

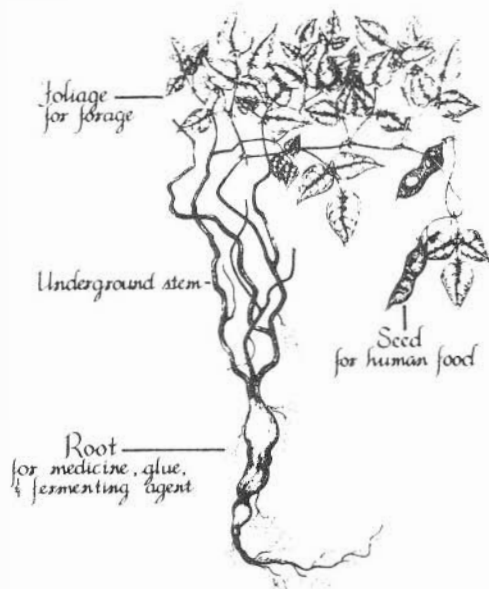


the Seedhead News

Conserving Beans — From the FAO to the Mountains of Mexico

(During the summer of 1983, Gary Nabhan had the opportunity to travel to Germany and to Mexico as part of bean conservation efforts. In Hamburg, he participated in the Phaseolus genetic resources advisory committee meetings of the International Board of Plant

Genetic Resources of the UN's Food and Agriculture Organization. On the west coast of Mexico, he contributed to a USDA-sponsored University of Arizona expedition for seed and root propagules of wild beans, organized by Russ Buhrow. Here are some highlights:)



WILD BEANS & THEIR USES (N. EVANS)

Bean conservation is quite different when it is discussed in an international meeting room, than when it is attempted on a muddy road in the sierras of Mexico during the monsoon season. Nevertheless, the two kinds of efforts reinforce one another, and both are essential to our descendants being able to enjoy and utilize the diversity of beans that evolved in the Americas--- resources critical to meeting future food needs.

The IBPGR, FAO's genetic resources program, has provided funds over the last five years for the collection of over 6000 accessions of 4 cultivated beans species and their wild relatives from 14 countries. While this effort has been major, its bean advisors remain concerned that many genetic resources are being lost in Latin

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America as land use changes affect traditional agriculture and wild habitats. They are particularly concerned that wild beans, tepary beans, and a runner-like cultivar,

Phaseolus polyanthus, are greatly underrepresented in world collections. World gene banks for beans are also faced with difficult challenges in cataloging, documenting, and storing already-collected beans---CIAT in Colombia currently has a backlog of more than 10,000 collections that have not yet been properly quarantined and stored--- a task that may take many years. The committee was interested to learn that so many voluntary organizations in North America (such as the Seed Saver's Exchange) are working to conserve heirloom green beans that no gene bank now has. They see that if such volunteers could be enlisted to obtain seeds with accurate associated documentation into gene banks, long term conservation would be aided without further aggravating existing bottlenecks. Finally, to encourage more thorough collection and use of teparies

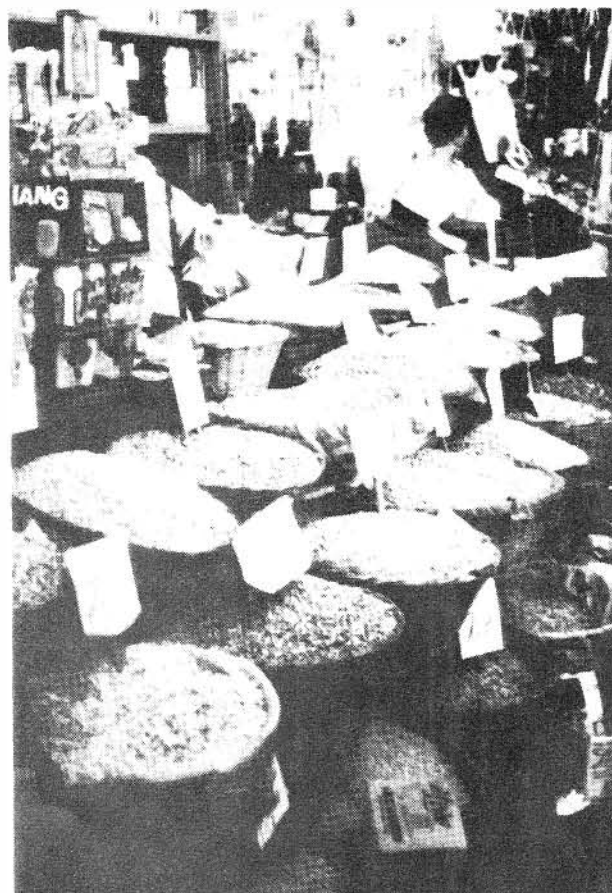
and wild beans, the IBPGR has enlisted my help in preparing booklets on the collection and documentation of these resources, to be published in 1984.

