



The Virtual Gardener—Garden Jewels

A few days ago I was invited to a friend's garden to view one of the extraordinary sights of the summer—a massive bloom of *Echinopsis/Trichocereus* cacti. The relatively few *Echinopsis/Trichocereus* cacti in my own garden had also bloomed that day, so I thought I knew what to expect, but the sight of hundreds of cacti displaying brilliant blooms at the same time took my breath away. What a sight to behold!

I describe these cacti as *Echinopsis/Trichocereus* because there is much confusion among the folks who classify cactus. Until recently the taxonomists had considered these (and several other genera) as separate, but they now have convinced themselves to place them in the same genus—*Echinopsis*—the “hedgehog” cacti. The arguments of the specialists would be moot to us mere gardeners except that the nurseries haven't always caught up with them and you are likely to see either or both names when you go to the store. From now on I will use the newer genus name, *Echinopsis*, to refer to all of the cactus I am discussing.

The *Echinopsis* are native to Argentina, Bolivia, Brazil, and Paraguay. There are about 120 or more different species in the genus, which have been extensively hybridized to produce flowers of great beauty and fragrance. The flowers emerge at night and last for only one (or rarely) two days in mid- to late-summer. The colors are intense and range from brilliant reds, to orange, to white, to vibrant yellows, and to delicate pinks. Some of the flowers have single colors and others are

subtly shaded from one color to another. The most impressive blossoms are produced from hybrids that have been skillfully developed over many generations.

The *Echinopsis* first imported to Europe in the 1830s mostly had white flowers but were cross-pollinated with members of the genus *Lobelia* (now also integrated into *Echinopsis*) to produce hybrids with different colored flowers. By the 1940s a California nursery owner, Harry Johnson, had begun producing hybrids with spectacular flowers known as the Paramount hybrids. Later another Californian, Bob Schick, working out of the Huntington Gardens began crossing the Paramount hybrids to produce yet another series, the Schick hybrids. Today there are hundreds, if not thousands, of hybrids to choose from.

Most *Echinopsis* hybrids are easy to grow here. Many can withstand temperatures to the teens and below and thrive in our native soils. The experts recommend, however, that you amend native soils with a little organic material and perhaps a little sand if the soils are dense with clay and silt. The *Echinopsis*, like all cacti, like well-drained soils. Water them only during the warmer months because their roots will rot if exposed to water during the winter. Some experts also recommend fertilizing them regularly with a very dilute solution of a balanced fertilizer.

Echinopsis are easily propagated from cuttings, so although they can be expensive to buy initially, buying one is an investment that can be multiplied many times over. My

(Continued on page 3)

Inside this issue:

Mulch-Part II	2
Xeriscape Tour	3
Plant Propagation	4
August Reminders	5
Cuttings 'N' Clippings	5

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Mulch: A Simple and Effective Tool—Part II

My Kingdom for a Mulch!

There are a lot of mulches to choose from. Let's try to make it a little simpler. First of all, mulches tend to be grouped into two main categories: organic mulch and inorganic mulch.

Organic mulch is made from recently living material and includes such familiar types as wood and bark chips, leaves, grass clippings, straw, and even horse manure.

Organic mulches have the benefits of (1) adding nutrients and organic matter to the soil, (2) generally being cheaper than inorganic mulches, (3) being made from recycled materials, and (4) attracting desirable worms and insects.

On the other hand, the same decomposition process that provides nutrients also uses up nitrogen from the soil requiring the replenishment of nitrogen (*e.g.*, using fertilizer). Also, organic mulches are lighter on average than inorganic mulches and thus are more prone to being blown away by high Cochise County winds or washed away by heavy monsoon rains. And, on occasion, they can attract undesirable worms and insects, too.

Wood and bark chips have the benefits of good protective qualities while coming in a variety of colors and sizes. Being smaller, wood chips tend to decompose a little more quickly than bark chips and, conversely, bark chips are lighter and are more likely to be blown or washed away.

Two abundant and often overlooked mulches in Cochise County are horse manure and straw. They are excellent at adding nutrients to the soil and they can be cheap. Straw can be bought at any feed store and any neighbor with horses will be more than happy to let you

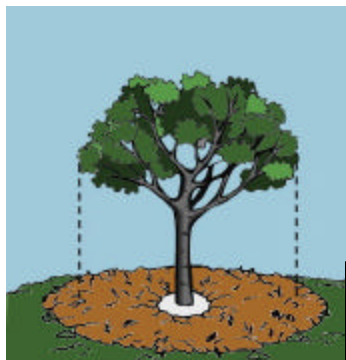
take as much manure as you want for free! Both are admittedly not strong on beauty, however, and these might be best used for example in either a vegetable garden or on property with acreage.

