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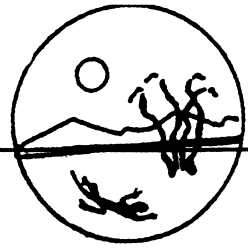
High on the Desert

Cochise County Master Gardener Newsletter



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

Garden Basics: Spring!

Spring Equinox,the first day of spring, arrives Friday, March 20th. Spring in the high desert signals wildflowers, possible rains, always wind, and of course, **Spring Plant Sales**! Here are a few tips to make your shopping foray enjoyable.

RESEARCH: Knowing what plants you are looking for before you enter the nursery will enhance the success of your trip. Browse through catalogs, books, and magazines and make a list of plants that interest you. Be sure to consider heat and cold tolerance, height and width restrictions, what your soil structure is, fragrance or color, and what you want the plant to do–act as a windbreak, create shade, prevent soil erosion, wildlife value, *etc*. Match plants to the site and conditions to avoid heartaches later on.

BE PREPARED: I have found it useless to go shopping, bring back a truckload of plants, and not be prepared to plant them. If you already know where you want to plant something, begin digging the hole(s) now. It's also a good time to inspect, repair, or install drip irrigation. In the vegetable garden rake out all old mulch to remove overwintering pests/diseases and lay down fresh mulch. And if you aren't currently using mulches in the ornamental garden, spring is an excellent time to accomplish this chore before the heat of summer sets in and fries not only you but your plants.

BUY HEALTHY PLANTS: Inspect plants for any pests or diseases; check the rootball, it should not be rootbound; and avoid plants that are lanky or leggy. Plants should generally have compact, green growth. Now all that said, I need to stress that some native plants look really funky in containers. It will be alive, sometimes small, sparse, and have a small amount of new growth. Buy it! Plant it! Give it a year and it will be beautiful! Look for annuals/perennials in bud, not in full bloom. Buy plants in bloom only if you are looking for a specific color.

When looking at trees check the crotches, they should be well-spaced and balanced looking. Select for single or multitrunk and don't be put off by a tree that has branches starting very low on the trunk. This is good–studies show that it helps stimulate growth. It can be thinned up slowly over a period of pruning seasons.

THE PLANT SALES! Not only will you find plants, some nurseries hold seminars and demonstrations, have speakers and exhibits, and refreshments. Happy Spring!

Tohono Chul Park, Tucson, March 7 & 8, (520) 742-6455
Boyce Thompson SW Arboretum, Superior, March 20 - April 5, (520) 689-2723
Tucson Botanical Gardens, Tucson, March 21 & 22, (520) 326-9686
Desert Survivors, Tucson, March 28 & 29, (520) 791-9309
Diamond JK Nursery, Sonoita, April 4 & 5, (520) 455-9262
Zamp Country Nursery, Douglas, April 4 & 5, (520)364-3809

Cheri Melton
Master Gardener/Staff Writer

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Cuttings 'N' Clippings

► Cochise County Master Gardeners Association meets the first Wednesday of each month in the Mona Bishop Room of the Sierra Vista Library (note this new location) at 5:00 pm. All certified Master Gardeners/Trainees are invited to attend.

► Cochise County Master Gardeners Association has watering probes and t-shirts available for sale at the Sierra Vista Cooperative Extension office.

► The Sierra Vista Area Gardener's Club meets the third Thursday of each month at 2:00 pm in the Mona Bishop Room of the Sierra Vista Library. The March 19 speaker will be Peter Gierlach of Spadefoot Nursery and on March 20 there will be a tour to the Tucson Composters and the Community Garden and Street Fair. For information call Wilma at 378-1399 or Yvonne at 378-2833. Everyone is welcome to attend.

► Remember–Cado Daily offers free water audits of your property. Call the WaterWise info line at 458-8278, Ext. 141 with your questions or to make an appointment.