Less than a month after returning from Hamburg, I joined Russ Buhrow's bean searching team in Guadalajara. Certain wild bean species had not been recollected since their original descriptions decades ago. At each location we visited, we sought seed or perennial roots that could be propagated in greenhouses, root nodules of nitrogen fixing bacteria, photos, herbaria specimens, and data on whether or not the population was threatened. Whenever possible, we also collected seed or herbarium specimens and ethnobotanical notes on other relatives of crops, knowing that some of these areas may be inaccessible to researchers in coming years.

The 16 to 18 hour field days were both exhilarating and exhausting. Often single days included avoiding both landslides on narrow mountain roads and

areas of illicit drug production nearby. Nevertheless, we succeeded in reaching a number of remote wild stands, and obtained germ plasm several bean species for the first time, as well as securing data on wild relatives of common, lima, and runner beans.

Our last day, near Imuris, Sonora, we saw dramatic evidence that wild beans really are threatened by pressures on the land. Just 3 plants of Phaseolus ritensis were found on an entire mountainside. One was pulled up by livestock and dead; the other two were on a cliff fortunately beyond the reach of most animals. It will be months before we learn how much of this material is unique. Yet this research has further convinced us that IBPGR is right in urging the collection of these resources now, while they still exist.



BEAN MARKET ON MEXICO'S WEST COAST

Tucson Goes Native for San Juan

On June 24, San Juan's day is traditionally celebrated in the Sonoran Desert at dawn, when families bathe in the nearest river, washing themselves and thereby preparing for the coming summer rains. Native Seeds/SEARCH chose this day to introduce itself to Tucson, by hosting an evening open house at the Tucson Botanical Gardens.

Over five hundred guests treated themselves to three hours of activities and entertainment sponsored by the new organization. Seed packages, desert foods and Mexican Indian crafts were sold to visitors in the main garden area, while smaller groups were given tours of the Native Seeds/SEARCH desert crops display located on the east side of the botanical gardens.

As the evening darkened, scheduled program events began. Our guest speaker was Laura Kermen, an elderly Papago farmer who has spent most of her life in the tiny village of Topawa, Arizona. Seated at the edge of the garden, framed by an arbor of flowers and greenery, Laura recounted from her youth the entire summer rainy season planting cycle.

Each year in June her family travelled by foot to a nearby mountain camp, where gallons of saguaro cactus fruit were gathered for wine or long term storage. Her father would watch the dry hot skies with intent, waiting for a sign of rain. Then he would see lightning, far off at the edge of the world, and clouds building. He would speak to his family, telling them to pack their belongings and take the long barefoot walk back to his field near Topawa, to get ready for the rains.

Once back at the fields, large ollas (clay pots) were set out to catch rain water for drinking. The shade ramada was refurbished, and the ditches which would soon lead floodwater to the

field, were cleaned of weeds and debris. When the rain did come and the soil was wet, the ground was softened with a plow. Corn, beans, squash, devil's claw and other vegetables were planted carefully and tended until harvest in October.

