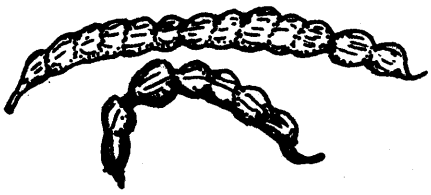
Vol. 1, No. 2
Summer, 1977

Newsletter of the Arizona Native Plant Society

GROWING MESQUITE FROM SEED

Two "tricks of the trade" make propagation of mesquite an easy matter. These procedures are needed because of two characteristics of mesquite, one of the pod and one of the seed. The pod does not split open in normal legume fashion to release the seeds. In nature seeds are not released until the pod is worn away or actually rots. When the seeds do emerge, they have a waxy and bony seed coat that is impervious to water. They don't ordinarily germinate until they have been abraided by stream action or have been otherwise treated, such as having passed through the digestive system of a cow or acted upon by soil micro-organisms. The following procedures will obviate the necessity of waiting for the pods to disintegrate or of obtaining a cow.

1. Use a tin-snips to cut along one side of the indehiscent pod to free the seeds.



2. Soak the seeds in concentrated sulphuric acid in a clean baby-food jar. Stir gently with a glass rod. After reticulations appear, pour the acid and seeds into a tea strainer, making sure that the seed is saved and the acid safely disposed of. Let cool water run freely on the seeds in the strainer to wash away all traces of acid. DO NOT USE ACID until familiar with its safe use. Never pour water into acid. Do not use it in the presence of children or pets or where carpets, wood floors or good clothing can be damaged. Do not spill acid on skin. Use where a shower is available to flush away all acid if any is accidentally spilled on you.

MEMBERSHIP COUNT FOR ARIZONA NATIVE PLANT SOCIETY

Membership in the Society now stands at the 100 mark. This is expected by many to double in the coming year as lecture and slide programs are organized and other member benefits become more obvious. Two local chapters have been formed while a third is in the planning stage. There is no limit to the number of local chapters allowed by the charter and by-laws. Members or prospective members remote from established chapters should consider setting up a local chapter.

GROWTH REGULATORS IN DESERT PLANTS

The Department of Plant Sciences at the University of Arizona has begun a research program on natural plant growth regulators. The program is being guided by Paul G. Bartels and thus far has also involved David A. Palskill, James R. Self and Frank S. Crosswhite. A growth regulator effect on germinating wheat seeds has been discovered in Aplopappus acradenius and reconfirmed in Encelia farinosa (Brittle-bush). Other plants being investigated are desert hop-bush (Dodonaea viscosa) and jojoba (Simmondsia chinensis). It is planned to screen a great number of desert plants for possible growth-regulator effects.

INFORMATION FOR CONTRIBUTORS

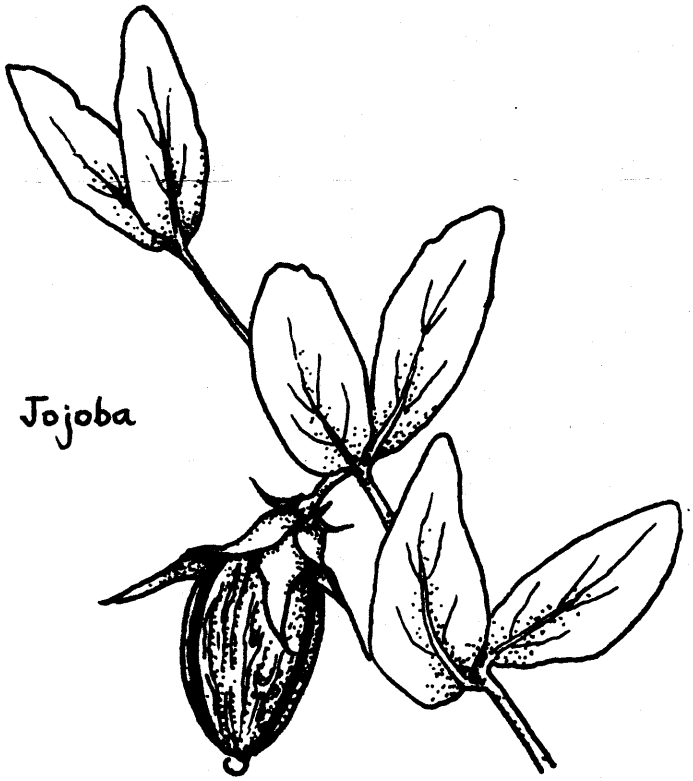
Members are encouraged to send news, notes and short articles to the newsletter editor, Frank S. Crosswhite, P.O. Box AB, Superior, Arizona 85273. Assembling a newsletter is made much easier when there is an abundance of material for insertion. Appropriate notes will almost always be accepted. Papers of a technical or research nature that are of interest to the membership are encouraged, but these will be referred to experts in the field for review. Such articles should be typed double-spaced and should not exceed six type-written (=three printed) pages.

