High on the Desert Cochise County Master Gardener Newsletter

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

The Virtual Gardener—Gardening With . . . a Soil Thermometer!

In our rush to get plants in the ground in the spring, we often consider air temperatures but forget about soil temperatures. I attended a lecture the other day given by Bill Cook, owner and operator of Harmony Gardens in Duncan, Arizona, who stressed the importance of soil temperatures in deciding when to sow and transplant vegetables. He recommended every gardener acquire and use a soil thermometer.

Garden soils are heated by the sun and their temperatures vary with the seasons and by the hour throughout the day. Many factors influence exactly how soil temperatures change in response to sunlight, including soil composition and texture, surface orientation with respect to incoming sunlight, and external shading.

Although the types and sizes of mineral particles and organic materials present influence soil temperatures, the amount of moisture in the soil is particularly important because water has one of the highest heat capacities of any substance. Water in the soil slows the rate at which soil temperatures rise, but once moist soil is heated it retains the heat and is slower to cool.

Be aware of shadows. If you plant in furrows or along berms, the directions of the furrows and berms will affect soil temperatures. North-south furrows and berms will heat differently in the mornings than in the afternoons, while east-west furrows and berms will have cooler temperatures on their shaded north sides where the soil slopes away from the sun. Buildings and other vegetation—including other vegetable plants in the garden—cast ever-changing shadows that also affect soil temperatures throughout the day.

Soil is also a good insulator so summertime temperatures drop off rapidly with depth. In one study soil temperatures taken near Tucson in June varied from 160°F at the surface to 82°F at a depth of 12 inches.

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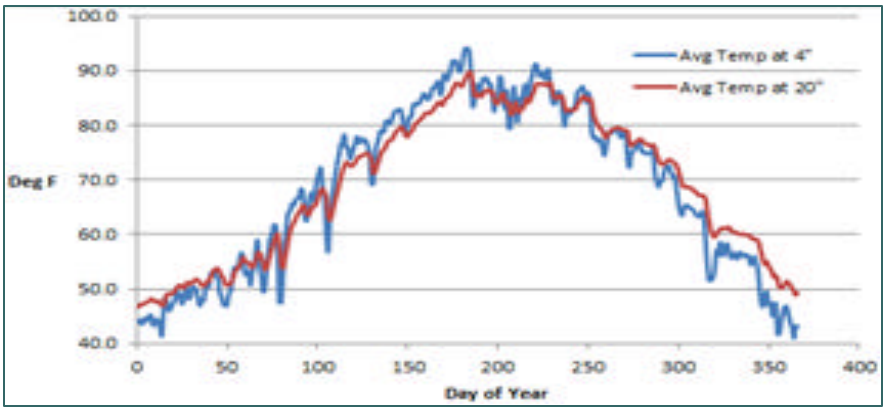

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Because of this, temperatures below the surface in high desert soils tend to vary within a fairly narrow range throughout the seasons. The graph above of soil temperatures at the Bonita AZMET site for 2012 shows that average temperatures range from the mid-40s in winter to the low-90s in summer.

Most gardeners who start plants from seed are aware that germination occurs faster in warm soil, and many studies have been done to precisely quantify the effects of temperatures on germination for different species of plants. You can find a chart of soil temperature recommendations for sprouting vegetable seeds here in the Arizona Master Gardener Manual.

Almost everyone knows that seeds sprout best in warm soil, but how many gardeners give any thought to the importance of soil temperatures when it's time to transplant their young plants into the garden?

Transplanting seedlings into soils that have not yet warmed up can not only damage their immediate performance but affect them for the entire season. The Texas A&M Extension recommends measuring the temperature of the soil at a depth of 4 to 6 inches for three consecutive mornings before installing transplants and using the following guide for minimum acceptable soil temperatures:

60 °F…..tomatoes
65 °F…..sweet corn, lima beans, mustard greens
70 °F…..peppers, watermelons, squash, southern peas
75 °F…..okra, cantaloupe. sweet potatoes

Soil thermometers come in a variety of styles and prices and can be found online and in garden shops. If you can't find them locally, an inexpensive meat thermometer will work as well. Bill recommended it's best to avoid thermometers that require batteries to operate. Batteries have a habit of dying at the most inconvenient times.

Until next time, happy surfing!

Gary Gruenhagen, Master Gardener
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All my life I have tried to pluck a thistle and plant a flower wherever the flower would grow in thought and mind.

—Abraham Lincoln

Cuttings 'N' Clippings

❄ The **Thursday, May 9** CCMGA **(Note: Meeting is being held one week later than usual)** meeting speaker will be Master Gardener Angel Rutherford, water gardening expert, who will tell us how to build a backyard pond. The meeting location is the Public Meeting Room at UASV and the time is 5:00 p.m. Due to graduation activities on campus at the same time, you are asked to park in Cochise College parking lots just across the street. For information call (520) 458-8278, Ext 2141 or contact Joyce at: **jwilliam@ag.arizona.edu/**

❄ The June CCMGA meeting is the annual business meeting.

