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Maricopa County Master Gardeners: Cultivating Plants, People and Communities since 1980:
Master Gardener volunteers are trained by University of Arizona faculty and staff during a 17-week course. They provide educational leadership to the community with research-based horticulture knowledge. Volunteers promote efficient use of water, fertilizers, and pesticides, and preservation of our desert environment.

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Northwest Valley Satellite location: Property Owners & Residents Association (PORA) Office 13815 Camino del Sol Blvd., Sun City West, AZ 85375. Phone 623-546-1672. Hours: 9 a.m.-1 p.m. Monday-Friday.

East Valley Satellite location: East Mesa Multigenerational Center 7550 E. Adobe Rd., Mesa, AZ 85207. Phone 480-498-0338. Hours: 9 a.m.-noon, Mondays and Thursdays.

Northeast Valley Satellite location: Via Linda Senior Center 10440 E. Via Linda, Scottsdale, AZ 85258. Phone 480-312-5810. Hours: 9 a.m.-4 p.m., Tuesdays and Thursdays.

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Cover Photos: (clockwise from top left) Banana trees by Dick Gross Mulga, Texas Mountain Laurel & Desert Willow by Candice Sherrill

Lucy Bradley, Extension Agent, Urban Horticulture
2003 was an exciting year for the Master Gardener Journal, culminating in the newsletter being named first-place winner in the National Association of County Agricultural Agents’ Western Region, in the division of Team Newsletter.

Candice Sherrill, editor since 2002, worked diligently to make certain that Journal readers were treated to the very latest and best information concerning plants and gardening, skillfully planning, researching, and editing every issue. Talented Phoenix artist Donna Atwood not only gave the newsletter a wonderful new design at the first of the year, but also did the layout for each issue while finishing her coursework for a bachelor’s degree in Fine Arts at ASU. Jo Cook, Internet maven par excellence, took time out of her busy schedule to convert each issue into HTML for uploading onto the MG Publications site.

Regrettfully Candice and Donna are moving on to other projects, but we’re looking forward to building on their wonderful contribution and making even more improvements in the coming year.

MEET OUR NEW LAYOUT ARTIST
HEIDI KIRSCH
Heidi is an administrative secretary with the Maricopa County Cooperative Extension. Heidi has strong desktop publishing skills and a great sense of design, and will be taking over the composition and layout of the Master Gardener Journal. We appreciate her taking on this new role with the Master Gardener program.

MANY THANKS TO OUR 2003 WRITERS AND COPY EDITORS...
...as well as those who contributed photographs and illustrations during the year. We look forward to being able to publish more of your work in 2004, and we welcome the participation of new Master Gardeners as they come into the program. Our special thanks to: Marion Adams, Sherry Allen, Diane Ashcroft, Donna Atwood, Christine Bahto, Duise C. Barnes, Janet Beaver, Copper Bittner, Jack Blake, Lucy K. Bradley, Vicki Bundy, Anne Byon, Judy Curtis, Tom DeGomez, Donna DiFrancesco, Lisa Dubas, Sandra Forsey, Coral Gallaher, Dick Gross, Linda A. Guy, Sue Hakala, Barb Hamilton, Evelyn Helm, Jeanette Irwin, Dr. David M. Kopeck, PhD., Kris Lecakes-Haley, Ron Mark, Becky McAneny, Mike Mekelburg, Terry H. Mikel, Jo Miller, Bonnie Newhoff, Annalisa Palacios, Nicol M. Price, Laurel Reader, Cathy Rymer, Jeff Schalau, Chris Schnier, Candice Sherrill, Lenora Stewart, Willetta Stimmell, Tyler Storey, Carol Stuttard, Terry Tanner, Linda Trujillo, Sandy Turico, Debora Villa, Ellen Wait, Audrey Wolff, and Carol Zimmerman.

Eat More Dirt
By Ellen Sandbeck
Broadway Books, Random House, 2003, 196 pages, $10.95 at Amazon Books

Although author Ellen Sandbeck is serious about the principles of organic gardening, her book Eat More Dirt is written in a casual and humorous manner. Sandbeck wants people to create gardens they will enjoy, rather than gardens they should enjoy.

