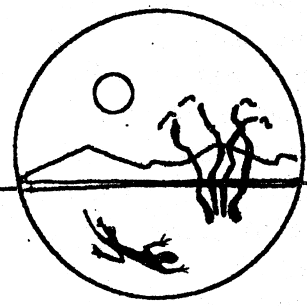
VOL. 7, NO. 9 University of Arizona Cooperative Extension SEPTEMBER 1996

High on the Desert

Cochise County Master Gardener Newsletter



University of Arizona and U.S. Department of Agriculture cooperating.

PLANT PROFILE– A Great Houseplant

Bromeliads

Originating from the tropics and found in the rain forests of Brazil, there are over 2,000 species of bromeliads. Some are grown for their flowers, others for their foliage, and contrarily to popular belief are not difficult to grow indoors. Most bromeliads are epiphytes (air plants) and in their native habitat grow suspended from trees and on rocks, gathering moisture and nutrients from rainfall and the air. (They aren't parasites on trees like mistletoe, only requiring support.)

Bromeliads may be displayed in pots, hanging baskets or 'mounted.' If you decide to pot them, be sure to use a light soil that drains easily and keep the soil just barely damp. Overpotting and overwatering is fatal to their small root systems. You can also mount them on tree branches. Wrap the roots with moist sphagnum moss and secure the moss to the branch with plastic-covered green wire. Keep the moss moist by spraying it with water. The rosette of leaves molds into a cup which in the wild collects rainwater and holds it in reserve until it is needed. When it is grown indoors that cup must be kept filled with water, preferably rainwater, at all times. Also, in the wild, that vase of water attracts insects. As the insects are caught, they die and decay and release small amounts of fertilizer the plant needs. Now it's not necessary for you to keep a ready supply of dead flies on hand! A couple of drops of houseplant fertilizer into the cup once a month will do the trick. (I keep a bucket outside to collect rainwater, which attracts insects and use this to keep my bromeliads and all my other houseplants happy.)

The issue of light gets confusing. One book tells you it needs indirect light and cannot tolerate full sun; another says it needs lots of sun and high temperatures to bloom. I do know that excessive cold will kill it. Common sense tells me that filtered sunlight is best, imitating the exposure it would receive in the wild.

If you are having trouble getting your plant to bloom try placing it in a plastic bag with a ripe apple for a few days. The ethylene gas from the apple will initiate buds. When the plant stops flowering, and sometimes the flowers will last up to six months, the rosette enters a slow dying process that can last as long as three years. During this period new offspring will develop at the base of the plant (similar to the agave plant). When the baby rosettes are about 8-10 inches tall divide them from the mother plant, replant, and you will have an endless supply of bromeliads that bloom year after year (and make great gifts!).

Bromeliads–a houseplant that you should get to know.

Cheri Melton
Master Gardener/Staff Writer

Cochise County Cooperative Extension

1140 N. Colombo, Sierra Vista, AZ 85635
(520) 458-1104, Ext. 141

450 Haskell, Willcox, AZ 85643
(520) 384-3594

Let the Sales Begin . . .

September 22 is the first day of Autumn and this signals Fall Plant Sales!!! I love autumn. The weather becomes cooler, the air smells great, and hopefully the rains are good. This is also, in my opinion, the best time to plant. After being to three seasons of sales, here are some helpful hints for a successful plant expedition:

1. Make a list. With all the different and enticing plants on sale it really helps you to remember what you are looking for.

2. Take a good plant book. My favorite is *Native Plants for Southwest Landscapes* by Judy Mielke. Speed things up by going through your plant book(s) and highlight the entries that will grow in our area. Upon discovering a new plant I can tell at a glance if it is a high desert candidate.

3. If you know where you want to plant, take advantage of the summer rains and dig your holes. There is nothing worse than coming home loaded with plants and having to dig ALL those holes. Here's the scoop on who is having a sale. Good news–they are all on different weekends so you can visit them all. Happy shopping!