LANDSCAPE AND GARDEN SHOW AT TUCSON COMMUNITY CENTER, OCTOBER 21-23, 1977

The Arizona Native Plant Society has been asked to provide displays in a booth provided free at Tucson's Landscape and Garden Show in October. The Board of Directors of the Society will meet August 18 in Casa Grande to make plans for this important event. Members are invited to communicate with Board members either before or after this meeting if they have pertinent ideas or would like to help. Directors of the Society are listed in the Spring, 1977 Newsletter.

AVAILABILITY OF APACHE HAND-DIPPED JOJOBA WAX CANDLES

Jojoba wax candles are being distributed by the Apache Marketing Cooperative, P.O. Box 681, San Carlos Arizona 85550. The candles are produced from 65% paraffin and 35% jojoba wax. The 12-inch tapered candles burn approximately 13 hours with a good flame. They are highly wilt resistant and produce little drip. A total of 234 mixtures and/or treatments of jojoba wax in combination with six different paraffin waxes and other ingredients were tested to arrive at the present formulation.



WARREN JONES RETURNS FROM TRIP TO GUADALUPE MOUNTAINS

Warren Jones, Professor of Landscape Architecture in the UofA School of Renewable Natural Resources, recently returned from a reconnaisance of the Guadalupe Mountains. These mountains rise up from the high-plains desert adjacent to the Texas - Chihuahua border in the "Trans-Pecos" region. Acorns of Quercus havardi, a small chaparral oak, were brought back for propagation, as were seeds of Rhus microphylla, sometimes known as "soda-pop bush". Indians and early settlers made a drink from the fruits of this bush, the drink tasting similar to strawberry soda-pop. Choysia dumosa was an attractive plant which seemed to grow under very dry conditions in the Guadalupes.

JANCA'S JOJOBA OIL AND SEED COMPANY

The jojoba bush of our Sonoran Desert is being increasingly planted for its seeds rich in liquid wax. Tom S. Janca of 1407 South Date, Mesa, Arizona has established a business of supplying jojoba seed for planting in foreign countries as well as in California and Arizona. At last contact he was buying oil-grade seed at $1.50 per pound and select seed for planting at $2.00 per pound. Both prices are for dried and cleaned seed. Tom has obtained permits for collecting the seed from several National Forest ranger districts and is paying a fee to the government in addition to money paid to collectors. The two dollar price is making it possible for school children and others to make some spending money this summer. Jojoba pickers are warned to avoid the mid-day sun, to work near the easy reach of help in case of emergency and to avoid snakebite. For safety reasons, parents should accompany children and adequate drinking water should be available. Families wanting to add a little variety to their life can plan a combination picnic and jojoba collecting expedition for a Saturday morning. One such family collected 113 lb of jojoba nuts during five hours on July 4. When the nuts are thoroughly dried and cracked, seed makes up about 50% of the original weight. Persons interested in collecting jojoba seed can obtain details from Tom Janca at 962-4672.

Desert Willow

CHILOPSIS LINEARIS
THE DESERT WILLOW

Chilopsis linearis is the technical name of the Sonoran Desert plant that we simply know as "desert willow". This willow-like tree grows not only in the Sonoran Desert but from Western Texas all the way to southern Nevada, Arizona, southern California and northern Mexico. It is not in the true willow family (Salicaceae) but is rather a relative of the Catalpa in the Bignonia family (Bignoniaceae). Catalpa is well-known in the eastern United States as a large tree with very large broad leaves.

