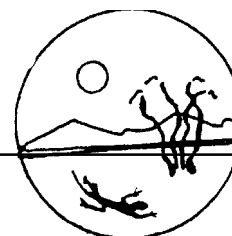


High on the Desert

Cochise County Master Gardener

Newsletter



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

Spring Time Reading

Longtime readers of this newsletter know about my dismal springtime planting success at my Hereford garden. April is here with its howling winds, and the blistering furnace heat of May and June are soon to follow. This is my favorite time of the year to read and wait out the heat of spring until the summer rains of July begin signaling the time to get planting.

Life in a Small Place and other essays from a desert garden, Janice Emily Bowers. Sixteen essays about her garden that will make you laugh, cry, and perhaps change the way you look at your garden and the world. If you love hiking in the Huachuca Mountains then you'll enjoy *Fear Falls Away and other essays from hard and rocky places*, which details her adventures of hiking in the desert mountain regions that includes five chapters on the Huachuca Mountains.

Gathering the Desert and *The Desert Smells Like Rain: A Naturalist in Papago Indian Country*. Anything written by Gary Paul Nabhan is wonderful. His books are the most eloquent and insightful readings I have ever found on deserts, nature, conservation, human cultures, and ethnobotany.

Why is organic gardening so important? Read *Gardening for the Future of the Earth, A Seeds of Change Book*, by Howard-Yana Shapiro, Ph.D. and John Harrison. Find out why one individual with a digging fork and a garden can help save the planet. In-depth descriptive methods of organic gardening practices from permaculture to polyculture to saving seed and much more. Beautiful pictures of various gardens throughout the world. By the way – Seeds of Change also sells seeds that really do well in our High Desert gardens. You can find them at www.seedsofchange.com

Prodigal Summer by Barbara Kingsolver. This book just became one of my all time favorites. It drew my attention with its lush green leaves dustcover. When I opened the book I found it beautifully illustrated with various moths and beetles. I didn't even read the jacket flap to see what it was about! It follows the lives of three extraordinary women; a wildlife biologist dealing with her self-imposed solitude whose passion is observing coyotes; an entomologist city girl who becomes a farmer's widow much too soon and struggling to find herself; and the story of two elderly neighbors; one who practices organic gardening and the other with a fondness for chemical solutions.

All these books can be found at the library, your favorite bookstore, and at the San Pedro House located on Highway 90. It stocks a wonderfully huge selection of Southwest books.

Happy reading!

Cheri Melton



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Cuttings 'N' Clippings

- Cochise County Master Gardeners Association will meet at 5:00 pm, April 11 at the Kuttner home. The next regular monthly meeting will be May 2 at the Sierra Vista Library.
- The May 5 Water Wise Workshop series will be presented by Rob Call, Extension Agent. The title is *The Mysteries of Irrigation Unveiled-Drip*. It will be held at the University of Arizona South from 9:00 - 10:00 am.
- John Begeman, Pima County Extension Agent, will be leading a Garden Tour of France, August 4-15 and will visit some of the best examples of Mediterranean gardens along the French Riviera. The tour includes gardens in Paris and Provence and the lavender fields and vineyards. For a tour itinerary, click on www.gildedagetours.com or contact Begeman at (520) 575-2806 or by e-mail at begeman@dakota.com.net.
- The 2001 International Master Gardener Conference, sponsored by the University of Florida, will be held May 28 - June 1 at Walt Disney World Resort. This conference is exclusively for Master Gardeners. For information go to <http://www.ifas.ufl.edu/~conferweb/ma/index.html>

NOTICE!
This will be your last
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SOIL FUNDAMENTALS - PART I IMPROVING DRAINAGE

Anyone who has ever attempted to plant anything here in the high desert knows just what a challenge it can be. Soils in our arid region are quite different from what one finds in other parts of the country (read-back east). The high mineral content, high alkalinity, and paucity of organic matter not to mention rocks, makes gardening quite a challenge. But rather than bemoaning the poor soils, the smart gardener learns to work with what nature has provided. Remember, if you fight the desert, you will, in the end always lose!



No matter what you plant here, you must always be knowledgeable of the soil and the selected planting spot. When you dig your holes (a real fun activity) always check for drainage. Native plants that one finds in the area and most non-native plants will not tolerate wet feet. I always recommend that after you dig your planting holes that you fill the hole to the brim with water twice. After the second fill, the water must drain at least 3 or more inches an hour—NO EXCEPTIONS! If it doesn't drain at this rate, you must improve the drainage or you will inevitably lose your plant. Nothing is more damaging to your gardening ego than having a prized plant suddenly collapse and die.