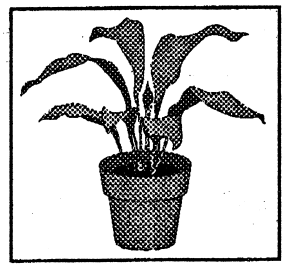
Tucson Botanical Gardens
Oct. 5, 10 am-4 pm & Oct. 6, 12 pm-4 pm

Desert Survivors
Oct. 12, 8 am-4 pm & Oct. 13, 10 am-4 pm

Boyce Thompson SW Arboretum
Oct. 18 - 27, 8 am-5 pm

Tohono Chul Park
No plant sales but don't forget them–they have great plants!

Cheri Melton
Master Gardener/Staff Writer



Where can you get seeds?

This year's garden included hollyhocks, tall and lovely at the North end of the garden. The seed was given to me by a sweet dear friend especially remembered when the flowers bloom.

On the West side of the garden grew multi-colored Indian corn from seed exchanged with the garden club members.

Potatoes from Ronigers Seeds, one of our conference sponsors, were a success. The deer ate more of them than we did but fresh potatoes–what a treat!

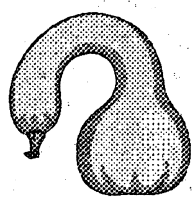
A huge striking artichoke plant grew from Shepherd's Seeds, Imperial Star strain. Also from Shepherd's we grew Brussels sprouts, Valient by name. They were hardy and produced well.

Great plump juicy Roma tomatoes grew from seedlings purchased from Ace Garden Place. They came to bear the first part of July and when left unattended until the first week of August, they gave many fruits at the expense of withered leaf and vine.

Garlic from Willcox was placed all around the entire garden perimeter. This, along with marigolds, kept the garden pests in control.

Peas and lima beans also from Shepherd's Seeds, were placed on the East side.

Some bachelor button flowers bordered the Southern exposure and came from High Desert Gardens. The bushy vigorous plants maintained their color most of the summer.



A beautiful gourd plant came from the garden seed of Barry and Gael Bishop.

Obtaining seed from friends, fellow Master Gardeners, the garden club, and those folks who sponsor our High Desert Gardening & Landscaping Conference, assures quality plants that are known to succeed in our area.

Barbara Kishbaugh
Master Gardener

Newsletter Staff:
Barry R. Bishop
Carolyn Gruenhagen
Cheri Melton
Virginia Westphal

Robert E. Call

Robert E. Call, Extension Agent, Horticulture

The Virtual Gardener—
CD-ROM Review

We're going to take a break from the Internet this month and instead look at a CD-ROM produced by the Water Resources Research Center of the College of Agriculture at the University of Arizona. *Desert Landscaping* is filled with over 1,500 color photographs of plants and landscapes and contains a database of information on 600 low-water use plants. In addition to the plant information, the CD-ROM contains landscaping and xeriscaping tips, a comprehensive bibliography of books on drought-tolerant plants, and a challenging plant trivia game. But enough hype. Let's take a look inside the CD-ROM.

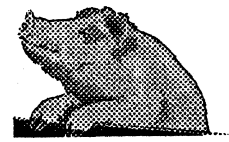
The main menu screen gives you the option of branching to six different tools–the plant selector, landscaping tips, the landscape browser, the plant trivia game, the plant list, or the bibliography. For me, the plant selector is the most valuable feature of the program. This tool allows you to select plants from the database that meet criteria you specify. For example, I found 64 trees that require low water use, tolerate poor drainage, and are low temperature hardy. Unfortunately the plant selector also includes the only major glitch I was able to find in the program. When I increased the requirements until there were no matches in the database, the program locked up and had to be restarted from scratch. I tried this several times using different sets of criteria and the result was always the same.

Overall, I found this CD-ROM to be first class. There is always room for quibbling about a favorite plant that is not included in the database, and there are technical glitches here and there–the problem I described above, an image that won't load and a plant in one of the landscape scenes that won't link to the database when clicked–but there are no show stoppers. There are some features I would like to see included in the program. Instead of specifying plant hardiness by category (tender, semi-hardy, hardy), I would like to be able to specify by minimum temperature. I would like to see Arizona distribution maps for each plant and perhaps a capability to select plants by region. I would like to see a little more information on identification features of the plants listed, especially those that are easily confused with their relatives. And finally, I would like to be able to add my own notes to the plant descriptions given in the program.

Would I recommend this CD-ROM? The answer is a qualified "yes." I understand that an updated version of the program is in the works, so I would wait until it appears before buying.