After Laura's talk, Mahina Drees played her guitar and sang. Through her songs she reemphasized the importance of living with the desert seasons. As one of her songs tells us: It's raining in the canyon/ warm summer rain./It's raining in the desert/ hard thunder rain./Lightning streaks across the sky/ thunder follows by and by./ It's raining..."



PAPAGO BOY AND NATIVE SQUASH PATCH

We wish to thank all the folks who contributed to the enormously successful evening. Rodney Engard, Lois Haight, Charlie Miksicek, Alison Galloway, Susan Kunz, Rose Houck, Mary Wilkens, Tony Edland, Mary Erickson, Betsy Evans, Francis Manual, Jeremiah Teague, Judy Ratliff, Ed Stiles and Kay Mirocha were all tremendous help. Thank you all.

---Karen Reichhardt

Seedkeepers in their Own Right

Rafael Guzman Mejia may be the most heralded seed discoverer of the 20th century. Yet visiting this quiet young man at the herbarium and field station of the Universidad de Guadalajara in Zapopan, Jalisco, you immediately sense that plants, not publicity, are what matters to him.

In 1977, he was challenged by a University of Wisconsin Christmas card that sadly remembered a teosinte relative of corn thought to be extinct in the wild. Guzman not only rediscovered this Zea perrenis that had not been seen in the wild for over 60 years, but annual teosintes at 6 places in Jalisco as well. Then, working collecting seed of the annual ancestor of corn in the Sierra de Manantlan, Guzman was told by a man on a mule of a similar plant 12 kilometers back in the mountains. Setting off, Rafael reached an Indian field edge at dawn, where an undescribed kind of perennial teosinte, now known as Zea diploperrenis, grew. This robust grass can be found with wild beans (Phaseolus vulgaris) twining around it, is cross compatible with corn, and is immune to several diseases for which corn has no other source of resistance. Guzman now believes that the species was formerly a grass in climax vegetation habitat that no longer exists, but is now dependent upon Indian tolerance of it along irrigation ditches and in orchards.

Rafael Guzman has already made greater scientific contributions than those made by most plant scientists during their entire lifetimes. Still young, he continues his work on Jalisco as the probable center of Zea's (corn's) evolutionary diversification, and on another group of grasses, Paspalum. Conservation of the wild stands of these valuable resources is among his lifetime goals.

---GARY NABHAN



TEOSINTE

Volunteers

Brad Burk, who already had an interest in native seeds when he moved to Tucson from New Mexico recently, helped us considerably in the care of the Tucson Botanical Gardens native crop grow-out this summer. We thank him, and encourage others to contact us if they can volunteer time either growing plants, helping with educational efforts, or searching for wild species. Drop us a note.



Recent Writings by NS/SEARCHers

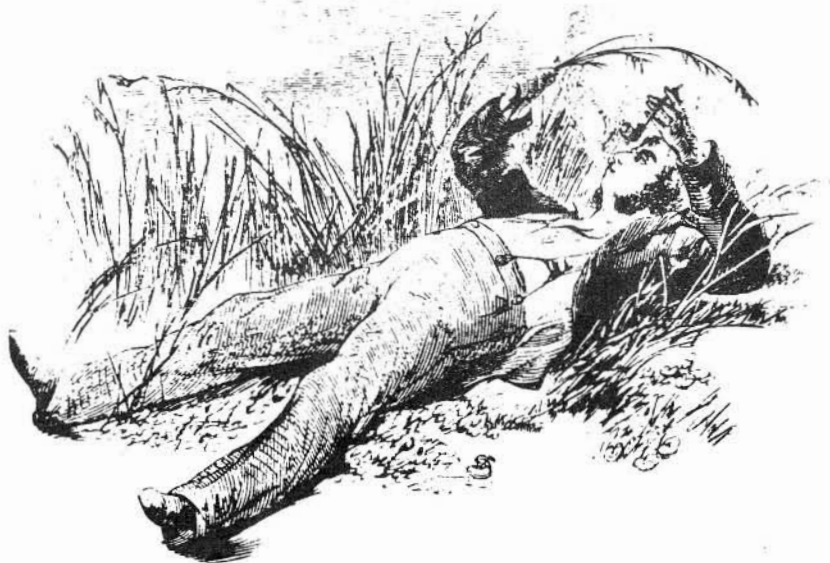
Hopi protection of Helianthus anomalus, a rare sunflower. By Gary Nabhan and Karen Reichhardt. 1983. The Southwestern Naturalist 28(2): 231-235.