Newsletter Staff:
Carolyn Gruenhagen
Cheri Melton
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Robert E. Call

Robert E. Call,
Extension Agent, Horticulture

High on the Desert

It has happened again! The dedicated volunteers of the Cochise County Master Gardeners Association Conference Committee had another successful High Desert Gardening & Landscaping Conference! This year's conference brought 170 attendees and presenters from Arizona, Texas, New Mexico, Colorado, Oregon, and even a Master Gardener from Boston, MA. From all reports everyone had a great time and learned a lot!

A very special thank you to our wonderful speakers–all 25 of them!

I especially want to thank the **Committee Chairpersons** and members who gave so much of their time, energy, and talents: **Rob Call,** Extension Agent, who arranges the incredible program each year, Jo Babbie, **Jena Barnett, Sponsorship,** Dutch Cauwels, **Alice Christ, Artist,** Frank Christ, **Cado Daily, Master of Ceremonies,** Elaine Gaar, Cynthia Garcia, Jan Groth, **Gary Gruenhagen, Registration,** Wilma Hinzman, Janet Jones, Gretchen Kent, **Barbara Kuttner, Sponsorship, De Lewis, Treasurer and Facilities, Cheri Melton, Publicity,** Dave Strichek, and also Joyce Williams, Cooperative Extension, Sierra Vista, Secretary who does SO much for us!

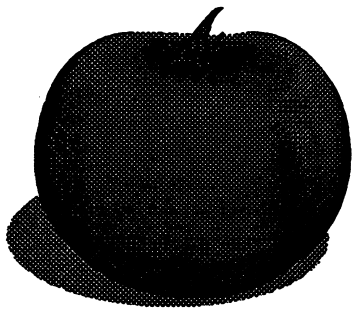
Also, special thanks go to our **Sponsors:** Arizona Landscape Contractor's Association, Phoenix, Arizona State Land Department, Arizona Community Tree Council, and Bella Vista Water Company; **Exhibitors:** Chulo Canyon Seed, Bisbee, Desert Trees Nursery, Tucson, Diamond JK Nursery, Sonoita, Funky Junque, Bisbee, Irrigation & Sprinkler Supply, Tucson, Kazaam Nature Center, Patagonia, Mountain States Wholesale Nursery, Litchfield Park, Southwest Gardener, Phoenix and The University of Arizona Bookstore, Arizona Native Plant Society, Arizona State Land Department, Arizona Sonora Desert Museum, Tucson, Sierra Vista Garden Club, and the U.S. Forest Service; **Door Prize Donors:** Ace Hardware, Sierra Vista, AZ Native Plant Society, Bisbee Therapeutic Massage Associates, Bisbee, Bordiers Nursery Inc., Irvine, CA, Cottage Gardens Nursery, Benson, Desert Trees Nursery, Tucson, Desert Botanical Gardens, Phoenix, Diamond JK Nursery, Sonoita, Flowers by Taeko, Sierra Vista, High Desert Trading Co., Elfrida, Irrigation & Sprinkler Supply, Tucson, Kazaam Nature Center, Patagonia, Mountain States Wholesale Nursery, Litchfield Park, San Pedro Valley Ace Hardware, Benson, San Pedro Feed & Hardware, Hereford, Sew What?, Sierra Vista, Southwest Gardener, Phoenix, Spadefoot Nursery, Pearce, Sulphur Springs Valley Electric Cooperative, Sierra Vista, Talking Drum Gourds, St. David, Target Garden, Sierra Vista, WaterWise Audit, Western Organics Inc., Phoenix, Whetstone Pottery, Whetstone and Willow Creek Nursery, Chino, CA.

WOW!

Because of the continued success, it looks like plans for a Sixth Annual will soon be underway for February 1999! Watch for information later this year in this newsletter and plan now to attend!

Carolyn Gruenhagen
1998 Conference Coordinator

Grow a Bumper Crop of Tomatoes this Year!



This past summer I had a number of people tell me of their failed tomato crop. I have been fortunate to have had a bumper crop the last three years to which, I am sure, my friends and neighbors will attest. I have been told that I'm doing everything wrong. I top-water my plants, and I don't pinch back the new growth, but somehow the plants don't know it either.