The program is reasonably priced and can be purchased at nurseries, bookstores, and software stores as well as directly from Water Resources Research Center, U of A, 350 N. Campbell Ave. Tucson. AZ 85719. A 486 or better PC with a minimum of 4 mg of RAM and a 2X CD-ROM drive are recommended. To get the most out of the program you should also have a sound card.

Gary A. Gruenhagen, Master Gardener
gruenha@c2i2.com



Pigging Out on Pigweed?

Palmer Amaranth, aka carelessweed and pigweed
Pigweed family-*Amaranthaceae*
Amaranthus palmeri Wats

One of the most common weeds in Cochise County at this time of the year is pigweed. It covers many many hundreds of acres. It is uncommon knowledge that this plant may become potentially toxic to livestock.

The tall summer annual has a stout stem which usually turns red and shorter lateral branches. Ranging from approximately 1 to 6 feet in height, this plant is characterized by towering spikes which are tassels containing oval, reddish-brown seed at maturity.

Considered a pest plant in cultivated fields, it thrives in elevations under 5,500 feet, including desert grasslands and in regions where the soil has been disturbed.

Stockmen prize pigweed and may even take steps to harvest and store it. Because of its benign reputation most individuals may not be aware of its potential toxicity. Pigweed may contain up to 9 percent nitrate, which in turn may be quickly turned into toxic nitrite by a process known as enzymatic action.

All livestock may be affected by the onset of the toxicity which has the following symptoms: death from respiratory failure after rapid and labored breathing, gasping, trembling, and convulsions. Bloating is common in the late stages of poisoning.

Peggy Dierking
Master Gardener

The Agent's Observations

This month we begin a four-part series answering questions about termites. Part 1 deals with Arizona termite biology. Our thanks to Dr. Robert Smith, Department of Entomology, University of Arizona for this information.

Question: What is the ecological role of termites in Arizona? What are termites good for?
Answer: Termites serve an essential role in recycling the nutrients contained in cellulose, a very resistant material that is the structural component in wood and other plant materials. Termites are especially important in regions of our state because fungi cannot help in cellulose recycling when it is extremely dry. If it weren't for termites, we would soon be buried in cactus skeletons and other woody desert plant material.

Question: Are there different kinds of termites in Arizona?
Answer: Yes, there are about twenty different species of termites in Arizona, but only about five or six of these species cause damage to structures.

Question: What is a termite colony?
Answer: An insect colony is a social system consisting of many related individuals working efficiently together. Termite colonies consist of a king and queen that do most if not all of the reproduction, workers that forage for food and keep the colony clean, and soldiers that protect the colony against enemies, especially ants. At certain times of the year the colony also produces alates, winged individuals of both sexes that disperse from the colony, mate, and attempt to establish new colonies.

Question: What are the kinds of termites that cause damage to structures in Arizona?
Answer: In general there are three categories. These are the **subterranean termites,** the **dampwood termites**, and the **drywood termites.**

Question: Are termites a problem in all areas of the state?
Answer: All wooden parts of structures in localities below 8000 ft. elevation are subject to damage by subterranean termites. Drywoods occur below 6000 ft. elevation.

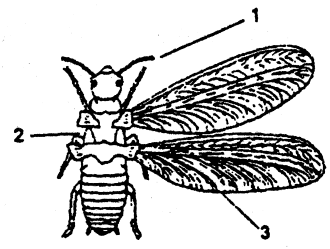
Question: Where do termites live?
Answer: Subterranean termites have colonies deep in the soil whereas drywood termites always live in the wood they infest. Dampwoods can live in the soil or in wood that is constantly moist.

Question: We had Formosan termites in Florida. Do they occur in Arizona?
Answer: Happily, these very aggressive, introduced termites do not occur in Arizona, and it is doubtful that they will ever become established in our state because Arizona is too dry for them.

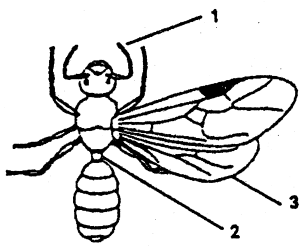
Question: Why do subterranean termite colonies live in the soil?
Answer: The colony needs the perennial moisture provided deep in the soil; without access to this soil moisture the colony will die.

