



No. 11, 1985

Fall Equinox

the Seedhead News

New Garden Takes Shape at Tucson Botanical Gardens

Those who frequent the grounds of Tucson Botanical Gardens will find a new surprise. The staff of Native Seeds/SEARCH is converting previously uncultivated space into a green museum. A living legacy of little known crops and their rare wild and weedy relatives is being erected in the context of a Native American garden.

The theme of the garden is rare and endangered plants of the Sonoran desert and outlying regions which have lent themselves to human use via their domestication or modern plant breeding. As the garden takes shape this fall, public education tours by Tucson Botanical Gardens docents will begin, in addition to tours of the old TBG/SEARCH demonstration garden to the west.

An increasing need for rare plant conservation is being met ex situ, in botanical gardens away from the habitat where the plant can be experiencing pressure. It may be argued that in situ conservation - the preservation of habitats in which the plants originally thrived - is far superior to harboring the seeds out of context in botanical gardens, seedbanks or growout stations. Yet, in the Southwest we have already

experienced cases where rare seeds have become lost when left in situ. A back-up only makes sense until the original habitat has been safeguarded for conservation.

The matrix for the garden is agroecological niches common to traditional gardening in the Southwest. The plot is rimmed to the north and east by Hopi Mesa style rock terrace gardens. A small sandy wash similar to those found along valley floors of southern Arizona enters from the west side of the garden and feeds a Papago style floodwater field. At one edge of this field is a typical stacked mesquite pole fence. The other edge holds a mesquite, ocotillo and saguaro rib shade ramada and living ocotillo fence. Hohokam style cobble lined terraces of agaves complete this combination of niches for plant display.

Plants chosen for display are rarely known outside their original context. Wild perennial shrubs and herbs along the wash banks illustrate this. Native indigo, Indigofera suffruticosa is known from wash habitats from southern Sonora to Guatemala and is sometimes cultivated for its blue dye. A wild cotton resis-



The new garden is shown here during construction this July. In the foreground is the Hopi terrace and piled earth ready to be shaped. The floodwater field, ramada and ocotillo fence are in the background.

tant to several pests, Gossypium armorianum from San Marcos Island off the coast of Baja California, has been used by modern cotton breeders to produce a variety of cotton which loses the bracts before harvest. In common cotton varieties these have contributed to brown lung disease among gin workers. Also planted here is the wild cotton common in this area, Gossypium thurberi.

The mesquite pole fence will soon be covered with the vines of an uncommon wild gourd from Baja California named Cucurbita cylindrata. Other border plants are pomegranates from the Papago Reservation, wild chiltepinies, and Agave angustifolia, the century plant used for making the bootleg liquor bacanora in northern Sonora and in danger of local de-

pletion there. Each year 1/2 million of these plants are harvested from Sonora. The plants are distributed in the wild as far south as Guatemala.

The floodwater field is currently planted with Mohave flour corn, a fast 60 day variety grown by the Colorado River Indians. Twining up the stalks is a wild relative of cowpeas Vigna pachycarpa which was collected for the first time in Chihuahua last summer.

If you live in Tucson or are visiting here, be sure to visit the demonstration garden to watch it unfold. You will have the opportunity to witness some extremely rare plants as they are sheltered here.

Karen Reichhardt

Interesting Characteristics Noted For Mt. Pima Yellow Sweetcorn

In March of 1985 we planted Mountain Pima Yellow Sweet Corn at SEARCH's New York Drive garden. The intent was not to produce any quantity of seed for eventual distribution, but to determine how medium elevation corn from Western Chihuahua would do in Tucson's desert climate. As expected this particular variety of corn is not well suited to Tucson's heat and dryness. Corn cobs were obtained with viable seed, but no great increase in SEARCH's supply resulted. Obviously this corn variety is much more productive at elevations in western Chihuahua around 5,000 feet in oak woodlands.

During this growout a number of characteristics were noted which singly may be present in a particular corn variety, but normally do not occur in any one crop. This particular corn appears to have retained many traits of early cultivated corn. Using this unusual sweet corn variety as an example we wish encourage readers to record characteristics for the varieties they grow out in their own gardens.