I have tried a number of varieties but have had the best luck with Hybrid Celebrity VFFNT and Hybrid Viva Italia VFFT (Roma). I grow my own plants from seed that I order by mail. The plants are spaced 5 feet apart and when planting I cut off the lower leaves and branches and set the plants 6 to 10 inches deep. To ward off cut worms I push a No. 10 can, bottom and top removed, a short way into the ground around each plant. After planting, I give them a good drink of a fertilizer solution and place newspaper tents over them for a few days until they are acclimated. To water, I put in an irrigation line of 1/2 inch poly-pipe and 2 2 gallons-per-hour drippers for each plant and cover the entire area with a mulch of straw.

I cage the celebrity tomatoes in cages that I make from 5 foot concrete remesh. The romas seem to do better on the ground rather in cages. The cages are made by cutting a 6' section of 5' concrete remesh and form a tube by joining the ends with wire. After putting the cages around the plants, they should be securely anchored with a couple of steel or wood stakes to keep them from blowing over.

Last of all, I set up my top watering system. I make mine out of 3/4 inch PVC electrical conduit (the grey stuff) because it is UV stabilized. If you do use the white PVC, paint it–any color will do. The risers are 39 inches tall (a 10' section of pipe will make 3 risers) with a full circle shrub spray attached on top. These come in plastic and brass, but the brass seems to be more serviceable. Each head will cover a 15' circle at 40 lbs. per-square-inch of water pressure. On the end of the system I place a female PVC garden hose adapter so that I can attach a short length of 5/8 inch garden hose to join the sprinkler to an automatic sprinkler valve or a sill cock. My top water system has gone through a number of revisions but I feel I have it almost perfected. I use it on my leaf and root crops with equal success. Although building one is neither difficult or expensive, it does require a number of cuts, welds, and parts which would require more space to describe than I have here. Should anyone like to build one, I would be glad to provide plans, diagrams, and instructions. Please call me at (520) 378-0426 in the evening.

I irrigate early in the morning so not to disturb the pollinating insects. Other than checking periodically for hornworms and side-dressing with a good vegetable fertilizer a couple of times, the tomato plants are pretty much on their own.

Both celebrity and romas are determinate varieties, and they will produce fruit for two to three months. I will have to admit to having a few early fruit with blossom-end rot, but once the fruit starts to ripen it is not unusual to get 2 to 3 gallons of vine-ripe fruit per picking per plant. It is also not uncommon for the plants to reach 6 to 7 feet in height.

El Frugal Gardenair
Gene Hasse, Guest Writer

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Success with School Gardens

Nothing accelerates learning like doing, and few things are as well worth doing as gardening. Linda A. Guy, Cathy Cromell, and Lucy K. Bradley (a speaker at the High Desert Gardening & Landscaping Conference), all garden education specialists, wrote *Success with School Gardens: How to Create a Learning Oasis in the Desert* (Arizona Master Gardener Press, Phoenix, 1997). The book is designed to show how to set up gardening programs in schools, and is also a great primer for anyone who wants to grow vegetables, herbs, and flowers in Southwest deserts.

An appendix lists planting times for almost every vegetable, flower, or herb you can grow in the desert.

To obtain a copy, write to Arizona Master Gardeners, Box 200, Phoenix, Az 85040.

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Q Do I need a green thumb to grow plants successfully?

A No. All you need is to provide the plants what they need: the right soil and exposure, as well as the right amount of water and fertilizer.

The Virtual Gardener- Nitrogen

One of the many great speakers we had at this year's High Desert Gardening & Landscaping Conference was Dr. Tom Thompson of the Department of Soil, Water, and Environmental Science at the University of Arizona. Dr. Thompson's lecture, *Nitrogen in the Environment: Where It Comes From, Where It Goes, and Why*, inspired me to do a little Web surfing on the topic. An Alta Vista search on the term "nitrogen AND cycle" turned up hits on over 21,000 documents. Of these, one of the most informative and interesting was a fact sheet from the Ohio State University Extension titled *Nitrogen and the Hydrologic Cycle*. This document provided much of the content for this article and can be downloaded from: **http://ohioline.ag.ohio-state.edu/aex-fact/463.html**.