SYNOPSIS: A rare sunflower species of dunes in northern Arizona and adjacent Utah thrives as an intentionally protected plant in Hopi Indian fields. Hopi knowledge and historic uses of this plant are noted. Plants in one field were measured to provide a benchmark to gauge possible changes in the genetic variation expressed in the population through time. (We now have 2 more years of data.) Though threatened elsewhere, this wild species has persisted at one of America's oldest villages, suggesting that people and rare plants need not be exclusive of one another. (Recently, we have seen this plant growing atop Hotevilla's kiva!)

Simulated Anasazi Storage Behavior Using Crop Yields Reconstructed From Tree Rings: A.D. 652-1968. By Barney Tillman Burns. 1983. University of Arizona PhD. dissertation. 739 pages.

SYNOPSIS: This landmark study is the first to estimate prehistoric agricultural crop yields for Indian farming cultures in the Southwest. Based on correlations between tree ring widths and historic crop yields of dry beans and corn in southwestern Colorado, retrodictions of prehistoric yields were made using tree ring data dating back to A.D. 652 for the Four Corners area Anasazi. A method for removing the increasing effects of modern technology on crop yields was developed, in order to determine how crop yields are affected by climatic variation. Additionally, annual crop yields were compared with presumed annual levels of food consumption to estimate annual levels of store food reserves. The research confirms that the A.D. 1276-1299 period known as the Great Drought by archaeologists was the worst period of storage short fall to have plagued the Anasazi of southwestern Colorado. Anasazi abandonment of the Four Corners area at this time was surely related to this regional food crisis. Three other major

periods of probable prehistoric food problems were also identified. Major periods of excess surplus resulting from a number of consecutive years of above average yields were also identified. It now appears that many public works projects, such as sizeable additions to pueblos and kivas, date to these infrequent periods of superabundance.



OUR NATURALIST STUDYING GRASSES

Book Reviews

A WEALTH OF WILD SPECIES--- STOREHOUSE FOR HUMAN WELFARE

Written by Norman Myers. Published by Westview Press, 5500 Central Avenue, Boulder, Colorado 80301. 273 pages.

Myers' book aims to document "the myriad contributions that wildlife makes to our material well-being." Like his earlier work, The Sinking Ark, this book uses case histories, an occasional statistic, and moving anecdotes from his own experience in Africa to plea for the conservation of wild species and the habitat critical to them. Here, the reasoning presented is almost entirely economic. He chronicles the use of wild organisms in crop improvement, medicine, fuel and chemical supplies, etc.

Myers' plant stories are often well-written and engaging. But he only occasionally shows caution in overselling a "miracle plant", as with gopher plants and gasahol crops. He views genetic engineering as the "ultimate contribution", naively believing that scientists can now move genes from one wild organism to the next to "improve them" (without any unforeseen problems cropping up). It is worth noting here that even Nobel Prize winner Norman Borlaug feels that the use of hardy wild species and land races in conventional plant breeding will play a more significant role in helping feed the world than will genetic engineering. Myers enthusiastically proclaims that "even the military are finding constructive applications for microorganisms" that are genetically manipulated. He fails to consider that other military applications of manipulated microorganisms, such as for germ warfare, do not make his readers too comfortable. This lack of critical and ethical judgement, most obvious in the last chapters, is disappointing.