Many modern and/or hybrid corn varieties have a single stalk or culm that conveys water and nutrients from the plant's roots to its leaves. The Mountain Pima Yellow Sweet Corn produced a number of secondary stalks or "tillers". The number of tillers per plant in our small test plot ranged from zero to six with an average of two tillers. The corn also exhibited an unusually high number of sets of aerial roots. Aerial roots occasionally appear at the lower nodes of some corn plants, but this variety of corn exhibited up to seven sets of aerial roots above the ground level. It was not uncommon for many stalks or tillers to have three to six sets of aerial roots while other plants had none.

Aerial roots are valuable to prevent lodging. Many Indian farmers heap dirt up around the stalks which allows the aerial roots to grow and better anchor the plants. (However, this variety did not exhibit root instability or weak stalks.)

The plants produced a number of poorly filled out ears of corn because of the extreme heat present while the plants were pollinating. The plants often produced from one to as many as three ears per main stalk or tiller. This variety obviously has the potential to be very high yielding since the tillers produced cobs. A number of main stalks and tillers occasionally branched into two or three stems at a height of three feet above the ground.

As the cobs matured, from 90-120 days after planting, they were removed from the stalks. As many as three new ears emerged on some stalks at the location where the ear had been removed. Only a few secondary ears developed, but their presence was unusual.

A single tassel was present on as many as a third of the ears. The frequency of this characteristic appears to be greater than in other corn varieties we have grown.

All the tillers produced tassels, but two or three of these tassels produced small corn plants. These miniature plants developed at the base of the tassel. They were not the result of viable seeds maturing at these points and then sprouting. Comprised of sets of one to six small sets of leaves, these plants grew to a length of four to six inches before being dislodged by the wind rustling the tillers. The tiny shoots quickly developed sets of roots when placed in water.

These observations are reported here to encourage other Native Seeds/SEARCH growers and members to take note of the characteristics of plants they grow. Most of the varieties of seeds we offer for sale have never been carefully studied by agricultural scientists. The staff of SEARCH encourages anyone growing our seed to take careful notes on the plants they have planted. For many varieties of seed, it may be the first time ever for them to be grown in such far ranging climates.

Barney T. Burns

Seed Savers In Their Own Right

Phyllis Hogan Boone has been involved with traditional herb use in the Southwest for about 12 years. She became interested in herbs when she moved to central Arizona from Flagstaff and could not find a pediatrician who knew anything besides surgery and pill dispensing.

Her acquaintance with Herbert Talahastewa, a Hopi herbalist, gave her enough credibility to slowly be accepted by Mrs. Marian Valencia, an herbalist and distributor of Mexican herbs for most of Arizona's Hispanic and Indian population. Phyllis began to realize that none of the information she was learning was documented. To learn more about the dried medicinal herb preparations, she began to explore what was known about the living wild herbs by botanists in the area. Frank Crosswhite of the Boyce Thompson Arboretum, who was amazed that Mrs. Valencia had discussed herb lore with an Anglo, set her on the path of botanical identification of plants. She was also helped by Art and Barb Phillips of the Museum of Northern Arizona and through a few courses.

Phyllis gradually bought out Mrs. Valencia who wanted to retire after 50 years and added the herbs to her jewelry business. She later moved her business to Flagstaff. In 1982 she founded the Arizona Ethnobotanical Research Association to record and preserve Arizona Indian herbal knowledge. To raise funds for her research, wild herbs are collected and sold. Their catalogue, *Plants of the Winter Sun*, is available by writing 18 East Santa Fe, Flagstaff, AZ., 86001.

Research projects which she has participated in include writing ethnobotanies and establishing pressed, dried plant collections of about 200 plants each for both the Hualapai and Havasupai Indians, with the help of the school children of each tribe. She has also investigated Navajo plant uses with her father-in-law, Sam Boone Sr., a tribal herbalist. She is currently active in growing and seedbanking wild herbs of interest from Northern Arizona used by Native Americans.