In Arizona the true Catalpa can be seen cultivated at the Boyce Thompson Southwestern Arboretum west of Superior and also as an "escaped" plant in Devil's Canyon in the Upper Sonoran Life Zone above Superior where it grows with choke-cherry.

Although Chilopsis linearis has large bell-shaped flowers with ruffled petals and long narrow pendant pods similar to the eastern Catalpa, the very narrow leaves of Chilopsis set it off markedly from Catalpa with its massive broad leaves. Chilopsis flowers range from white through all shades of pinkish lavender. Most people prefer the more heavily colored flowers when desert willow is planted for shade and ornament. Chilopsis is totally deciduous like Catalpa, bearing not a leaf through the winter. For this reason it can be recommended for planting to shade a window in the summer and to let sunlight and warmth in through the winter. Chilopsis flowers resemble somewhat those of a delicate orchid coursage. The flowers are present over a long period of time in spring and summer.

Pods of desert willow have numerous thin, flat, wing-margined seeds that very easily blow with the wind. They germinate easily with no special treatment. Desert willow grows very rapidly and will flower the first year by late summer when started from seed in early spring.

NEW HOURS AT DESERT BOTANICAL GARDEN

Rodney Engard, Superintendent at Desert Botanical Garden in Phoenix, announced that garden hours during the hot summer are temporarily being extended to sundown. During the first part of the summer the extended hours applied only to week ends. Effective July 15, however, the garden is open until sundown daily. Before planning a trip, you can check with the garden by telephoning 947-2800 or 946-9942.

FLOWER AND GARDEN FAIR IN RANDOLPH PARK, TUCSON, SUNDAY, SEPTEMBER 25, 1977

George Brookbank, Pima County Extension Agent in Urban Horticulture, is organizing the 1977 Flower and Garden Fair again this year. Some of the demonstrations and displays this year center on topics of interest to Society members. Some of those tentatively scheduled include Natural Desert Plants (Larry Doolittle), Arid Land Plants (Larry Holsworth), Native Plant Law (R.A. Countryman), Raising Native Plants From Seed (Leslie Brookbank), Plants That Save Water (Bill Harlow), Drip Irrigation (Tom Boyle), Cacti and Succulents (F.S. Crosswhite), Indian Food Plants (Martha Wiseman) and Poisonous Plants (Ms. Yolanda Faba).

BOOK REVIEW -- HORTUS THIRD, MACMILLAN PUBLISHING CO. NEW YORK. 1976.

Hortus Third is "a concise dictionary of plants cultivated in the United States and Canada." It contains 1290 large double column pages, weighs six pounds and costs $99.50. So many persons worked so long in preparing it that no single author could be chosen other than "staff of the L.H. Bailey Hortorium, Cornell University.

The Hortorium at Cornell is a herbarium of dried, preserved horticultural plants and it carries on the traditions of its founder, Liberty Hyde Bailey. Bailey was the father of horticulture in the United States. Bailey himself (with his daughter Ethel) was the author of the original Hortus published in 1930 and later of Hortus Second published in 1941. "Hortus" is Latin for "garden" and it is clear that Bailey meant his book to list all of the plants that could be found in a North American garden.

Hortus Third provides the most up-to-date listings (with descriptions) of garden plants that is available. For example, some 158 kinds of Eucalyptus are treated as cultivated in North America out of the approximately 700 species that grow in the wild in Australia and Tasmania. The Sunset Western Garden Book treats only 50 species. However, the Western Garden Book gives information on temperature hardiness lacking completely in Hortus Third. Descriptive information in tables in the Western Garden Book is much easier to follow than the more rigid botanical format of Hortus Third. Moreover, the Western Garden Book includes a discussion of "best features and how to encourage them" for each species of Eucalyptus. For a representative group of plants such as Eucalyptus, most western gardeners would find the Western Garden Book most satisfactory, particularly since it costs about $2.50/lb as opposed to $16.50/lb for Hortus Third. On the other hand, Hortus Third would prove most useful for a worker in a large botanical garden, arboretum or university where less common species might be planted.