Nitrogen is one of the 16 chemical elements required by all plants and even though it is very abundant in the environment—the atmosphere comprises 78 percent nitrogen gas—nitrogen is the element that most often limits plant growth. There are two reasons for this. First, nitrogen is a basic and essential constituent of proteins, amino acids, and chlorophyll in plant tissues. Second, nitrogen gas (N_2) is not directly useable by most plants but must be changed into other chemical forms that can be taken up by plant roots.

Nitrogen in the environment goes through a complex set of chemical reactions called the *nitrogen cycle*. Ammonium ions (NH_4^+) and nitrate ions (NO_3^-), the *inorganic* chemical forms of nitrogen that can be directly used by plants, are produced from atmospheric nitrogen gas naturally by the action of bacteria and lightning and artificially by industry in processes called *nitrogen fixation*. Once nitrogen gas has been transformed into ammonium and nitrate and incorporated into plant tissues, it is unavailable to other plants until the plant containing it dies and its tissues are processed by other bacteria back into ammonium and nitrate in a process called *mineralization*. As you can see, bacteria play an important role in changing nitrogen from one chemical form to another. A third group of bacteria in the soil convert ammonium into nitrate in a process called *nitrification*, and a fourth group change nitrate back into the form we began with, nitrogen gas as well as another gas called nitrous oxide (N_2O), in a process called *denitrification*. By now I suppose you are wondering where this is leading. All these loops and cycles are interesting, but what's the point?

One of the first things to appreciate is that the natural processes of nitrogen fixation and mineralization produce relatively small amounts of ammonium and nitrate. Only around two percent of the nitrogen in the soil is in the inorganic form that can be directly taken up by plants. The other 98 percent is tied up in plant (and animal) tissues and is unavailable for direct uptake. This is slowly released by the mineralizing bacteria. Since our desert soils are very low in organic material, our soils are chronically short of nitrogen. This is why so many desert plants are leguminous (*i.e.*, they host nitrogen-fixing bacteria that provide them with their own private supply of ammonium and nitrate). It is also why we have to artificially add sources of nitrogen to our soils to get many plants to grow.

When adding sources of nitrogen to the soil, we have a choice of several different kinds of materials. In order to mimic nature and provide sources that slowly release nitrogen over long periods of time, we can add organic materials. When doing this we want to choose materials that have a fairly low carbon to nitrogen ratio such as compost and manures which promote mineralization and avoid materials with higher carbon to nitrogen rations such as straw which do not. Alternatively, we can add chemical fertilizers.

Next month I will discuss the use of chemical fertilizers and some of the environmental dangers associated with their incorrect use. In the mean time, have fun surfing.

Gary Gruenhagen, Master Gardener (gruenha@sinosa.com)

Tohono Chul Wildflower Tours

Tohono Chul Park, 7366 N. Paseo del Norte, just off Ina Road, in Tucson, offers Wildflower Tours on the park's ground every Monday, Wednesday, and Friday at 10:00 am through April 29. The docent led tours last 45 minutes to an hour and take guests on a leisurely stroll of the park, pointing out many varieties of wildflowers. These tours are ideal primers for wildflower-hunting trips outside of Tucson at other popular wildflower sites.

Call's Comments

A Few Farming Facts

This month I would like to share some facts that hopefully will increase your appreciation for the great miracle of modern agriculture, and for those who produce the majority of the food we eat, the American farmer.

In 1850, it took 75 to 90 labor hours and 2½ acres to produce 100 bushels of corn. Today, it takes about 2½ hours and one acre. Southeastern Arizona, however averages over that amount, and has the highest corn yields for any region of the United States.

The sweet aroma of freshly turned soil comes from the soil bacteria genius *Actinomycetes*.

Every cubic inch of topsoil may contain over a billion creatures, mostly bacteria, microbes, and fungi. We need them because they make nutrients available to plants. All soils are teaming with life, except after a nuclear bomb explosion!