Ground cocoa shells and pecan shells are new types of organic mulch. They are very attractive for ornamental gardens and even smell like chocolate or nuts when wet. They have some drawbacks. One is that coconut shells are about twice as expensive as commercially available wood or bark chips. Also, they are very light and can easily blow or wash away.

Inorganic mulch is made from non-living materials (or creatures dead long ago such as crustaceans from ancient seas). Basically, these are some form of rock (natural) or synthetic material (man made). Some common examples of inorganic mulches are stone and gravel, river rock, recycled rubber, and landscape fabric.

For their part, inorganic mulches have the advantages of being (1) permanent or long-lasting in nature, (2) fire resistant, and (3) inhospitable material for weed growth.

Their weaknesses are that they do not add nutrients to the soil, may add to the alkalinity of the soil for some kinds of rock, and they can be rather inflexible for future plantings or removal.



The picture to the left illustrates the proper application of mulch. Note how the mulch does not touch the trunk and how it extends beyond the drip line.

Rock such as decomposed granite, pea gravel, or river rock all have the advantage of being heavy and long-lasting. They are often very attractive together with southwestern plants. Although not properly functioning as a mulch, river rock is very useful in the beds of rock rivers, which are used to slow down and help harvest rainwater. Also, when using rock or stone as mulch, beware of using either too light or too dark of a color. Very light stone will reflect solar radiation and may lead to plant burn. Very dark stone will absorb heat, and in this case raise the soil temperature to undesirable levels.

Coarse building sand is a more flexible, effective inorganic mulch that is often overlooked. Its fine texture means that smaller depths are required on the ground and is generally cheaper and easier to work with than stone. It is light weight, though, which means it's more prone to being washed or blown away than rock or stone.

Lastly there is landscape fabric, which is water and air permeable. This forms an excellent barrier to weeds, although over time dust can form on top of it and provide a germination medium for weed seeds. The advantages of its water/air permeability and weed protection are offset by its generally bulkiness and lack of flexibility. Landscaping fabrics need to be anchored in some way and are often covered over by another mulch material. It can be cumbersome when you want to put in new plants after the fabric

(Continued on page 3)

(Continued from page 2)

has been laid, anchored, and covered.

A word about black plastic—it is not recommended. It has now been used in gardens long enough and there have been enough studies performed to indicate that the negatives outweigh the positives. In particular, black plastic promotes the growth of potentially toxic fungi and molds and it usually leads to compaction of the soil beneath it. If you currently have black plastic but do not want to remove it at this time, a quick solution is to use a pitchfork and poke holes throughout the surface to provide plant roots some access to air and water.

The Art of Mulch

It's easy to learn how to apply mulch correctly if you follow these guidelines:

First weed the area to be mulched. For new/young plants, apply mulch to an area between 3 and 4 feet in diameter. For mature plants, spread the mulch out to the drip line or beyond (better).

Do NOT let the mulch lie against the trunk or stem. For small plants, keep it several inches away; for trees at least 6 inches.

Apply a thickness of between 3 to 6 inches of mulch. Six inches is ideal but it may be cost prohibitive. That's okay. Use 3 inches. Any mulch is better than none. This greater thickness is appropriate for the conditions in Cochise County.

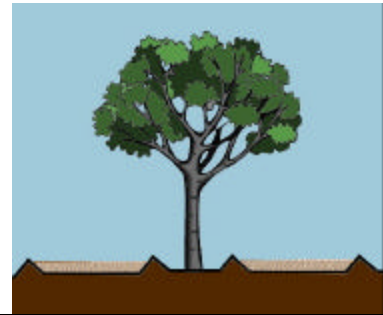
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Editor

One way to apply the proper thickness is to use old soda, fruit, vegetable, or soup cans. Place a few around the plant or tree and then put on mulch until you reach the tops of the cans. You are now protected from most of what nature can throw at your plant!

Bret Galloway, Master Gardener



This is a suggested way of planting and mulching. An inner berm, or wall, is created around the tree to protect the trunk from water and mulch. The outer berm holds in water forming a watering ring or basin around the tree. The mulch (light brown in the picture) is placed in this watering basin.

Xeriscape Tour

As the Fall Xeriscape Tour is approaching, I want to tell you what a great experience it is to be a part of the Xeriscape Tour. This spring I was taking the Master Gardener class at the University of Arizona South and I needed to volunteer for hours to receive my Master Gardeners' Certificate. I volunteered our garden for the Spring Xeriscape Tour, not knowing if it would qualify. Our garden was selected. That was exciting!!