❄ There will not be a July CCMGA meeting due to the holiday.

❄ The Water Wise schedule for May includes an informational talk on **Saturday, May 4** by the Watershed Management Group from Tucson titled *Play in the Rain! Watershed Health Begins at Home.* The meeting location is the Public Meeting Room at UASV and the time is 9:00 to 10:30 a.m. Water Wise will also be at International Migratory Bird Day at the San Pedro House on **May 4** For information call (520) 458-8278, Ext 2141, or contact Joyce at: j**william@ag.arizona.edu/**

May Reminders

- ***Deep water***
- ***Plant warm season crops***
- ***Check tree ties***
- ***Control pests***
- ***Control weeds***

Berry Confusing

Quickly, name three fruits, not including the typical oranges, apples, plums, and other such supermarket items that we usually call fruit. Now, name three berries—any kind of berry. Next, what exactly is a pineapple? The answers to these questions demonstrate the difference between everyday language and the specialized terminology of professionals, those professionals being botanists in this case.

Fruits are defined botanically as the "mature ovaries" of a flower. More usefully, botanists define a fruit as a plant part that contains seeds that come from a flower. The group of flowering plants is called angiosperms (from the Greek, "angeion," meaning vessel and "sperma" meaning seed). Angiosperms are the largest single division (or phylum) in the plant kingdom. Other plants, such as conifers, also have seeds, but these seeds are not held in fruits, nor are they produced by flowers. Their seeds are contained in cones and such plants are known as gymnosperms (from the Greek "gymnos" meaning naked). Gymnosperm seeds are unprotected between the layers of the cone. Other plant groups such as ferns and mosses produce no seeds at all.

Most gardeners realize that squashes, tomatoes, cucumbers, corn, peas, beans, and peppers are every bit as much a fruit as are things like peaches, oranges, and apples. What is less commonly known is that some of these things are also berries. For instance, the tomato is a berry, as are bell and chile peppers. Blueberries, grapes, and avocados are berries, too. Citrus fruits are considered to be a modified berry. So, what is a berry? A berry is defined by botanists as a fleshy fruit produced from a single ovary.

As for raspberries, marionberries, and blackberries, alas, they are not berries, botanically speaking. Instead, they are known as "aggregate fruits." Aggregate fruits are produced by a single flower that contains multiple ovaries. While each individual ovary in these fruits produces something that is technically a berry, when taken as a whole, these common fruits are not berries at all.

There are yet other types of fruits. Stone fruits, such as peaches, apricots, olives, and cherries, are known as "drupes." The significant characteristic of a drupe is that it contains a single seed surrounded by a hard layer known as an "endocarp." The reason that avocados are not drupes, even though they contain just a single seed, is that the avocado seed is not contained in an endocarp. Apples and pears belong to yet another category known as "pomes." Pomes are distinguished by the presence of a core that separates the seed bearing portion from the rest of the fruit. Beyond these examples, there are yet more fruit types. The strawberry is an "accessory fruit." With accessory fruits, the edible portion is not produced by the ovary.

Most of what we commonly call nuts are also fruits. To a botanist, a nut is a simple dry fruit containing one seed (rarely two) in which the ovary wall becomes hard. Filberts (also known as hazelnuts), walnuts, pecans, and chestnuts are all true nuts. A characteristic common to all nuts is that their exterior shell does not open at maturity. Somewhat confusingly, pistachios are considered drupes. This makes some sense because pistachios split open at maturity. Almonds are considered to be a drupe as well and are related to stone fruits such as peaches.

The pineapple? It's a "multiple fruit," according to botanists. The pineapple contains many flowers that are arranged along a short stem in a fashion that is reflected in the shape of the ripe pineapple. Each flower produces a single fruit, and together these fruits coalesce into the thing we know as the pineapple. Interestingly, the pineapples we eat come from unpollinated flowers. If their flowers were to be pollinated, the individual fruits would contain seeds, an undesirable characteristic with respect to edibility. The state of Hawaii actually prohibits the importation of hummingbirds as these tiny little birds would facilitate pineapple pollination, and therefore poor quality pineapple fruits.

Some of the information used for this article came from a book by Brian Capon entitled *Botany for Gardeners.* A copy of this book, donated by the Cochise County Master Gardeners, is available at the Sierra Vista public library. We gardeners ought to be at least familiar with basic botany.