How big is an acre? If it were a square, it would be just over 208 feet on each side. A football field covers 1.03 acres. It is the amount of land that a man could plow in a day with a yoke of oxen. Oxen are bovine (cows, steers, and bulls) trained as draft animals.

Americans spend about 11% of their disposable income on food. In France, and much of Europe, it's 26% or more, Mexico, 32% and in China, 48%. What would you do if you, like a French person, had to spend 15% more of your disposable income on food.

Water traveling at 10 miles per hour can carry four times the sediment load than water going 5 mph. That's why filter strips, terraces, contours, *etc.* are so effective. They slow water down.

On average, one American farmer produces enough food and fiber for 129 people: 95 in the United States and 34 abroad. In 1900, each farmer fed less than ten people.

Of all the earth's water, 97% is saltwater and 2% is frozen in polar icecaps. Only 1% is usable fresh water.

The atmosphere around the earth carries about a ten-day supply of fresh water–about one inch of rain.

Water is the only substance necessary to all life; many organisms can live without oxygen, but none can live without water.

The United States uses three times as much water a day, 1,300 gallons per person, as the average European country. Americans like to bath and shower quite a bit!

The average American uses 60 gallons of water in the house each day. In our house of seven that would be 420 gallons of water a day. We do not use that much because we conserve, do you?

Sources: *Farming for Clean Water in South Carolina. Natural and Environmental Resources Report*. American Farm Bureau Federation.

Robert E. Call
Extension Agent, Horticulture

Upcoming Seminars

Brochures are available at The University of Arizona Cooperative Extension offices in Sierra Vista and Willcox for the following:

➢ **Controlled Environment Crop Production–A short Course Primer for Greenhouse Production Systems,** Thursday, March 19 at Maricopa County Cooperative Extension, 4341 E. Broadway, Phoenix, AZ.

➢ **1998 Arizona Farmers Direct Marketing and Tourism Conference,** Monday, March 16 at Maricopa County Cooperative Extension, 4341 E. Broadway, Phoenix, AZ.

Upcoming Tour

➢ The University of New Mexico-Valencia Campus Development Fund is sponsoring a self-guided tour–Rio Abajo Flora on Saturday, May 16. You will see spectacular cacti in one of the world's largest collections of cacti and succulents, more varieties of prickly pears than you thought existed, a vast collection of rare and unusual oak trees at a private arboretum, a desert walk through a garden of native plants designed to attract wildlife, and other gardens and nurseries where you can get ideas for your own home landscape. Information and tickets can be obtained from: Community Education Office, UNM-Valencia Campus, 280 La Entrada, Los Lunas, NM 87031 - there is a small donation charge.

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

ROSEMARY

Rosmarinus officinalis

(a plant for all seasons, many seasonings, and erosion control)

Rosemary, although known to most people as an herb, does double duty as a very rugged, evergreen shrub. Especially suited to desert climates, this plant thrives in hot sun and poor soil (with adequate drainage). Some watering, once established, may be necessary, even in the desert, in order to maintain its narrow, dark green, strongly aromatic leaves on the topside of the plant (the leaves tend to be a grey-white on the underside).

Rosemary's flowers are highly attractive lavender-blue clusters, flowering in both spring and winter, perhaps in the fall, as well. Birds and bees are especially drawn to rosemary. Birds prefer the shelter and habitat which rosemary affords them.

Believe it or not, some individuals prefer not to grow rosemary. They complain that the plant is too woody, that it grows too wildly, etc. The culprit is not the plant itself but the fact that it is being given excessive water; too much water causes rank growth. Tip-pinch young plants in order to control growth. It is recommended that older plants be pruned lightly and thinned occasionally.

Remember that rosemary makes awesome ground/bank covers and hedges if managed properly. A little known fact about this plant is that it's great for erosion control.

Several species of rosemary are on the market, including dwarf (up to 2 ft. tall) and some tall ones (up to 6 ft. in height). Enjoy this plant and make full use of its many features by selecting the species of rosemary best suited for your landscaping needs.

Peggy Dierking
Master Gardener