Question: How many termites are there in a single colony?
Answer: There can be millions of individual termites in a single subterranean colony! Drywood and dampwood colonies contain from a few hundred to a few thousand individuals.

Question: How can I distinguish between termites and ants?
Answer: Termite workers are whitish and soft bodied with dark heads. Ants on the other hand are hard bodied and dark in color. Termites have straight antenna and ants have "elbowed" antenna. The termite abdomen is broadly joined to the thorax whereas the ant abdomen is constricted at the juncture of the thorax with the abdomen.



TERMITES: (Winged Reproductives)
1. Antennae are straight, not "elbowed"
2. Middle part of the body is thickened
3. Wings are similar in shape, size, and pattern with numerous veins



ANTS: (Winged Reproductives)
1. Antennae have a distinct "elbow"
2. Middle part of body very narrow
3. Front and back wings are not alike in shape, size, or pattern

Question: I sometimes see crusts of mud covering fence posts, the bottoms of saguaro cactus, and dead grass tufts in my backyard. When I break the crust there are termites inside. Does this mean my house is threatened by termites?
Answer: This is the work of the "Crust Building Sub" termite. It is an ecologically important arid lands termite that poses no threat to structures whatsoever. These termites eat only grass and the weathered wood on the exterior of posts or the trunks of trees and cactus. They never enter structurally sound wood. Disreputable pest control marketers often use the presence of Crust Building Subs to alarm homeowners and to purchase unneeded services.

Question: Something killed my pyracantha bush by cutting it off at ground level. What is responsible for this damage?
Answer: The damage was probably caused by the "Desert Dampwood" termite which is the only species in Arizona that can feed on green wood. This termite also sometimes feeds on young citrus trees.

Question: How do termite colonies get started?
Answer: Once or several times each year, some members of the colony develop wings. These individuals are male and female reproductives. The reproductive individuals depart their parent colony and fly off to mate with reproductives from other colonies. When a male reproductive meets a female reproductive, he follows her until she finds a place suitable for attempting to establish a new colony. The pair then excavate a cavity in wood or soil, break off their wings, and mate. The female then lays a few eggs and both male and female feed the young nymphs when they hatch.

Question: Do termites have any natural enemies?
Answer: Absolutely! Birds, bats, frogs, toads, lizards, rodents, mites, and ants love to eat termites. Predation on winged reproductive termites is tremendous, and the probability of new colony establishment is very low. Nematodes (tiny worms) and some fungi may infest and injure termite colonies.

Question: If I see flying termites in my house does it mean my house is infested with termites?
Answer: Millions of winged termites fly each year and termites like other insects often come to lights, so a few winged termites around lights does not indicate an infestation. However, if there are numerous winged termites on indoor window sills, it may indicate that they are emerging from infested wood inside the house. Save the termites (and wings) in rubbing alcohol for identification.

Question: We never had termites back in Maine (Minnesota) – why is that?
Answer: Termites have a tropical center of distribution and cannot survive in soil that is deeply frozen for part or most of the year.

Question: Are all areas equally likely to have subterranean termites in the soil?
Answer: It is safe to say that every house built below 8000 feet is in the foraging range of a subterranean termite colony. Flood plains and areas close to drainages usually have more subterranean termite colonies than rocky uplands. Mesquite bosques are especially loaded with subterranean termites.

Next month Dr. Smith will answer questions about termite structural damage in Arizona.

Robert E. Call
Extension Agent, Horticulture

September Reminders!

- **Keep on watering!**
- **You can always plant something–try cool season veggies**
- **Start shopping for bulbs (*Bulbs For Southern Arizona* bulletin is available from the Cooperative Extension offices)**

Cuttings 'N' Clippings

➢ The Sierra Vista Area Gardener's Club meets on the third Thursday of each month at 2:00 pm in the Mona Bishop Art Gallery of the Sierra Vista Public Library. The next meeting will be September 19 with Yvonne Jingle speaking on "Seed Saving."

➢ It's that time of the year again! The Cochise County Fair will be held at the Cochise County Fairgrounds in Douglas from September 19-22. The theme is *If it's not fun...it's not FAIR!* Join the fun and enter SOMETHING! Fair books are available at the Cooperative Extension offices–there is a category for everything it seems!