Blending research and personal experience, Sandbeck, a landscape gardener, presents material to help beginners feel confident; yet even seasoned gardeners should come away with a few new tips.

Readers here in the Southwest will appreciate the fact that Sandbeck continually provides information appropriate for gardening in a desert environment. She emphasizes the physical side of gardening, by providing instructions on proper body mechanics when using tools as well as appropriate stretching exercises (complete with graphics of budding plants that demonstrate the moves).

Early chapters cover organic gardening, pest management, soil health, plant choices, and design, and then Chapter 10, “The Meditative Gardener” reminds readers that gardening is good for our mental and emotional health.

Eat More Dirt is informative and fun; it will motivate you and at the same time help you avoid taking your garden—or yourself—too seriously. Enjoy!!
Calendar of Events

by Candice Sherrill, Master Gardener

JANUARY 2004

1/10—Junior Master Gardener Teacher/Leader Training. 8:30am to 1:00pm. Learn to lead Junior Master Gardeners! Teach young people the joys of gardening. Use a hands-on approach to explore horticulture & environmental science. Promote leadership, life skills & self-esteem in children. Sponsored by Cooperative Extension. Contact: ditucker@ag.arizona.edu. Phone: (602) 470-8086. Web: http://cals.arizona.edu/youthgardens

1/10 & 1/21—Introduction to Winter Annuals. Saturday Wednesday, 6:30pm to 8:30pm at Tucson Botanical Gardens. Mary Sisson-Eibs, Certified Nursery Professional and former plant nursery manager, introduces you to new and interesting annuals that are available and will thrive in Tucson’s unique gardening climate. Mary will show you samples of the latest color and foliage plants that can be combined to add “pop” to your landscape or containers. Wait until you see what’s out there! Your flowerbeds and patios will be the talk of the neighborhood. Cost: $12, $10 TBG members. 2150 North Alvernon Way, Tucson. (520) 326-9686.

1/17—Gardening for Snowbirds. Saturday, 9:30am to 11:30am at Tucson Botanical Gardens. Winter might be the nicest time to be in southern Arizona, but many garden plants go dormant and leave landscapes looking dull and bare. This class will help visiting snowbirds (and full-time residents) create landscapes that look great in winter and early spring using a variety of plants that thrive in cooler temperatures. Plant information and design tips provided by horticulturist Greg Corman will make all but the digging easier. Cost: $12, $10 TBG members. 2150 North Alvernon Way, Tucson. (520) 326-9686.

1/17—Australia Day. 9:00am to 3:00pm. Join us for a day in the land down under as Australian folklorist Paul Taylor spins stories, poems, and tall tales at Boyce Thompson Arboretum State Park, 37615 Highway 60 in Superior. The park is home to one of the largest collections of Australian plants in the United States. Join an 11 a.m. tour of the Australian Walkabout Trail and learn about the wonders of the giant gum trees. Have you ever wanted to build and play a didjeridoo? Mr. Taylor leads a class in this growling, howling aboriginal instrument from 9-11am! Cost: $350 public, $25-Friends of the Arboretum. Pre-registration required. Call (520) 689-5248 to enroll in the didjeridoo class.

1/24—Drip Irrigation. 6:30pm to 9:00pm. Take the mystery out of watering your landscape. Learn to design and install a drip irrigation system that will be water efficient and low maintenance. It’s easier than you think. Price: Free. Registration required. Location: Southeast Regional Library at Greenfield and Guadalupe Roads in Gilbert, Maricopa County. Contact: Lisa Hemphill at lisahem@ci.gilbert.az.us. Phone: (480) 503-6098. Web: http://www.ci.gilbert.az.us

1/31 and 2/7—Container Garden Paradise. Saturday, 9:00am to 11:00am at Tucson Botanical Gardens. Discover the joys of container gardening! Bring your favorite pot (up to 18” in diameter) and learn how to create and care for container plantings from award-winning floral designer Nancy Brown. In this hands-on class, Nancy will guide you through the planting process and provide tips on dynamite plant combinations that will make your patio or balcony come alive. Soil and plant materials will be provided. Limit 15. Cost: $25, $20 TBG members. 2150 North Alvernon Way, Tucson. (520) 326-9686.