We had a few things to do to bring it up to *Water Wise* standards, but these were things we wanted to do anyway. Cado Daily, *Water Wise* Educator, came to our house and did a "Water Wise" inspection, which is provided free. (Call *Water Wise* at

458-8278, Ext. 2141 for your free audit.) Upon her recommendations, we added a separate timer for the vegetable garden along with a better drip system for it, changed the timer on the other drip systems to water less frequently and longer for better root growth, and we added mulch to conserve the water we were using. Then the Master Gardener volunteers came to identify all the plants in our yard. Some of it was easy, but other plants had to be researched by me and the Master Gardeners who were helping. What a great learning experience! It isn't easy to identify all the cacti, yuccas, etc. The Internet isn't always our friend. Cado Daily is our friend. She knows so much!!

(Continued on back page)

(Continued from page 1)

recommendation is to buy from a dealer who specializes in cactus to make sure you buy a plant that will survive our winter temperatures. There are a number of such dealers in Tucson.



There is much information about *Echinopsis* on the Web. Try a Google search on "Echinopsis hybrids." Here are some of the sites I found most interesting:

<http://en.wikipedia.org/wiki/Echinopsis>

<http://cactiguide.com/>

<http://www.echinopsis-hybrids.cssnz.org/>

Until next time, happy surfing.

Gary A. Gruenhagen, Master Gardener
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Plant Propagation for the Home Gardener

Assisting nature in the production of a new complete, vital organism is of great joy and significant accomplishment to gardening enthusiasts. Propagation of plants, be it from simple division of a complete structure, germination of seed on your window sill, cloning of a favorite plant by stem, leaf, or root cutting, grafting one plant onto another, developing tissue culture, or advancing to genetic alteration and creation of new plants is both fascinating and frustrating. Variables such as the forces of nature, light, radiation, temperature, humidity, wind, and seasonal diurnal changes play a major role in plant propagation success.

Personal expectations must also be realized. Items such as time availability and management, expense, and space need consideration. Satisfaction of desired goal, how best to achieve that end, and acceptance of fruition or failure must be studied up front to alleviate personal stress.

Research, experimentation, and documentation are key factors in plant propagation at home. There are no recipes for 100% success in plant propagation. Employing these key factors will minimize risk of dissatisfaction in your endeavor to help create new organisms for your enjoyment or the appreciation of others.

Once you know what you want and have balanced your time to manage it, you also need to know whether it can be accomplished within your economic means. Having met these three variables, it is time to start your research on plant propaga-

tion; I recommend investment in two texts for the American Southwest gardener:



The Reference Manual of Woody Plant Propagation: From Seed to Tissue Culture. A practical working guide to the propagation of over 1100 species, varieties and cultivars. 2nd edition. Dr. Michael A. Dirr and Dr. Charles W. Heuser, Jr. Varsity Press, Inc. Cary: 2006.

This practical working guide will expose you to hundreds of years of research, techniques for propagating over 1,100 woody plant species and the various components essential to success. Authored by professionals of the eastern United States, most of the plants referenced are exotic to our area.

How to Grow Native Plants of Texas and Southwest: Revised and Updated Edition. Jill Nokes. University of Texas Press, Austin: 2001.

This book brings you relevant information on plants that have the genetic ability to thrive in the unique desert Southwest. It is a must for all gardening enthusiasts in the great Southwest. Useful information such as seed gathering and storage, propagation timing, and plant transplanting are warmly

presented for native species for our region.

These books allow vision of what you may expect from various propagation methods and the limitations of certain techniques used on individual species of plants.

Other valuable research resources include: arboreturns, herbariums, botanical gardens, and your local Cooperative Extension.

Here in Southeast Arizona, we are blessed with the Cochise County Herbarium on the UAS campus, the UA Campus Herbarium in Tucson, and the Audubon Appleton-Whittel Research Ranch Herbarium in Elgin. Herbariums are collections of dried plants classified, mounted, and used for botanical study. Not only is this a resource of plant identification, but individual mountings also included site collection data that may provide the plant propagator a resource for locating particular plant material.

A word of caution—laws often restrict the collection of plant materials, even seed. Know whose land you are on and get permission to be on it, please. And check with your state and local authorities about protected plants in the area of your intentions and if collection is allowed.

The other key factors in home plant propagation experimentation and documentation go hand in hand. Experimentation without documentation is reliance on memory. Documentation on experimentation will provide you with a wealth of knowledge that proves your success and failures, the hows and whys things

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(Continued from page 4)

worked or did not, and where to go from there. As I mentioned earlier, there is no recipe for success in plant propagation. I've often heard people revel at success rates of 15% or less when dealing with species rarely found in the nursery trade. Documentation of things like seed provenance, time of cutting, hormonal percentage usage, media profile, fertilization, rate of success, and any other data created in experimentation is valuable information.