---GARY NABHAN

THE 2ND GRAHAM CENTER SEED AND NURSERY DIRECTORY--- A GARDENER'S AND FARMER'S GUIDE TO SOURCES OF OLD-TIMEY VEGETABLE, FRUIT, AND NUT VARIETIES, HERBS AND NATIVE PLANTS.

Compiled and written by Cary Fowler and Elaine Chiasso. Published by the Rural Advancement Fund, P.O. Box 1029, Pittsboro, North Carolina, 27312. \$2.00.

No self-respecting seedhead should be without this annotated listing of plant materials sources. It contains information on the oldest seed house in the U.S.; a sweet potato specialty house; a Texas outfit with 30 kinds of chili seed; and many more. Addresses for most commercial and non-profit sources of open-pollinated or land race seedstocks available through the U.S. mail are noted.

In addition, the directory includes seed-saving tips and an update on the causes and consequences of genetic erosion. Ink prints of various fruits and vegetables illustrate this delicious little booklet. Buy it, but don't read it on an empty stomach!!!

---MAHINA DREES

Wild Chile Search

Our chiltepine project is proceeding slowly but surely. We have located an additional stand of this plant in Arizona, where it is rare. In documenting its wild harvest in Sonora, we learned that certain ejido communities fine harvesters who damage the plants. We are also exchanging seed with Mexico's chile experts, J.A. Laborde and Salvador Montes, who have sent us 14 Sonoran collections. Their booklet, PRESENTE Y PASADO DE CHILE EN MEXICO, free from INIA, is a beautiful testament to chile diversity. We still need help from southern Arizona hikers who want to help us locate and evaluate the status of other wild stands. Contact us!

Winter Crops Available

Native Seeds/SEARCH primarily offers summer crops, since native agriculture in our region was traditionally a warm season activity. However, we do offer \$1.00 packets of a few winter-growing plants. These should be planted from November to early January in the low deserts of the Southwest. Order soon if you want to try them this winter:

CANAIGRE/WILD RHUBARB (*Rumex hymenosephalus*): A desert root perennial with a flower stalk that can be cooked and eaten like rhubarb, edible seed for flour (grind), and a red root used for medicine or tannin by desert Indians. Soak seed for one hour in a 50-50 solution of bleach and water before a rinsing and shallow planting.



SALVIA

DESERT CHIA (*Salvia columbariae*): An aromatic herb with a rosette of leaves that puts up seedheads in March. Seeds are shaken out, placed in water where they gel up into a refreshing drink, or ground and roasted for pinole.



Ca'pticum.

PAPAGO ONIONS (*Allium* sp.): A reliable, year-round producer of green scallion-like tops and small, shallot-like bulbs. A prolific multiplier.

PAPAGO PEAS (*Pisum sativum*). A whitish green, dry pea that produces largely at the end of the season. A drought hardy, semi bush that improves the soil.



YES! I'd like to help in the conservation of native crops and their wild relatives in the American Southwest. Enclosed is a contribution to Native Seeds/SEARCH for: (check off)

ASSOCIATE MEMBERSHIP (1 YR., \$10.00)
(Includes newsletters, and 10% discount on seed purchases, workshops & publications)

LIFETIME ASSOCIATE MEMBERSHIP (\$100.00)
(All of the above for every year...)

LISTING OF SEEDS AVAILABLE (\$1.00)
(Garden packets of over 50 varieties of native plants, \$1.00/packet)

SPECIAL CONTRIBUTIONS TOWARD RESEARCH AND CONSERVATION PROJECTS (Your choice)
-Native seed collection/conservation:
-Virus-free tepary grow-out:
-Conservation of wild chile stands:
-Nutritional analysis of native foods:

TOTAL ENCLOSED: _____

YOUR
NAME: _____
ADDRESS: _____
TOWN & ZIP: _____

Send to: Native Seeds/SEARCH
3950 W. New York Drive
Tucson Arizona 85745



*Conserving
desert crop
diversity*

*Keeping alive
food options
for the
future*

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