting redgrass grain at The Volunteer Center (The Commons), Silver City. Rita Herbst and Richard Felger. September 26, 2016. Photo by Adrienne Booth.



BELOW

12.1. Honeyhawk Farm, portion of propagation area, including for native elderberry, gray oak, tarragon, and lemonade-berry; March 18, 2017.





13.1. Flyer for new crops presentation, March 17, 2017.



13.2. Audience applauding Powerpoint portion of new crops presentation, March 17, 2017. Photo by Adrienne Booth.

13.3. After the Powerpoint segment of presentation, audience sampling baked goods made with sacaton grain, mesquite, and other new crops. March 17, 2017. Photo by Adrienne Booth.



13.4. Some of the foods made from new crops, presented for free sampling. Clockwise from top left: Savory sacaton pancakelettes, sacaton-mesquite blue corn bread, sacaton mini-muffins with dried berries, plain sacaton crackers, savory sacaton crackers, plain sacaton mini-muffins, sacaton sweet cake. Baked by Chelsea Rittchen, Adrienne Booth, and Rita Herbst/Xavier Khara. March 17, 2017. Photo by Adrienne Booth.



13.5. Poster for “Baking with Native Food Crops” outreach event, May 6, 2017. Chelsea, Rita, and Adrienne were the bakers; Adrienne, Chelsea, Kristin Lundgren, and Andrea Warner staffed the workshop table, with Richard on hand to provide new crops information. Poster made by Adrienne Booth.

13.6.a, b, & c. Clockwise from left: One of the many people who stopped by to sample Yummy Mesquite-Sacaton Cookies and more. Baked goods, informational handout (pink), recipe cards (yellow, blue, green). (Photos by Adrienne Booth.) Adrienne staffs the workshop . (Photo by Bea Buzard McKinney.)



13.7. "New Crops Luncheon" at The Volunteer Center (The Commons; Nuevos Comienzos community kitchen), part of Silver City CLAY Festival, July 2016. Richard and others gave presentations, and Adrienne distributed redgrass and sacaton plants and seed packets. The chefs included Rita Herbst and Kristin Lundgren. Photos by Adrienne Booth.





13.8. Part of our outreach and education display at Silver City's annual Earth Day celebration, showing redgrass plants, sacaton and redgrass seed packets, bags of winnowed sacaton grain, and container of winnowed redgrass grain. April 22, 2017. Photo by Adrienne Booth.

13.9. Left to right: Richard discusses planting grasses near fruit trees with Kristin Lundgren. Aldo Leopold Charter School (ALCS) students with Kristin, working on plant identification & mapping. Younger ALCS students pose with sacaton plants. March 29, 2017. Photos by Adrienne Booth.



13.10 a, b, & c.
Upper left: a) Office of Sustainability Community Garden at the beginning of planting; b) Lower left: Sacaton and redgrass plants at left and central part of image; Earth Day, April 23, 2016. c) Below: The maturing garden, May 29, 2017. Photos by Adrienne Booth.