FEBRUARY 2004

2/1—Winterfest. 9am to 5pm. at the Arboretum at Flagstaff. Explore winter wildlife during the seventeenth annual Flagstaff Winterfest. Members-free, Non-members: $4-adults, $3-seniors, $1-youths. Phone (928) 774-1442.


2/17—Drip Irrigation. 6:30pm to 9:00pm. Take the mystery out of watering your landscape. Learn to design and install a drip irrigation system that will be water efficient and low maintenance. It’s easier than you think. Price: Free. Registration required. Location: Southeast Regional Library at Greenfield and Guadalupe Roads in Gilbert, Maricopa County. Contact: Lisa Hemphill at lisahem@ci.gilbert.az.us. Phone: (480) 503-6098. Web: http://www.ci.gilbert.az.us
2/13 thru 2/15—Language of Flowers Show & Chocolate Tasting
Boyce-Thompson Arboretum, 37615 Highway 60 in Superior. This annual show is a living display of plants and their blossoms designed to interpret the Language of Flowers. For centuries flowers have been used for discreet and diplomatic communication when words proved to be difficult or impossible. A bouquet of red rosebuds, gardenias, and jonquils, for example, would send three messages, “You are pure and lovely,” “I love you in secret,” and “I desire a return of affection.” Also, sample decadent gourmet confections from Bernard Callebeaut Chocolatiers; morsels are available for purchase this weekend for an additional fee of $1 each or six for $5. Phone: (520) 689-2723.

2/15—Color Your World - Landscaping for Color. 6:30pm to 9:00pm. Does your landscape need a makeover? Perhaps just a tune up? This class will show you how to have fabulous color in your landscape year-round. Learn what to plant for an extended blooming season with plants that thrive here in the valley with very little effort. You’ll hear money-saving tips that will result in spectacular color in your landscape. It’s easier than you think. Price: Free. Registration required. Location: Gilbert at the Southeast Regional Library at Greenfield and Guadalupe Roads. Contact: Lisa Hemphill lisahem@ci.gilbert.az.us. Phone: (480) 503-6098. Web: http://www.ci.gilbert.az.us
Oh dear! Your treasured agave has sent up its life-ending flower stalk. Typical of its genus, you will have a chance to enjoy its superbly beautiful blooms for a period of time, and then it will die. The value of your agave needn’t end there, however. By converting the stalk into a nursery, you can preserve it as a reminder of your special plant.

To do this, cut the stalk to an appealing size with a saw and then wedge it between heavy rocks or similar features to maintain its verticality. The best location is a protected, semi-shaded area. As the stalk dries out it will become the perfect nursery for carpenter bees. These handsome bees are hairy, bluish-black, about an inch long, and as wide as your thumb. They won’t sting you unless trapped or threatened, and they are solitary and do not form a hive. They are excellent pollinators, and therefore valuable additions to your landscape.

Single female carpenter bees nest in wood. They will compete heavily for a chance to nest in your stalk. In the spring, you can sit at a safe distance of about ten feet and observe the females posturing with each other to see who will get the prize, sometimes for days at a time.

The winning architect will chew into the stalk to tunnel out an 8- to 9-inch section of tunnel that is three-quarters of an inch in diameter. If you listen closely you’ll be able to hear the chewing and digging, and you’ll notice telltale sawdust collecting at the base of the stalk. At some point during this time the bee will mate, and when her tunnel is finished she will collect pollen—fertilizing your plants in the process—and return to the nest with it.

The female carpenter bee will then roll the pollen into a ball and place in the bottom of the tunnel to become food for her developing offspring, after which she will lay an egg on top. Finally, she will chew cellulose from the stalk and form a roof over the cell. She will continue this process until the tunnel is relatively full of eggs.