Mahina Drees

Putting Teparies Back On The Map

In 1969, British legume expert pronounced last rites for the obscure tepary bean: "It is quite likely that this species will disappear from cultivation in a relatively short while." On August 30, 1985, 50 people including Mexicans, a Papago, a Cucupa, a Ugandan, a Peruvian, and American scientists and farmers, came up with an entirely different pronouncement: the little tepary bean is alive and well. The first international meeting ever devoted to this bean announced that its acreage in cultivation is on the upswing in the U.S. for the first time in a quarter century. More tepary land races have been gene banked in the last decade than ever before. Additionally, the demand and market price (\$1.75 a pound) are enough to encourage other farmers in the U.S./Mexico borderlands to sow more seed of more varieties. In short, teparies are being put back on the map.

SEARCH advisor Anita Williams hosted the group in Mexicali, Baja California --- one of the states in Mexico with the lowest production of beans, due to salinity, drought and heat limiting common bean production. Yet, as Anita pointed out, the Cucupa farmers of the adjacent Colorado River successfully grew teparies for centuries. Anita and her colleagues, Mario Martinez, translated the 1983 Desert Plants issue on teparies into Spanish, and this document was provided to all workshop participants. For those of you who know projects in Spanish-speaking desert areas which may benefit from this document, write for a free copy of "El Potential del Frijol Tepari En Las Zonas Deserticas" to Dr. Gary Nabhan, OALS, 845 N. Park Ave., Tucson Az., 85719.

The workshop was funded through the U.S./Mexico Bean/Cowpea CRSP at Michigan State University, organized by the Office of Arid Lands Studies of the University of Arizona, and cosponsored by a number of organizations, including the Secretary of Agriculture of Mexico and SEARCH. It provided an update on the status of teparies in gene banks, their superior adaptations to stress, commercial production methods, promotion and marketing

strategies, nutritional utilization, and consumer acceptance. The workshop also allowed several scientists, such as Lope Montoya Coronado of Ciudad Obregon, Sonora, and Dr. Richard Pratt, of Purdue University, to present unpublished results of their work over several years to an international audience for the first time. The consensus from participants was that although teparies still face many challenges, and many land races have already been lost, there still exists enough unique characteristics within them to secure them a place in future desert agriculture.

Gary Nabhan

Book Reviews

HAVASUPAI HABITAT; A.F. WHITING'S ETHNOGRAPHY OF A TRADITIONAL INDIAN CULTURE.

Edited by Steven A. Weber and P. David Seaman. 1985. Published by University of Arizona Press, Tucson, Arizona. 288 pages.

In 1950 the late anthropologist A. F. Whiting finished an ethnographic manuscript based upon extensive fieldwork with the Havasupai Indians in the early 1940s. Editors Steven A. Weber and P. David Seaman have resurrected this work on plant and animal uses, and relating how these have changed over the years. The accounts of people's daily lives in the 1940s seems especially vivid. This may be because Whiting had nine reliable informants who assisted him in his field work. Most of these were listed as being very patient with ethnographers. Whiting himself comes through as a very sympathetic observer.

A complete bibliography provides numerous sources for further study on the Havasupai and surrounding tribes of Northern Arizona.

Esther Moore

PEPPERS; The Domesticated Capsicums

Written by Jean Andrews. 1985. Published by the University of Texas Press, Austin, Texas. 186 pages, 32 color plates, 24 color photographs, 52 black-and-white illustrations, and 4 maps. \$35.00.

This complete account of every aspect of the genus Capsicum is a colorful, educational, interesting and fun reading experience. The book begins with thirty-two full page color prints of the artist's own exquisite illustrations of chile cultivars. These are the most complete and well done of their kind since Fingerhuth's work in 1932, which was a one page rendition titled Monographia Generis Capsici.

With a firm belief that to know one's subject is bliss, Andrews began a detailed search of the current literature on peppers. The resultant bibliography is very complete and will be useful to scientists in this field as well as to the layman.

Andrews then covers the history of peppers from the beginning, with information collected from archaeological evidence to Mayan drawings depicting chilies cultivated, traded and used in religious ceremonies. Her historical tale follows not only the domestication and cultivation by man but includes the natural speciation theories that are presently accepted.

She bravely delves into the taxonomy and systematics of this genus and also describes the current cultural and biological aspects of pepper cultivation. Recipes from worldwide cuisines and an illustrated glossary round out this opus magnum sure to delight readers of all backgrounds.