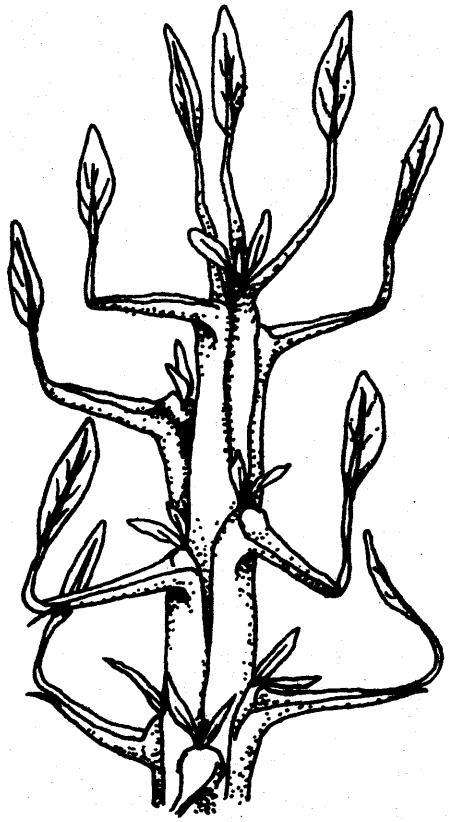
However, many Eucalyptus species growing in botanical gardens or arboretums within the United States prove not to be treated in even Hortus Third, upon recent examination. Such a situation can be expected for other plants chosen at random. A brief look through various genera of Cactaceae shows this to be confirmed. This brings one to the question "how complete should a dictionary be?" Hortus Third clearly stands half way between a handy reference volume such as the Sunset Western Garden Book and a complete "unabridged" version that never has been written.

Illustrations in Hortus Third are adequate for characteristics of plant families, but no attempt has been made to illustrate differences between genera and species. Discussions of subjects such as "houseplants", "photoperiod", "propagation", and so forth are treated in the same alphabetic series as are the scientific names of the plants themselves. In the opinion of the reviewer, a separate book should have been devoted to these subjects or they should have been placed in a separate section of the book. Certainly most users would turn to Hortus Third to find or confirm the name of a particular plant rather than to learn the fundamentals of vegetative propagation.

FORMATION OF SPINES IN OCOTILLO

This spring and summer ocotillo has put on considerable new growth in southern Arizona. Several branches examined seem to have grown 8"-12" in about a month. This new growth at the tips of branches reveals the manner in which the spines are formed. Study of this new growth indicates that the petiole of each new primary leaf becomes increasingly hard and rigid. As the desert becomes dry after spring and summer rains, the blade of each primary leaf falls. The petiole, however, remains, hardens further and becomes a spine. All ocotillo spines form in this manner. A new leaf-blade will never regenerate from the petiole. Hidden buds in the primary leaf axil (between the petiole base and the plant stem) develop clusters of leaves following future rains, however. These are the axillary leaves that give ocotillo its green appearance after rains.

An axillary leaf of ocotillo never produces the long petiole of the primary leaf. As a result, the axillary leaves do not form spines. They are entirely lost when the rainy period passes. New axillary leaves form, however, when rains come again. The quick formation and loss of axillary leaves in ocotillo renders the plant uniquely adapted to long periods of drought in the Sonoran Desert. The spines protect the tender axillary leaves from browsing animals.



Ocotillo

AAN ASKS FOR TAX-BREAKS FOR ENERGY-SAVING LANDSCAPING

In recent testimony before the House Committee on Ways and Means, the American Association of Nurserymen suggested establishment of tax incetives for planting trees and shrubs intended to conserve energy. Such an incentive would be similar to ones being considered by Congress for installation of insulation, storm windows and solar heating. Leo Donahue of the AAN pointed out that skillfully placed landscaping can make a significant and long-lasting contribution toward energy conservation. Properly placed plantings have been shown to reduce fuel consumption between 10% and 40% in many cases. An example applicable to Arizona of this type of planting might be the use of deciduous trees such as mesquite to shade houses in the summer and to let light and warmth in during the winter.