I’ve observed females returning to their tunnel at sunset for their night’s sleep, and then very early the next morning I’ve seen them sleeping in the tunnel doorway guarding their brood. When the bees are ready to emerge, each in turn will chew through the roof of their cell. They bees will then over-winter in the tunnels; in this case inside the agave stalk you have provided.

Carpenter bees normally use dead tree limbs or other unfinished wood such as firewood as nurseries. If you see them tunneling into wood that has value to you, you can protect it by covering it, varnishing it or painting it.

I’ve had bees nesting in a cherished agave stalk for several years. They provide pollination as well as a great deal of entertainment. Even better, observing them affords children a wonderful lesson in natural history.
Pruning My Red Bird of Paradise

by Judy Curtis, Master Gardener

Question: I notice that some of my neighbors are pruning back their red bird of paradise shrubs (Caesalpinia pulcherrima). Is this the right time of year to do this?

Answer: Yes, this is the time of year you begin to see red birds hacked, axed, and stubbed into all sorts of grotesques shapes. If there were an equivalent to the SPCA for plants, I would choose to report abusers who deform not only red birds but Texas rangers (Leucophyllum frutescens) and cassias as well. If asked why they are pruning, most homeowners will reply, “Because everyone else is.”

Consider the following dialogue:

Me: What would happen if you left them alone?

HO: They would look ugly during the winter when the leaves fall off.

Me: So, do you cut down your shade trees because they lose their leaves in winter?

HO: No, but the red birds will grow too large.

Me: What is “too large”? If left alone and not over-watered, the red bird is simply not a large shrub. And its natural growth habit is quite handsome.

In fact, all three of these plants—red birds, cassias and rangers—can survive on natural rainfall here in Phoenix. I have established specimens of each, and I seldom water them. I do prune them lightly every couple of years, and I cut the green pods off of the cassia so I won’t have volunteers coming up everywhere.

If you give them a once-a-month soak in the summer and leave them alone from November through March, they will look good on this watering schedule and not grow too fast. The need for pruning will be reduced drastically, and you will save time and money.

So sit back, enjoy them, and let them do their thing.
Coping with those Irritating Weeds!

by Sandy Turico, Master Gardener

Is there anything more irritating to home gardeners than discovering those pesky weeds in their gardens and landscapes? Weeds are not only unsightly, they compete with our more attractive plantings for water, light and nutrients. The secret to tolerating weeds is to learn to control them before they take over your yard.

Here in Maricopa County, homeowners battle infestations of such weeds as nutsedge, spurge, dodder and oxalis in lawns, desert landscapes and gardens. Even Bermuda grass can be regarded as a weed when it spreads into areas where it is not wanted.

FIRST STEP: PROPER IDENTIFICATION
How can the homeowner keep these nuisances to a minimum? First, know what you’re dealing with. Check with your library, the Internet, your neighborhood nursery, or the Cooperative Extension Office to help you identify the weeds you are trying to control.

You’ll discover that weeds may be annual or perennial, grass weeds or broadleaf; there are those that reproduce by seed, and those that reproduce by stolons or rhizomes. Some weeds are prevalent in lawns, others in desert landscapes. Some invade both. It is important to be aware of the type of weed present in order to treat the problem correctly.

You may be trying to cope with annual weeds that complete their life cycle during one season; spurge, puncture vine, dodder, mustard and bur clover are examples of annuals. Summer annual weeds sprout in the spring and go to seed in the fall; winter annuals germinate in the fall and live through the winter before dropping their seeds.

Perennial weeds such as oxalis, nutsedge, wild celery, field bindweed, or Bermuda grass may be causing problems in your landscape. Perennials are harder to control because they can survive for many years.

CONTROL
Mechanical controls can be very effective and do not negatively impact the environment. There are a variety of ways to exterminate weeds without resorting to chemicals. While the following methods may require a little extra exertion, it is well worth the effort.