There are many reasons why your soil may not be draining properly; the most common of which are soil compaction and/or

caliche, the scourge of the high desert gardener. High desert soil in this area tends to be clayish in composition (there are exceptions, of course) and lacking in organic matter. Neither of these two factors bodes well for water infiltration. In addition, new construction generally requires the operation of heavy equipment all over the areas the future homeowner will invariably want to garden in. This only tends to make a bad problem worse. Many, especially those new to the desert southwest, tend to mistake compacted soil for caliche. Compacted soil impedes water infiltration; caliche nearly stops it completely and will not allow root penetration. Caliche will appear whitish in color and will foam when vinegar is poured on it. Also sparks will fly when your pick strikes caliche. Caliche can be anywhere from a few inches to several feet thick and can be found at the soil surface to several feet under the surface. It is not omnipresent however as it tends to run in veins through the soil making drainage testing all the more necessary.

Because the presence of caliche is not always obvious, you simply must perform the aforementioned drainage time each and every time you want to plant. Oftentimes the caliche layer may be just below where you stopped digging your

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Robert E. Call

Robert E. Call
Extension Agent, Horticulture
Carolyn Gruenhagen
Editor

hole. Your plant will thrive for awhile and then inexplicably die. Take time and do the job right the first time. If you have a drainage problem, adding sand to the hole is not answer unless, of course, you intend total soil replacement (we are talking about a six foot by six foot hole for a tree!). You must improve drainage below where the plant will be. Invest in a caliche bar and put in some sweat equity and break through the impermeable layer of soil. Do not despair, you don't have to remove all the offending soil. It is sufficient to dig drainage holes 4 inches in diameter through the caliche. Never dig these directly under where the plant will rest. The number necessary will vary based on the size of the hole, the severity of the drainage problem, and the size/type of plant. Fill these drainage holes with sand/rock to prevent recompaction of the soil in them and assure continuous drainage. The addition of gypsum will aid in reducing soil compaction. In severe cases, usage of such caliche eating products as "alka-liche" can slowly eat away at the caliche layer. As with all chemicals, follow directions carefully or you will be going to a plant funeral.

Next month - Soil Fundamentals, Part II, Building an Earthworm Paradise

John Phillips, Master Gardener



April Reminders

- ✓ Stake new trees
- ✓ Plant cool season veggies
- ✓ Fertilize
- ✓ Prepare for pests

THE VIRTUAL GARDENER



GROWING TOMATOES



A couple of months ago I wrote a short article about using paper bags to start tomatoes [Garden Tip # 7563, MGNL, Feb. 01]. Now that tomato planting time is upon us, I thought a follow-up article might be in order.

Tomatoes are everyone's (well almost) favorite garden vegetable, mostly because the tomatoes we buy in the supermarkets are so horrible and home grown tomatoes are so incomparably better. Despite (or maybe because) of millions of man-hours of research efforts, the agricultural industry has failed miserably in its efforts to bring to market a good tasting tomato. The products we buy at the grocery store are perfectly sized and shaped and carefully engineered to withstand rough handling but are tasteless. Nothing you can buy at the supermarket can compare to a juicy, vine-ripened Beefsteak tomato freshly picked off your own vines.

Okay, so what are the secrets of growing great tasting tomatoes in your own garden here in the high desert?

The first thing to remember is that tomatoes (*Lycopersicon esculentum*) come from the tropics. That means they like heat and sun (within reason, of course) and a constant supply of moisture. Their flowers will not even set fruit when night temperatures are below 55°F. Conversely, however, the flowers fall off when daytime temperatures exceed 90°F or nighttime temperatures exceed 77°F.

If you buy six packs of tomato plants at the nursery as I do, look for plants with thick stems, dark

green leaves, and well-developed roots but avoid plants with open blossoms or fruits. Also examine the plants carefully, especially the undersides of leaves, to make sure they are not infested with aphids or other insects.

After you bring your six pack home, you should repot the plants into individual containers. As mentioned in the previous article, I had great success last year planting them in garden soil in lunch-sized paper bags. Since the stems will develop roots when buried, you can place the young plants in the soil a little deeper than they were in the six pack containers. This will promote deep rooting and ultimately produce healthier plants.

The garden soil I use has been heavily amended with organic material—up to 25 percent or more—to improve its moisture holding capacity. It has also been treated with soil sulfur to lower the pH a little and fertilized with bone meal. Since these materials require some time and water to break down in the soil, you should consider preparing the soil late in the winter or even in the previous fall.