THORNS VS. SPINES

Occasionally we hear reference to cactus thorns or honey-locust spines. Some people do not differentiate between spines and thorns and merely call any sharp projection on a plant either a spine or thorn indiscriminately. Technically, however, there is a major distinction. Spines are derived from leaves or leaf material, whereas thorns are derived from stems. The thorns of the honey-locust (Gleditsia) or of the eastern hawthorne (Crataegus) are sharp, pointed branchlets. Cacti do not have thorns, but rather spines. The pancake-shaped pads of the prickly pear are the true stems of this plant, whereas the spines are developed as modified leaves. Some plants such as the rose form sharp outgrowths of the epidermis technically referred to as prickles. Sometimes it is difficult to determine without detailed study whether one has become stuck with a spine, thorn or prickle. Sometimes a person just might not care.

RON GASS REDISCOVERS PENSTEMON CRIDERI

In 1930 Aven Nelson, botanist and president of the University of Wyoming visited the Boyce Thompson Southwestern Arboretum at Superior. While exploring some of the natural areas away from the gardens proper, he came upon a most unusual plant. After collecting a specimen on March 21, 1930 he returned to Laramie, studied the plant in detail and decided that it represented a plant new to science. In 1936 he published a description of the plant as a new species in the American Journal of Botany, naming it Penstemon crideri. It was named in honor of J. F. Crider who had been in charge of the Arboretum from 1924 to 1934. Crider was well-known in Arizona as head of the Horticulture Department at the University of Arizona before going to the Arboretum. He also served as Regent of the University and State Colleges throughout his tenure at the Arboretum.

The plant was not found again until 1960 when F. S. Crosswhite discovered a plant growing in Oak Creek Canyon near Sedona. Unfortunately, the rarity of the plant was not fully appreciated and it was preserved as a herbarium specimen as was Nelson's original. David D. Keck examined the specimen collected by Nelson and theorized that it was a hybrid between the scarlet-flowered fire-cracker penstemon (P. eatoni) and the connate-perfoliate leaved canyon penstemon (P. pseudospectabilis ssp. connatifolius). The specimen collected by Crosswhite was growing adjacent to both P. eatoni and P. pseudospectabilis.

Recently Ron Gass of Mountain States Wholesale Nursery north of Scottsdale discovered an odd-looking plant in a large batch of seedlings grown from P. eatoni seed. As this matured and flowered it became increasingly obvious that the plant was a hybrid of P. eatoni with another Penstemon. Since the seed had been taken from P. eatoni in nature, the female parent had to be P. eatoni. The pollen plant was unknown. Rooted cuttings of the plant were brought to the Arboretum where they were ascertained to be the same as Nelson's P. crideri. The importance of Ron's discovery lies in the fact that his plant and those propagated from it are the only known living examples of the hybrid. According to the international rules of botanical nomenclature, such a hybrid can be designated with an "X" as "Penstemon Xcrideri" once the hybrid nature has been demonstrated. The plant promises to be a very showy ornamental in flower and will be displayed at the Arboretum next spring.

VIC MILLER WRITES ON TEPARY BEANS

Recently ASU professor Victor Miller discussed tepary beans in his Arizona Republic "Gardening For Fun" column. Tepary beans grow and produce under hot conditions not favorable for the common bean. Teparies were cultivated by prehistoric Indians of southern Arizona and northern Mexico. They are thought to be the only bean truly native to this region. In 1912, professor G.F. Freeman collected and described 47 types of tepary beans being raised by the Pima and Papago Indians of southern Arizona. Recently new studies have been initiated by Dr. Robert Dennis and Gary Nabhan of the UofA Plant Sciences Department.

The National Research Council in Washington, D.C. is also collecting data and preparing a literature review on teparies according to their staff study director, Noel D. Vietmeyer. Teparies were "dry-farmed" by Arizona Indians for centuries. After spring and summer rains, one or two bean seeds were dropped into each hole made by poking a "planting-stick" into the moist ground. Teparies grew very fast and produced beans with little or no supplemental irrigation. Although teparies are nutritious and rich-tasting, their small size has decreased their acceptance in modern times.