Organic or gravel mulch is one of the most efficient ways to keep the weeds down. A few inches of mulch will deter seeds from germinating and growing. Weeds that do manage to grow through the mulch are easier to pull out. Think twice about laying plastic under gravel; although it may be of some help in controlling annual weeds, the perennials may grow right through the plastic. In time the material will begin to fall apart and become another problem to deal with.

Eliminate weeds before they develop seedheads. Seeds laying dormant in the soil will germinate when the temperature and
moisture conditions are right or when the soil is disturbed. You can stay ahead of the game by reducing the number of those seeds.

Grab a hoe or shovel to get rid of weeds. Removing the top growth repeatedly will weaken the plants and eradicate them if you’re patient; digging out roots and rhizomes (underground runners) will also get rid of them in due course. Don’t leave the weeds you’ve removed on the ground. Dispose of them or throw them on the compost pile (minus the seedheads!).

Other natural ways to manage your weed problem include solutions as simple as vinegar or boiling water. Always try mechanical or natural methods first. The environment will thank you!

If your weed problem has become unmanageable, you may decide to resort to chemical controls. There is an arsenal of herbicides available to homeowners locally. Pre-emergents, contact herbicides, foliar-applied translocated herbicides…the options can be confusing as well as hazardous. Become informed about the different alternatives: read the labels and proceed with caution! The Cooperative Extension offers a number of publications (8103, 8653, MC51, Q349) that list various herbicides and provide details about their use.

Like it or not, weeds are a fact of a gardener’s life; short of paving over one’s entire yard, there is no way to entirely eliminate them. Still, armed with the right information and proper tools they can be managed efficiently. Your reward will be relaxing in a beautiful, weed-free outdoor environment!

Who Am I?

by Candice Sherrill, Master Gardener

I am a perennial evergreen groundcover native to Central and South America.

I will mature to a height 12 to 18 inches with a spread of 5 to 6 feet.

My glossy, dark green leaves develop to 4 to 5 inches in length and have 3 to 5 shallow lobes. The lobes sometimes cause people to mistake me for ivy.

I have an attractive trailing habit but don’t like foot traffic. When planted, I quickly form a dense horizontal mat that can be cut back to near-ground level if I lose my compactness as I age.

I tolerate sun and heat, but prefer at least partial shade here in Phoenix.

Hard frost can cause me to die back to the ground, but I recover rapidly with the advent of warm weather.

I have no reported insect or disease problems.

My growth rate and the flower display depend on soil richness and watering regimen, but I will generally do well in sandy, well-drained soil and survive with bimonthly irrigation. I am also relatively salt tolerant.

My hairy runner-like stems take root where nodes touch the ground, and it’s easy to propagate me by placing cuttings from these stems in moist soil.

I have small, 1-inch yellow composite flowers that may be reduced in number if I am grown in heavy shade. Otherwise I flower heavily from spring through summer, and may bloom year-round in warm climates.

Landscapers generally recommended me in cases where the feel of a lush mini-oasis is desired, for erosion control on hillsides, to cover bare areas between widely spaced plantings, or for large raised planters or retaining walls where my stems can trail attractively and soften the look of brick and stucco finishes.

Still don’t know who I am? Then turn to page 8 for an introduction.

Photography: Candice Sherrill
Experiencing the Wonders of Composting

by Mary Steenhoek, Master Gardener Intern

O f all the things I’ve done in my life, nothing has been more satisfying than composting.”

The above quote came from a conversation with a fellow master gardener intern, and I am in close agreement. Over and above the miracle of seeing green leafy plants and vegetables being spun out of tiny seeds and thin air, I think composting is the most wondrous natural occurrence there is.

When I was a child in Iowa, we left the fallen autumn leaves on the ground to mix with the final grass clippings of the late fall to make “good soil for the spring.” We didn’t call it composting then—Nature was just recycling itself. These days we enlarge on that same process, setting up a contained area and controlling nature to produce rich humus.

WHY COMPOST?

One of the basic tenets in gardening is to “Feed the soil, not the plant.” Or to put it more precisely, if your soil is healthy your plants will be happier and healthier. If compost is mixed into garden dirt (ideally to a depth of 12 inches but at least to 4 inches) the soil will be cooler and not erode as easily, and plants will have fewer diseases.