Was This Year's Garden a Success?

Having an oasis at the edge of the desert is sure to draw attention, even though the garden is located within a city. Our initial garden planning did not take into consideration the competition with wildlife which developed into a complicated game.

The garden bed is bounded by a concrete and stone enclosure. The soil was spaded and a ton of naturalized iris rhizomes were removed. Imported soil amendments were a necessity since the garden is perched atop a limestone hill in Tombstone, Arizona. "Tennessee Walker" nodule by-products were added with the guarantee that these droppings would produce the best garden ever. This material was turned into the already once-dug soil. The result was a light humus base ready for the germination of seeds.

Each day about 6:00 am the seeds were watered. Hummingbirds darted through the sun-filtered spray and curious birds fluffed their feathers and welcomed the early morning showers.

Once the tiny green seedlings peeked through the warm moist soil, a floating cloth was placed upon the plants, protecting them from the birds and creating a mini-greenhouse effect. When the plants became large enough to start pushing the floating material into small hills, a more permanent barrier was installed. A small chain link fence enclosure assured absolute security (except for birds and insects, of course). In addition, the West side of the fence was covered with black shade cloth to block the hot afternoon rays.

This chain link enclosure did not cover the entire garden plot. The remaining exposed area was lined with horizontally placed boards which were covered with chicken wire. This worked fine until the plants were of sufficient height to poke through the wires.

Once this wire barrier was removed, Bambi and Mama Doe began their nocturnal visits to the garden. They first began to nibble the blossoms of the potato plants. Wire, buckets, and boards were placed throughout the garden to discourage their visits. When that ploy proved to be unsuccessful, ocotillo limbs were placed between the established plants. The "dears" pushed the limbs into lengthy piles and pawed up the potatoes they had come to appreciate. More than one person told us that because of the drought the poor deer were just hungry. It seemed to be discretionary dining to us, though, since the rear yard full of green, soft grass was pretty much ignored.

The portion of the garden enclosed by the chain link fence yielded much, howsoever ugly in appearance it must have been to the neighbors.

Returning to the house with an armful of produce was always a coup. Being out-of-doors, bending the limbs, tugging and lifting and hauling and spading is a truly solitary delight. Each moment in the garden a sort of relaxing peaceful physical endeavor.

The pleasure of gathering includes the harvesting of the seeds. This exercise triggers grand expectations for next season's crops. To share the bounty with the desert critters–deer, javalina, rabbit, mouse, and bird–is not such a bother. Outwitting them, however, is a time consuming futile exertion.

Barbara Kishbaugh
Master Gardener

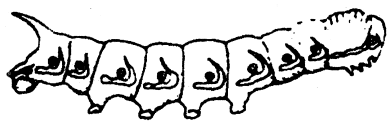
Tomato Hornworm

Miniature Monsters

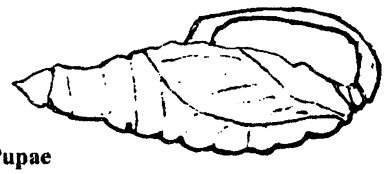
The garden was green, luscious. The tomato beds were full and beautiful. The rain the night before had been long and steady so I had not been out to the garden until late afternoon to pick some chard and tomatoes for dinner. I opened the gate, walked toward the center beds and froze. Instead of a forest of leaves on the South ends of the tomato beds there were only sticks. We were visited. It could only be hornworms–tomato hornworms–the most voracious appetites of very unwanted creatures.

Quickly, a pail of hot water and a little detergent–I had no kerosene. Garden gloves, my glasses, and a call to my husband for help. Despite their size, these worms, the color of the plant, are almost invisible, and it took the two of us a long time to be sure we got them all–15! The worms hang on tight and wouldn't be so unpleasant to handle if they didn't squirm. But because they are such fast and steady eaters, picking and drowning is a necessity if not a pleasure.