Put the paper bags with the young plants on a board or other support that can be moved easily and place them in a sheltered location with filtered shade. The young plants are very tender and must be protected from both sun and cold temperatures. Frost is deadly. As the plants grow larger, they can gradually be exposed to more sunlight until they spend the entire day in the sun. They should be

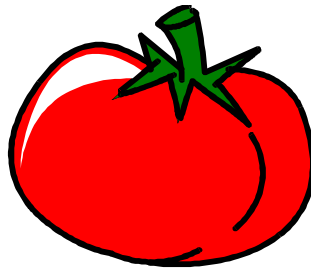
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watered at least a couple of times a day so that the soil is kept moist at all times. While your young plants are maturing on the patio, you should also periodically water the garden area where they ultimately will be planted. This will promote the breakdown of the amendments and cause weeds to sprout prematurely. It's a lot easier to deal with the weeds before the tomatoes are planted than after.

The tomato bags can be placed in the garden after all danger of frost is past. De Lewis, a fellow Master Gardener, recommends waiting until the mesquites have begun to leaf out. You can place the plants a couple of feet apart if you intend to cage them or up to 4 feet apart if you let them sprawl. Personally I have had better luck caging them. Last year, however, I found that both the varieties I planted (Celebrity and Beefsteak) quickly outgrew the wimpy tomato cages I had purchased for them. This year I have acquired some large mesh wire fencing that I can cut into 6 feet long pieces and roll into cylinders to make 5 feet tall cages. If caging is not your thing, you can choose to use either stakes or trellises to support the plants or let the plants sprawl. I like cages because they keep the fruits off the ground and make them easier to harvest.

Once your plants are in the ground, here are some additional things to consider. If the plants will be exposed to direct sunlight all day long, you might want to provide them with some shade as the weather warms up. In my garden, experience has shown that no additional shade is required, but that might not be the case for you. You might also consider placing mulch—I use straw—around the plants to help keep soil moisture in and weeds from sprouting. If you

plant early, though, you should wait on the mulch until the soil has had a chance to warm up a little before covering it with a mulch. Warm soil promotes early growth of roots and results in healthier plants.



Tomatoes are gluttons for nutrients, which is not surprising considering the amount of foliage and fruits they produce. Fertilizer should be applied when the first tomatoes have reached the size of golf balls and subsequent applications should be made throughout the season at about monthly intervals. I prefer organic fertilizers such as bone meal but balanced chemical fertilizers (10-10-10) will also work. It's a good idea to avoid the high nitrogen fertilizers such as ammonium sulfate which might burn the plants. The preferred method of fertilizing is side dressing in a one-inch deep furrow at the drip line of the plants. A couple of tablespoons of fertilizer per plant is just about right.

Other than not bending over the plants as they grow, the only other advice I have is for watering. (The reason I suggest not bending over a growing tomato plant is to avoid getting poked in the eye by a fast growing stem. :-))

Tomatoes are very particular about water. They like to have a lot but not too much, and they must have a constant supply. Irregular watering will cause a condition known as blossom end rot. Tomatoes suffering from this

malady have an ugly brown spot on the end of the tomato opposite the stem end. To avoid this condition, give your tomatoes about 2 inches of water per week during May and June. Don't get excited if the plants look a little droopy in the middle of the afternoon but get water on them right away if they look droopy first thing in the morning. I have watered with drip emitters and with weeping hoses. Both methods worked about equally well for me. Whatever method you use, be sure to water deeply (6 inches to a foot). You want to encourage your tomatoes to root deeply.

There is much more to learn about growing tomatoes. If you are interested, do a Google search on the keywords "growing tomatoes" or point your browser at the following Web sites:

Ohio State Cooperative Extension:
<http://www.ag.ohio-state.edu/~ohioline/hyg-fact/1000/1624.html>

North Carolina State Cooperative Extension:
<http://www.ces.ncsu.edu/hil/hil-8107.html>

Michigan State Cooperative Extension:
<http://www.msue.msu.edu/msue/imp/mod03/03900103.html>

University of Arizona Cooperative Extension:
<http://ag.arizona.edu/pubs/garden/mg/vegetable/tomatoes.html>

Good collection of links:
<http://members.home.net/ny4t/tomatoes.html>

Until next time, happy gardening and happy surfing.