Perhaps this bean adapted to the desert might successfully be hybridized with the larger common bean to produce a good crop-plant for southern Arizona. Tepary beans are featured in a display on prehistoric foods in the Visitor Center of the Boyce Thompson Southwestern Arboretum. Members wanting to grow teparies can obtain seeds from Dr. Crosswhite at the Arboretum.

Pink Tepary Beans

HARLOW'S WATER-SAVING GARDEN OPENS FOR VISITORS IN TUCSON

Bill Harlow of Harlow's Plant and Flower Center in Tucson recently opened a unique 5,400 sq. ft. demonstration garden featuring drought-resistant trees, shrubs, flowers, ground-covers and vines. He estimates that these drought-tolerant plants will require only 20% of the water used in a traditional landscape and lawn of the same size. Each plant in the garden is provided with a small stake bearing a number. By referring to a printed sheet, visitors can match the numbers up with plant descriptions. Information is given also on maintenance requirements under local conditions.

PINAL-GILA MEETING CALLED AT ARBORETUM

A meeting of persons in Pinal and Gila counties interested in forming a chapter of the Arizona Native Plant Society will be held on December 13 at the Boyce Thompson Southwestern Arboretum at 7:30 P.M. Local chapters previously formed meet in Tucson (Pima County) and Phoenix (Maricopa County). The Arboretum is located on U.S. Highway 60 about three miles west of Superior. Light refreshments will be served. A lecture and slide program entitled "Plant Collecting in the Arizona Chaparral" will be presented by Dr. Frank S. Crosswhite. A classroom-meetingroom at the Arboretum is in the planning stage for just this type of activity. It will be included as part of a $50,000 remodelling plan for the Arboretum visitor center.

DR. GENTRY TO RESEARCH AGAVE IN ST. LOUIS AND WASHINGTON D.C.

This fall Dr. Howard Scott Gentry, Research Botanist at the Desert Botanical Garden, is planning a two-month trip to the Missouri Botanical Garden (Shaw's Garden) in St. Louis, Missouri and to the U.S. National Herbarium in the Smithsonian Institution at Washington, D.C. While at these institutions, he will carefully study the herbarium collections of Agave. He plans to annotate a large number of specimens with corrected names. He also is planning to search for, identify and study many of the original "type" specimens from which the various species of Agave were originally described and named.

CHAPARRAL TEA

Health food stores in Phoenix and Tucson are selling a product labelled as "Chaparral Tea". Without intending to comment on the value of this tea as a tonic or therapeutic, it was decided to purchase a box in order to identify the "chaparral" plant from which it was made. The chaparral vegetation zone of Arizona consists of manzanita, mountain mahogany, turbinella (scrub) oak, emory oak, mountain laurel, quinine-bush and many other bushes with thick leathery "sclerophyll" leaves. The cowboy's "chaps" or chaparreros were originally designed for riding through this brushy "chaparral".

The word "chaparral" is spanish for "vegetation of scrub oak" and is thought to derive from the old Basque word "chabarro" for scrub oak. Basques who settled in southern California and Arizona as sheep-herders may have helped give our chaparral its name.

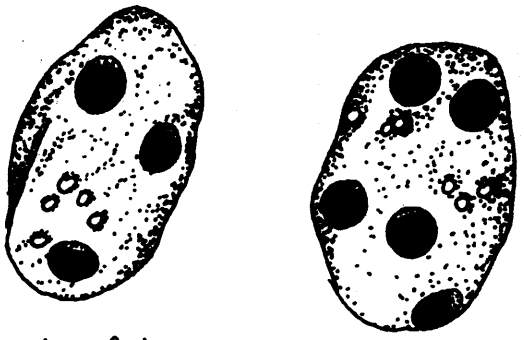
When the packet of "chaparral tea" was opened it was found to contain leaves and the white seed-balls of the creosote-bush, Larrea tridentata, the plant often called "greasewood" in southern Arizona. This plant is not a component of the chaparral and lives in an entirely different life zone from the chaparral. Exploring this paradox further, it was discovered that in southern Utah creosote-bush is locally and rather loosely referred to as "Dixie Chaparral".