Water and soil provide 96 percent of a plant’s needs; the additional 4 percent (nutrients) are best supplied through natural organic materials. Compost is the best organic fertilizer because nutrients are taken into the plant more slowly than if they were fed a fertilizer. They can absorb what they need when they need it. Furthermore, plants do not burn in composted soil.

And one final important reason to try composting is that you’ll be aiding the environment by limiting the number of trucks going to the landfill!

THE BASICS

Books say composting may take anywhere from 6 weeks to 6 months, depending on how fast it “cooks.”

The four basic elements of composting are:

ORGANIC MATERIALS—These will ideally include a mixture of “green” (grass clippings, kitchen fruit, vegetable scraps) and “brown” (dry leaves, sawdust, newspapers) materials. These green and brown materials should be layered.

WATER—Use just enough water to make the mixture wet; we don’t want a pond—neither do we want a dust pile.

AIR—Some sources claim that air helps the process immensely; others say it isn’t essential. It was the idea of introducing air to the mixture that seemed most daunting to me at first.”You mean you have to go out and turn it?” I asked out of either fear or procrastination. Since then, however, I have found that turning the compost is one of the most enjoyable steps. Truly, although most books say once a week is a suitable interval, I have occasionally had to restrain myself from going out more than once a day.

BACTERIA

YOUR FIRST COMPOST

I researched several different methods or recipes for do’s and don’ts, and the following is the advice I followed.

First you must decide where you will be doing all this. I chose a back corner of our yard that we had once cleared for a garden but never used because there was too much shade. This area seemed perfect because it was surrounded by tall rosemary bushes that would hide the water bucket, spade and pitchfork I would be using. Although some claim that composting requires sun, experience has taught me that it may help but it certainly isn’t a necessity. Our compost got very little sun, and I had rich soil in 8 weeks.

We fashioned our compost system ourselves, but there are fancy commercial bins available through catalogs that have built-in hand cranks for aerating and offer other advantages. You can also call the city where you live and order a recycled garbage container that has been converted for the purpose of composting. When it shows up you’ll notice that the bottom has been cut off and 1-inch air holes have been drilled in the sides. You can place your bin just about anywhere, but most people opt to keep them out of sight of visitors.

You can turn your compost with a spade or pitchfork, or you can purchase a hand auger to make this chore easier. A lid is optional; composting is not a smelly business for the most part, but gnats and flies love to be an early part of the process and a lid helps contain them. My husband cut a round lid from a board I bought at the Home Depot for $4, and attached a handle.

My first step was to dig a hole about 15 inches deep. In it I threw some kitchen waste, as well as some torn up newspaper and paper egg cartons. I then sprinkled a little of the dirt I had
removed from the hole on top, to keep down flies and odors, and finally I poured a little water from a bucket over everything. After that, I added kitchen scraps that I had collected in a plastic container on the back patio every 3 or 4 days, along with some brown leaves and water. Before each addition, I used a spade to turn over what was there.

At one point I went to the bait and tackle shop and bought a couple containers of worms and released them into the pile, then watched them quickly disappear down into their new quarters. Worms aid in the process of decomposition, and their castings enrich the compost and make plants very happy. Experts say red wiggly worms are best.

After eight weeks the bacteria had naturally done their thing. One day I went out to turn the pile, and there was no sign of anything I had put there except for one bedraggled pineapple top that had yet to be recycled. I dug my spade in, and what came up was beautiful rich, loose dirt.

I dug deeper and deeper, but all the garbage had been transformed into fluffy, rich-smelling (some say it is like fresh apples) black soil.

I had done it! I had composted! I felt like dancing a jig across my backyard. That which I had feared and avoided doing for so long had transformed itself into a sweet surprise.

And what can you do with this wonderful product? In the spring you can spread it where you want to plant your garden; flowers, vegetables, bushes, and trees all love rich humus. Then as the growing season progresses you can layer it over your soil to keep the ground cooler. I made a 1/4-inch screen sifter that fits over my wheelbarrow top for the purpose of sifting out fine soil—an optional fine point of composting.