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22nd Annual Desert Horticulture Conference May 17, 2013

The Desert Horticulture Conference is the premier annual conference for all members of the southwest green industry: landscape architects, designers, growers, retailers, contractors, maintenance personnel, suppliers, and educators. Presenting timely and research-based information relevant for designing, building, maintaining, and producing plants for urban landscapes in the arid Southwest. For information go to:

http://ag.arizona.edu/deserthort

The Story of the Elfrida Community Garden

In 2005, Drs. Anita Wood and Anthony Alberta developed a proposal for a project to address the issues of dementia and depression in the senior adults over the age of 60. Based on behavioral health research confirming that socialization, exercise, and certain types of learning could alter these degenerative diseases processes, a proposal sponsored by Chiricahua Community Health Centers, Inc. (CCHCI) was submitted to the Substance Abuse Mental Health Services Administration (SAMHSA) and a three year, $1.2 million dollar grant was awarded.

Titled "Sembrando Salud/Sowing Wellness," the two-part project was implemented at CCHCI's Elfrida Clinic site. Part One was an educational and exercise component that included classes in Spanish, English, computer use, yoga, exercise, healthy eating, and social events. A Certified Art Therapist treated a number of older adults in the community, many of whom suffered from depression, but who were unwilling or unable to pursue more traditional counseling therapy. Socialization activities included a monthly High Tea for participants over 80 years of age. This event quickly became the highlight of social activities for the frail elderly, and even younger senior adults in the Sulphur Springs Valley. Part Two of Sembrando Salud focused on socialization and gardening in a four-acre organic garden constructed adjacent to the Elfrida Chiricahua Clinic. Activities included adobe brick making, straw bale construction, and organic gardening methods. A Southwest Pueblo style adobe oven, or horno, was built with adobe bricks made from soil taken from an area that later became the garden pond. The horno became the focus of pizza parties and other healthy eating cooking events in the garden. Raised bed planting towers were established in a hoop


Planting tower

house by Master's level Therapeutic Horticulturist, Crecencio Elenes, who now resides in Lima, Peru. The underlying principle behind the raised beds was to grow significant produce in a small space and that allowed individuals with limited mobility (those utilizing walkers/wheel chairs) to garden at a comfortable level. Gardening in these grow towers was opened to any adult in the community who chose to garden in Elfrida.

Outcomes from evaluation of a convenience sample of participants in the SAMHSA projects showed that Sembrando Salud participants reported statistically significant (a - .05) reductions in symptoms of several behavioral health conditions, including depressive disorders, anxiety disorders, and traumatic stress disorders. The comparison group did not report similar changes in the number of symptoms of these behavioral health disorders. In addition, the intervention group also reported sustained, statistically significant increases in general social support while the comparison group reported a brief decrease in general social support. The increase in reported general social support is congruent with one of the primary features of the intervention, increasing the number of persons with whom intervention participants interact with, as well as the amount of time they spend in these interactions.

In 2011, a second grant was received from the United States Department of Agriculture (USDA), and included the placement of two planting towers in the homes of 57 low-income families in the Douglas and Elfrida area. Each participant not only received the installed towers but seeds and on-going gardening instructions. An instructional DVD on Organic Method Gardening was produced from videos of educational events in the garden. Since that time, the project has grown to encompass six greenhouses in the Elfrida garden that allow for year round production.

A current focus of the garden and CCHCI is the prevention and treatment of childhood obesity. In 2012, a grant from the Safeway Foundation established the "Safeway Healthy Kids Clubs"—an innovative obesity prevention and treatment project that empowers children to achieve a lifetime of weight control and good health through skill development, including an un-

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Ask a Master Gardener

Cochise County Master Gardeners are available to answer your gardening questions either by telephone call to the Cooperative Extension Office or on-line on our web site at:
www.ag.arizona.edu/cochise/mg/
Here are two of the recent inquiries and their answers:

Question: I need a source for Hatch, NM chili seeds. I have heard that they actually come from southeastern Arizona.
Answer: Ed Curry of Pearce, AZ grows most of the seed for Hatch Chiles. His web site is: **http://curryseedandchile.com/portal/Home/tabid/60/Default.aspx**

Question: Can I get rid of grubs using chemicals?
Answer: Simply put, grubs are hard to treat chemically. Just pulling them off of plants and out of the ground is one way to manage them. Birds like to eat them.

We have recommended the use of nematodes which is a natural group control and effective. I am going to send you a website that has info on the use of nematodes. I am not sure exactly how your friend will be using pest control, so I will let you and her read the info and make a decision about using nematodes. If you want to contact us after you have read the material, feel free to do so
http://nematodes.com/

Cochise County Master Gardener
Newsletter Editor
Carolyn Gruenhagen

In a Desert Garden

Hollyhock—*Alcea rosea*

I am sure, everybody is familiar with Hollyhocks, the old-fashioned garden plant, originating from the Mediterranean regions. This plant has conquered gardens all over the world. No English garden would be complete without hollyhocks. It was growing in my mother's garden in good old Germany, and it is growing in my little desert garden now.