Coming Events

Watch a NOVA special to be aired on PBS stations nationwide October 15. The title of the program is "Seeds of Tomorrow", and it emphasizes the causes and consequences of genetic erosion in the world's centers of crop diversity. The documentary follows plant explorers to Ethiopia, Greece, Peru, and our own Southwest. Featured in the show are Gary Nabhan representing Native Seeds/SEARCH, and other researchers world-wide working to save the remaining land races of our major food crops.



"Gathering The Desert" by Nabhan and Mirocha, is illustrated with drawings such as this one of coyote gourds.

Growing Southwestern Native Crops Course To Be Taught At The Garden

Tucson Botanical Gardens will be offering a course taught by Native Seeds/SEARCH garden manager Esther Moore, on Thursday, October 24, from 7:00 to 9:00 p.m. This class introduces you to several native crop plants, traditional and modern cultures and their uses.

Fee: \$5.00---TBG members \$4.00

Contact TBG for required pre-registration.



In early October, the University of Arizona Press will release the clothbound edition of the new book by writer Gary Nabhan and artist Paul Mirocha, "Gathering the Desert". Twelve essays, each with a provocative illustration, describe what plants desert dwellers relied upon in the past, and what has happened since traditional gathering and farming have waned. These essays take you into the thick of things--- into the fields, barrancas and lava flows where remnants of millenia-old traditions still persist.

You are invited to attend two book-signing parties with the authors, where the original illustrations will be displayed. On October 18, from 4:00 to 7:00 p.m., the Bookshop of the Southwest Parks and Monuments Association will have an open house at 223 North Court Avenue in downtown Tucson. On Sunday, November 17, the Desert Botanical Gardens in Papago Park in Phoenix will host a similar event from 1:00 p.m. to 4:00 p.m. Copies of the book signed by both Mirocha and Nabhan can be obtained for \$19.95 from Native Seeds/SEARCH, 3950 W. New York Drive, Tucson, Az. 85745.

Garden Seed Inventory Revisited

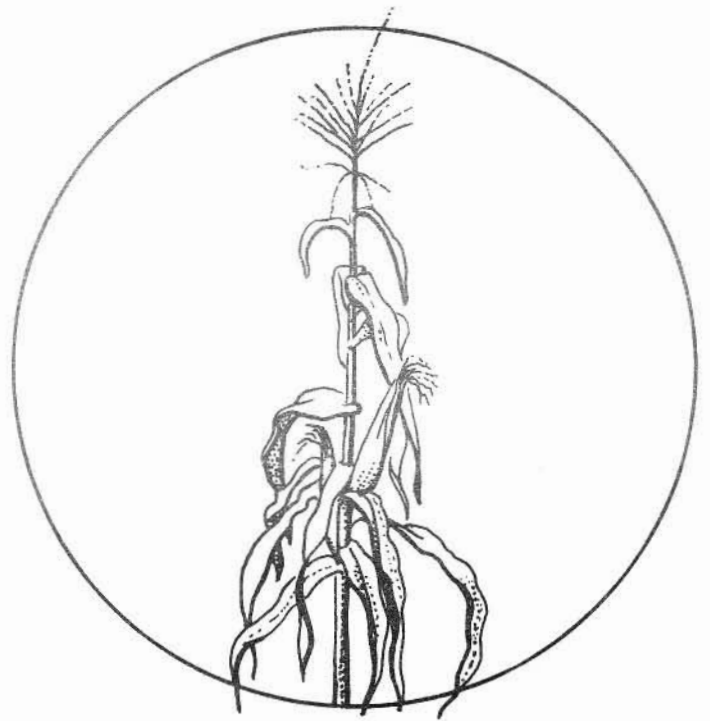
SEARCH staff member Barney T. Burns recently read through The Garden Seed Inventory (edited by Kent Whealy, Seed Savers Exchange, 203 Rural Avenue, Decorah, Iowa, 52101). He wanted to see how many of the vegetable plants included in the inventory were only available through Native Seeds/SEARCH. Based on our 1984 seedlisting of 91 vegetables and other useful plants, Kent had listed 72 of the vegetables only. Only five of these 72 vegetables were being offered by any other North American Seed Company.