The tomato hornworm, *Protoparce quinquemaculata*, is the green caterpillar of a Sphinx moth. The caterpillar is 3 to 5 inches long with 8 white stripes on each side and a black horn projecting from the top rear. The horn cannot sting and a red horn belongs to the tobacco hornworm. The tomato hornworm chews the leaves and fruit of tomatoes, eggplants, peppers, potatoes and dill–which is a good trap crop. The larva feed for about one month, molting 4 to 5 times until full development and pupation. Pupae are 2 inches long and have a curved handle on brown spindle-shaped



Protoparce quinquemaculata

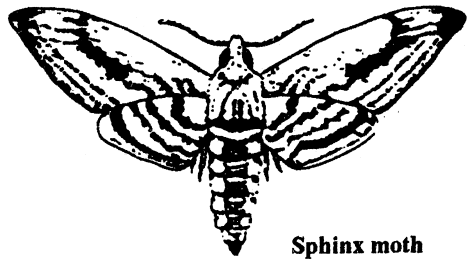


Pupae

cases. Pupation is in the soil and in the southern states it is 2 to 4 weeks until the adults emerge to lay eggs for a second generation. There is one generation per year in the north. Pupae overwinter 3 to 4 inches underground. The moths emerge in the late spring to early summer and lay their eggs.

The adult, a Sphinx moth, is large, mottled, gray or brown, with 5 orange spots on each side of its body. It has a wingspan of 4 to 5 inches, flies quickly, and is able to hover like a hummingbird. Look for the moths at dusk when they visit flowers.

The moths lay round, greenish yellow eggs singly on the underside of leaves. To try and spot the larvae before they reach full size, look for holes in leaves and fruit and dark colored droppings on foliage. It is said that spraying with water causes the caterpillars to trash about and be located.



Sphinx moth

Controls: The best is to hand pick–early. *Bacillus thuringiensis* (BT) kills hornworms by invading their digestive systems. It is most effective when the worms are small, of course. Apply it as dust, covering the plant entirely, especially the undersides. Or spray the affected plants every 10 to 14 days until the worms are gone.

Pyrethrum paralyzes on contact and must be applied directly to work. Spray the undersides as well. Usually two applications are needed 3 to 4 days apart.

Parasitic Braconid wasps, *Apanteles congregatus* small, white, elliptical, papery cocoons (like puffed rice) attach to the hornworms back. The worm is already doomed so do not kill it. Just remove it from your garden so the parasites can reproduce. The adult wasps are just 1/16 to 5/8 inch long and lay their eggs in the bodies of grubs and caterpillars. The larvae hatch and grow inside the host, weakening and sometimes killing it. The larvae pupate on the back of the host.

Assassin bugs and Praying mantis attack tomato hornworms. (Continued on next page)

COOPERATIVE EXTENSION
U.S. DEPARTMENT OF AGRICULTURE
THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

BULK RATE
POSTAGE & FEES PAID
USDA
PERMIT No. G268

Baltimore orioles, barn swallows, blackbirds, downy woodpeckers, flycatchers, grackles, phoebes, and sparrows are some of the common song birds that relish hornworms. Moles, skinks and toads dine on these fat green caterpillars.

Preventive Steps: Fall cleanup is critical to reduce overwintering worms. When harvesting is finished, remove all plants and weeds until soil is completely bare. Cultivate thoroughly to 6 to 8 inches, looking for pupae. Two to three weeks later do a shallow cultivation to about 2 inches. Plant a winter cover crop or winter mulch 4 to 6 inches. About two weeks before planting in the spring shallow cultivate about 2 inches. Do another shallow cultivation when planting.

If hornworms were severe in the past year spray BT on vulnerable plants every two weeks from transplanting them until blossoms form. Remember BT does not reproduce or overwinter in nature so it must be applied yearly as pests emerge. BT breaks down in sunlight, the powder being viable for only 7 days after application and liquid spray only about 24 hours. It has little residual effect so it must be applied when feeding larvae are present. Reapply BT after rain.

Sources: *Rodale's Garden Problem Solver*, Jeff Ball. Rodale Press, 1988; *Insect Pests of Farm, Garden, and Orchard*, Peairs and Davidson. John Wiley & Sons, Inc.: *Insects, Golden Nature Guide*, Zim and Cottam. Simon & Schuster.

Barbara Kuttner
MG Trainee

Arizona Native Plant Society

For information on upcoming events, please contact Nancy Stallcup, President of the Southeastern Subchapter (tel. 378-1169).