This plant does astonishingly well in our climate. It doesn't mind the dry heat and it withstands the winds and the hot sun, and for sure, it loves our spring. The flower stalks are starting to grow now, and it will not be long before the flowers appear.

The first time I went to a "High on the Desert" conference more than 17 years ago, I visited the table of the Sierra Vista Area Gardeners Club and took home a packet with hollyhock seeds and thought, "Why not? I try everything once." Well, the offspring of the first plants are still growing in my yard. Of course, they are not quite in the same place as they have moved around and the colors have faded to a light pink. The first flowers were red and white. As they get cross pollinated they have bleached out over the years, but they are still beautiful. A good friend dug up a plant with hopefully red flowers from her yard and I planted it to intensify the color for next year.

Hollyhocks are quite drought tolerant and can easily be over-watered. They prefer a sandy soil, but have survived in my heavy clay soil. They also like a lean soil without too much compost. After the plants set seeds, it is good to cut the stems down to the rosette of leaves as this might make them re-bloom, but don't forget to throw out some seeds for next year's bloom. The seeds will sprout and start little plants in fall and these will produce flowers next year. Sometimes plants grow in places with too much shade and this can result in fungal problems and attacks from whiteflies. I have good results in relocating plants that grow in places not suited. If it is done early in the year when the weather is still cool, it is successful. The plantlets should be watered deep the day before and as the roots are long, it is good to dig deep.

There are a variety of plant seeds available—old-fashioned ones that grow very tall, modern varieties that are smaller, single flowers, double flowers, colors in every shade from white to almost black, from deep red to hot pink and soft pink, and even in a shade that is almost yellow. All you need to do is to throw out a few seeds (I would cover them with small gravel). So go for it! I am sure there is an empty place in your yard that can use some color.

Angel Rutherford. Master Gardener Photographer

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derstanding of gardening, good nutrition, cooking classes, and engaging in physical activities such as dance and strength training. In a weekly after school club format, 3rd and 4th graders in Naco and Bisbee are gardening in school gardens, and learning about nutrition and cooking from a nutritionist with the University of Arizona Cochise County Extension Service, and using produce from the Elfrida Community Garden and their own school gardens. Children also will be visiting the Elfrida Community garden and the local Safeway store. Contests for physical fitness are family based and video tapes of children cooking will be entered in the Kids Cooking Network (TKCN) to compete to win a spot as a TKCN reporter.

In addition, as a place for people in the area to simply come and enjoy the natural beauty or walk among the 150 fruit trees in

the orchard, the Elfrida Community Garden provides regular gardening educational events for the community. The second annual Garden Expo, held on April 6, 2013 drew a crowd of over 800 people who shopped at more than 40 vendors, ate at 6 food booths, and accessed 12 educational sessions. The garden has received national and state acclaim for the innovative approach to improvement of mental and physical health. Most recently, in 2012, the Elfrida Community Garden was the recipient of the Arizona Association of Community Health Centers' award for innovation in health care. The Sembrando Salud/Sow-ing Wellness program and the Elfrida Community Garden are ongoing programs, supported in large part by Chiricahua Community Health Centers, Inc., and supplemented by sales of organic produce at Sierra Vista, Bisbee, and Elfrida farmers markets.

Jennifer "Ginger" Ryan, MBA/Ph.D., CEO – Chiricahua Community Health Centers, Inc. & Anita H. Wood, Ph.D., project consultant with Chiricahua Community Health Centers, Inc.
Authors are Master Gardener Trainees

At a Glance Box

Paper flowers

Cochise County native plants: *Psilostrope tagetina* and *P. cooperi*, "Woolly and Whitestem Paperflower"
Plant type: Short-lived perennials, approx. 1 foot high and wide
Native habitat: Arroyos, mesas and plains, 2,000 to 7,000 feet elevation
Culture: well-drained soil, full sun, at least 15F cold tolerance, minimal if any supplemental irrigation. Too much water discourages blooms
Bloom: One-inch yellow flowers bloom March-September, attractive dried flowers stay on plant
Landscape use: Plant with red and blue salvias, agaves, cacti. Brilliant blooms add pizzazz and cheer
Specimen: In the Cochise County Herbarium on UA South campus
For the rest of the story and more information click here.

Ms. Cado Daily, M.A.
Water Resources Coordinator, Water Wise Program
University of Arizona Cochise County Cooperative Extension

Microloans Are Cultivating Big Dreams on a Small Scale

Microloans are helping small, niche and beginning farmers and ranchers meet their goals. The less burdensome and more simplified loan process allows producers to apply for a maximum of $35,000 to pay for initial start-up expenses such as hoop houses, essential tools, irrigation, delivery vehicles and annual expenses such as seed, fertilizer, utilities, land rents, marketing and distribution expenses. Producers interested in applying for a microloan should contact their local FSA office to make an appointment with a Farm Loan Officer or Manager.