The upshot? Most of the seeds sold by us were not marketed by anyone else in the world. An incredible 93% of our listed seed varieties were only available from SEARCH. Considering the 1985 seedlisting which includes 150 vegetables, 97% are exclusively available from us.

If we are at the cutting edge of the urgent search for heirloom varieties of vegetables, it is only possible because you have generously supported our efforts through seed purchases and membership.

SEARCH Recognized by Governor's Commission

The Governor's Commission on Arizona Environment recognized Meals For Millions Southwest Program for its conservation efforts, especially for initiating a seedbank which has now become Native Seeds/SEARCH. Mahina Drees, Co-Director, accepted the award on behalf of both organizations.



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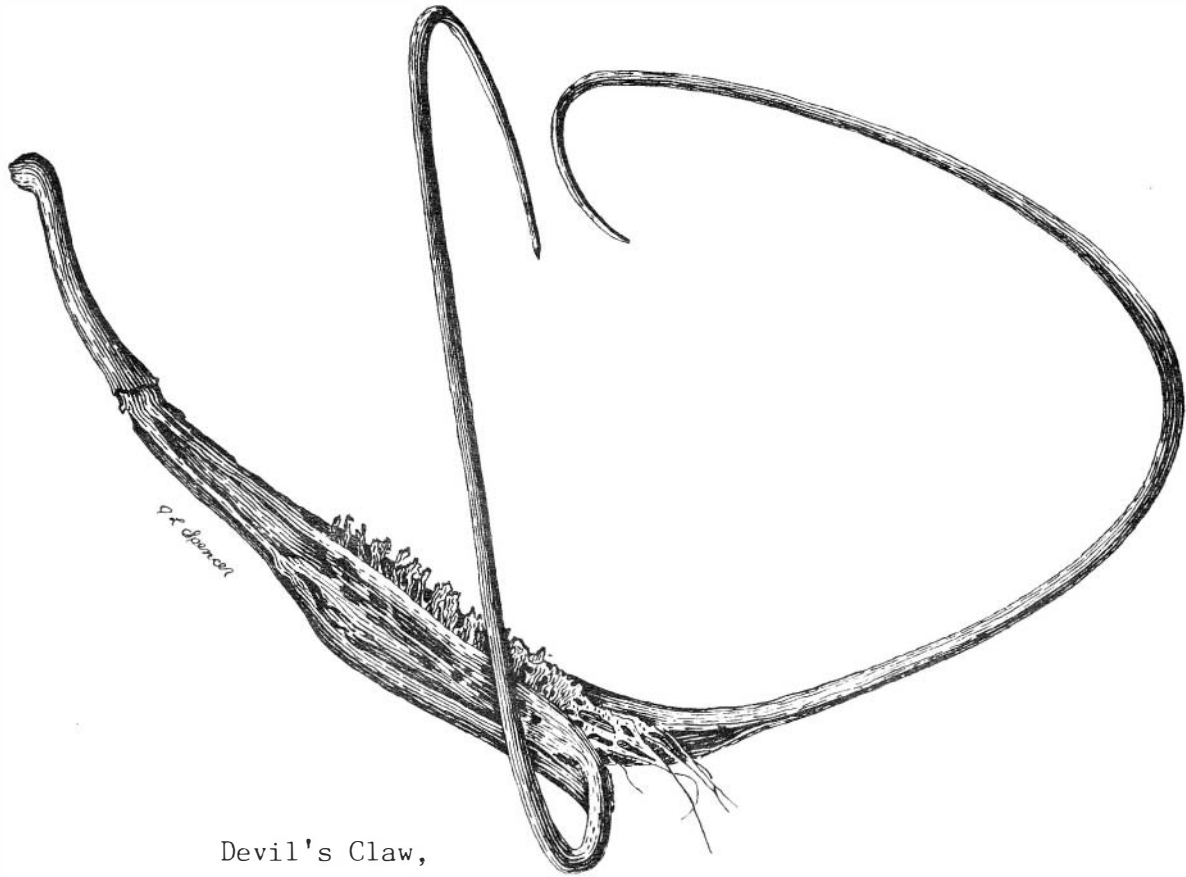
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Devil's Claw,
illustrated by Judy Spencer

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