Every organism we propagate has further to go before maturity. Future prosperity of that organism is dependent on environment factors, inherent ability of that plant to transplant successfully into a given environment, and the management of that plant to allow it to thrive.

Plant propagation at home, although challenging at times, allows for satisfaction that gardening in general provides; a comfort level is achieved only by our relationship with the plant kingdom.

Not all plants can be propagated by man. Some species can only be propagated using certain methods in any given environment. A case in point—you want a male Arizona Ash (*Fraxinus velutina*) because you do not want the seed litter produced by the female gender. The seed from the Arizona Ash will germinate into a male or a female depending on genetics. Research shows that approximately only 80% of all seed from the Arizona Ash is considered to be viable. Of the viable seed, 80% will produce females. Therefore, given the two

years growth from germination necessary to distinguish sex of the tree, what are the chances of getting what you want?

Vegetative cuttings from most dioecious woody plants will exemplify their sexuality, but cuttings from Arizona Ash seldom take root. But if we take propagation by grafting, success of identifying male or female plant is guaranteed. This is the way it is done in the nursery trade to specifically provide consumers with either female or male dioecious woody plants. However, this practice does not need to be limited to the nursery. You can also do graftings at home to achieve the desired plant.

Plant propagation at home is also an extremely economical way to provide the plants you wish to bring into your landscape, to give as gifts to your best friends, or to profit from by their sale.

DeForest S. Lewis, Master Gardener

August Reminders

- ◆ Keep pulling weeds
- ◆ Fertilize
- ◆ Prolong annuals
- ◆ Plan your spring wildflower garden
- ◆ Watch for nutrient deficiencies, sunburn, saltburn, over-watering, and insects
- ◆ Plant cool-season flowers and veggies

Cuttings 'N' Clippings

✧ The next CCMGA meeting is 5:00 p.m. Thursday, August 7 at the University of Arizona South campus Public Meeting Room. The speaker will be Tom Wood on *Hummingbird Gardening*.

✧ The free August 2 *Water Wise* workshop features Cathy Stuckey, owner of Butterfly Gardens, Inc. and *Plants, Plants, Plants!* This workshop will show you many plants that are perfect for Cochise County landscapes. The workshop is held at the UAS Public Meeting Room from 9:00—11:00 a.m.

✧ A 6-week course entitled *Learn to Identify Plants* will be taught by Cecile Lumer, Ph.D. The class will meet Friday mornings, 10:00 a.m.—Noon on August 15-September 19 at Cochise College. For more information call Cecile Lumer at 432-4294, email: cecilelumer@gmail.com or call Joyce at the Cooperative Extension at 458-8278 ext. 2141.

✧ **September 7, 1:00—4:00 p.m.** is the date for the next Xeriscape Garden Tour sponsored by *Water Wise* and the Cochise County Master Gardeners. Call the Extension office for maps that will be available mid-August for this **FREE** tour. Docents will be at each yard to answer questions and plant lists will be available.

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Fall Xeriscope Tour



September 7, 2008

1:00—4:00 p.m.

(Continued from page 3)

The next step was tagging the plants. Every plant in our yard got a classification and a number. Fortunately, we had a master list for every house on the tour so not all plants had to be tagged. Since our house had three separate areas, some plants were tagged three times. We had wonderful Master Gardener volunteers who took charge of everything and before I knew it all the plants were identified, tagged, and ready for the tour.

On the day of the tour, all signs, brochures, and the volunteer committee was in place and ready. Each visitor would receive a plant list for the self-guided tour. The Master Gardeners answered all the hard questions. I

got to visit and explain the design, construction, and planting of our yard. There is a lot of interest in water conservation in Sierra Vista, but the biggest surprise was the interest in our vegetable garden. A small space can produce a lot for a small family.



We had a lot of African daisies

this spring and my husband and I collected the seeds and packaged them up to hand out at the tour. Everyone loved getting them, but that is not a requirement for your garden tour. I'll be writing an article about the African Daisies at another time.

Participating in the Xeriscope Tour was fun plus it gave me volunteer hours for my Master Gardener accreditation. I learned a lot and have already volunteered to help with the Fall Xeriscope Tour. I'm a Master Gardener Associate now and am ready to put into practice what I learned by the experience of the Xeriscope Tour, the Master Gardener class, and my own garden.

Sue Olivo, Master Gardener Associate