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

The Agent's Observations

I completed a six-month sabbatical leave project in Mexico December 1, 2000. I studied the production and marketing of produce in Mexico. I made several visits to different regions of Mexico. The Central de Abasto, located outside of Mexico City, is the largest wholesale produce market in North and South America. Fruits, nuts, vegetables, and flowers are sold and delivered daily to supply over 40 million consumers. Produce from Mexico, the United States and many other parts of the world are marketed through the Central de Abasto. This market is owned and operated by the Mexican Federal Government. Over 8,000 "bodegas" or wholesale sales offices are leased to private companies in the Central de Abasto. I was hosted in Mexico City by Juan K. Wagner, owner of IMEX, in the Central de Abasto. He has been importing apples from Washington State for the past decade.

I studied fruit tree production practices in the Casas Grandes area of the State of Chihuahua, Mexico. Commercial production of peaches and apples has occurred in this area for nearly 100 years. Casas Grandes has a similar climate and topography to South-eastern Arizona. Casas Grandes is an ideal location to study fruit tree varieties and growing practices that are suitable to Southeastern Arizona.

Variety selection is critical when planning a deciduous fruit tree

orchard, as their productive life ranges from 20 to 70 years, depending on species. Orchard development is a costly and long-term investment. Choosing varieties and production practices that are viable for the long term is imperative. I studied the peach varieties that they are growing. Generally 16 varieties are used, the first being harvested in mid-May. They pick peaches through mid-October. Peach harvest season is longer than apple harvest!

Early spring frosts have been a limiting factor in the commercial production of stone fruits in this area. In Casas Grandes they have similar problems but have largely overcome them using frost control measures in the spring. I learned from the Chihuahua growers that they use their sprinklers before and during frost events to increase orchard humidity and to freeze water which gives off heat. They can increase orchard temperatures by 3° to 4° F using this method.

Paquimé Fruit Growers Cooperative, with 72 grower-members, hosted me during my visit to the Casa Grandes area. They have set the lowest price that State-side fruit can be imported to Mexico. The minimum price is set according to the harvest outlook of their crop.

Altarpec de Mexico produces grape and apple juice concentrate in Caborca, Sonora, Mexico. They are a subsidiary of a large Argentine conglomerate. The general manager of Altarpec, Antonis Ceja Becera, has been to the Willcox area and I hosted him. He was evaluating opportunities to purchase Arizona fruit for the

Altarpec processing plant. He invited me to Caborca to learn about their operation and marketing strategies throughout Latin America and Europe. Juice concentrate is a commodity that is traded worldwide. This past growing season Altarpec did not press one grape or apple. They could buy juice concentrate from California or China cheaper than they could produce it to fill their contracts with U.S. companies. Mr. Becera said that globalization was a reality and we all have to learn how to deal in this new environment.

The West Coast of Mexico produces many acres of produce for consumption in United States, particularly during the winter months. The Arizona-Sonoran Commission visited the Willcox area, September 22-24, 1999, and I assisted in hosting them. During their visit I was invited to Hermosillo, Sonora, Mexico. Dr. Cosme Guerrero, Professor of Plant Pathology, University of Sonora, in Hermosillo, hosted me while on the West Coast. We visited with several vegetable growers in the State of Sonora. They sell their produce strictly through brokers in Nogales, Arizona, who charge a 10% commission. The growers are held to the same standards of pesticide residues as State-side growers, but the Mexican produce is randomly examined for chemical residues at the border where U.S. produce is not checked. If any out of label residues are found the products from that farm are

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recalled. Also, produce can not be shipped for a minimum of 14 days while three clean samples must be submitted and passed before shipping resumes. The Mexican growers do not want to have their produce rejected and then spoiled sitting at the border so they are very vigilant about following pesticide labels. I found that the “circle of poison” is a media myth that is not founded in fact.

The benefits of this sabbatical leave project have increased my knowledge of how horticultural crops are produced and marketed in Mexico. This knowledge will be transferred to growers in Arizona so they can participate in the Mexican market place if they choose. In particular the growers in Cochise and Graham Counties will have at their disposal someone who is knowledgeable about how business is done in Mexico. I learned that NAFTA does not mean free trade but “freer trade” with our neighbor to the south. Also, that business dealings in Mexico are not done with a handshake but rather with relationships that are built over time so that trust can be established.

Robert E. Call
Extension Agent, Horticulture

Xeriscape Tour

Mark your calendars for Saturday, May 5 for the Water Wise/Master Gardener Spring Xeriscape Tour. Low water use landscapes will be on display with Master Gardener documents available to answer questions you may have. This is an excellent opportunity to get ideas about how to design your own yard, what plants do well here, and how to be more water efficient. Call the Sierra Vista Cooperative Extension office AFTER April 15 to get a map and more information.