True chaparral vegetation with the characteristic thick leathery leaves develops as a response to winter rain and is found in the Mediterranean, part of Australia, southern California and central Arizona. Thus, "Dixie Chaparral" is a misnomer as is the name applied to the tea made from creosote-bush.

INSECT DAMAGED SEED

How many people have collected a bag of palo verde or acacia seeds only to find a few weeks later that they had a bag of beetles plus seeds with holes from which the insects emerged? Seed-infesting insects fly from tree to tree, laying eggs on seeds while the seeds are still developing in the pods. Some of these insects are capable of damaging mature seeds that have already developed a hard seed coat. People have formulated various solutions to the problem ranging from spraying insecticide on a tree upon which desired seeds are growing to dusting seeds already collected with insecticide. Unless the insecticide has systemic action, spraying the tree can prove not totally effective. Likewise, dusting the exterior of a hard-coated seed may prove ineffective in killing the insect until the seed is already destroyed and the insect emerged.

A safe and effective procedure to minimize beetle damage is to immediately sort collected seed, visually inspecting all sides of each. Seeds with a tiny white speck adhering to the surface have been parasitized and should be destroyed. Seeds without the tell-tale spot can be placed into small coin envelopes of a few seeds each and stored in the presence of moth-balls (para-dichlorobenzene) for a few weeks to avoid new infestation if unnoticed parasitized seeds yield insects which emerge, mate and lay eggs. If the seeds are to be given to friends or otherwise distributed, the envelopes should be "candled" with a strong light or opened to make doubly sure that no insects are present.



Example of bruchid (bean weevil) damage on beans, showing exit holes made by mature beetles and smaller white eggs attached to surface. Larvae which hatch from eggs enter seed, feed and pupate within it.

SOIL CONSERVATION SERVICE RELEASING "CORTO" AUSTRALIAN SALTBUSH

"Corto" Australian saltbush, Atriplex semibaccata, has been selected and released by the SCS - Tucson Plant Materials Center in cooperation with the University of Arizona Agricultural Experiment Station. According to Larry Holsworth, Manager of the Plant Materials Center, "Corto" is a semi-herbaceous drought and alkali tolerant plant native to Australia. It will be used as a ground cover for erosion control and beautification on highway right-of-ways, mine spoils, construction sites, and similar disturbed areas in the 10-12 inch rainfall areas of the southwest. In addition it is well suited for landscaping around urban homesites and buildings and provides low volume fuel for firebreaks.

SPANISH PLANT NAMES IN GEOGRAPHY OF THE SOUTHWEST AND NORTHERN MEXICO

Nogales, Spanish for "walnuts" is the name for towns on either side of the Arizona-Sonora border. The cottonwood tree (alamo) inspired not only "The Alamo" in Texas but Los Alamos, New Mexico and Alamogordo, New Mexico. Alamogordo would indicate a particularly fat cottonwood tree. Carrizal in Sonora is translated "vegetation of carrizo, the bamboo-like reed". Fresnal, Fresnillo and Fresno are all variations on the ash tree, referring respectively to "ash vegetation", "little ash tree" and simply "ash". Encinitas, California refers to the little "encinas" or oak trees which grew there. Encinal in Mexico is a type of oak vegetation, while chaparral would indicate a vegetation of scrubby, bushy oaks. Sacaton, Arizona is named for the Sporobolus bunchgrass; bunchgrass as a vegetation type in Mexico is known as "sacatonal".

Pinal County, Arizona refers literally to a vegetation of pine or to "where the pine trees grow". Long-time residents of the county will chuckle because of the vast expanse of desert lacking anything resembling a pine tree. But once the county was larger and included much of what is now Gila County, including the Pinal Mountains near Globe. The mountains are clad with vegetation including pinyon pine, ponderosa pine and limber pine. When state legislators divided the old Pinal County, in typical bureaucratic fashion they gave the name "Gila County" to the part with the pine trees and retained "Pinal County" for the part through the center of which flows the Gila River.