There are many ways to compost, and many things I’m certain to learn after this first experiment. If you’re reading this and thinking about putting together your first compost pile, my advice to you is JUST DO IT. Another friend says, “Compost happens,” and she’s absolutely right. For all the research and different recipes available, in the end Nature has its way. All you have to do is begin the process, and it will take over and make you a successful compost maker.

REFERENCES:

Answer to Who Am I? page 6
Common Name(s):
Wedelia, Yellow Dots
Botanical Name:
Wedelia trilobata
Family: Asteraceae
Note: When Wedelia isn’t in bloom, its creeping growth and lobed leaves give it a somewhat ivy-like appearance. For desert dwellers wanting the look of ivy, Yellow Dots isn’t as thirsty, tolerates sun better, and will generally fare better in our soil and climate conditions. Just don’t expect it to climb walls without help—it isn’t a vine!
Banana trees may not be plentiful in Phoenix and surrounding areas, but if you take the time to look you will occasionally notice their broad leaves peeking over a back fence or adorning a sheltered enclave in a front yard. Most of these banana plants will be of unknown or unnamed varieties, grown more for their appearance than anything else. For the sake of this discussion, however, it can also be assumed that many of their titled cousins, the varieties you see in local supermarkets, will flourish here as well.

Temperatures over 100 degrees and the occasional frost can take their toll, but with a little luck and a bit of acquired know-how you can raise banana plants successfully here. You can enjoy the sight of their beautiful, tropical leaves growing next to your saguaros and palms and, better still, you can treat yourself to a banana split made with your own homegrown bananas.

DESCRIPTION

The banana is not a tree, but an herb. Julian W. Sauls, Extension Horticulturist with the Texas A&M University Agricultural Extension Service, describes it as a tropical, herbaceous plant consisting of an underground corm and a trunk (pseudostem) comprised of concentric layers of leaf sheaths. A true stem, with a terminal inflorescence (flower) that bears fruit, is the last thing to emerge from the center of the pseudostem. The flowers appear in groups called “hands” along this true stem.

PROPA GATION AND GROWTH

A single banana pseudostem will live only 2 to 3 years, or until its fruit is harvested and it is cut down. But the corm from which it grew can survive for many years, and every one of the dozens of pups it produces has the potential to develop a stalk of bananas. The corm will continue to enlarge and store energy to nurture an endless supply of pups.

To harvest the pups for purposes of starting new plants, allow them to reach about 2 feet in height and then sever them from the mother corm by inserting a sharp, clean 12-inch to 15-inch narrow shovel to its full depth vertically all the way around the pup’s stem. Worry the base out while inflicting as little trauma as possible, and wash off all the soil. To conserve moisture in the corm, lop off all the leaves about 2 inches above the tip of the stem. If a pup has no roots at all, it probably won’t survive. Toss it. Even if there are roots they won’t survive the trauma. Cut them off close to their point of emergence from the corm, and new roots will grow from dormant eyes at the right time. Let all wounds scab off in full shade for several days before...
planting at the same depth. Keep the soil on the dry side until active new growth appears.

Although you should grow banana plants in full sun, even in the summer, shade can be an important factor where young transplants are concerned. Normally, new shoots arising naturally from underground buds in an established corm receive nourishment from the corm during their first few months of existence. During this period the other members growing from the same mat provide necessary shade. However when you sever a young plant from its mother and plant it with its few roots cut off, you must be prepared to provide shelter and water until it can grow new roots, adapt to the new environment, and eventually build a colony of its own.

Strong winds tend to shred the leaves of bananas, but the green tatters will still photosynthesize and manufacture food. You should keep each individual leaf attached to the plant until at least two-thirds of it has turned brown. The unattractive dead leaves don’t need to be removed after that, but if you wish to do so for cosmetic purposes you can shred or chop them up and layer the debris around the base for mulch.

A single banana pseudostem has a short lifespan, producing one stalk of bananas in about 18 months in ideal soil and climate conditions. In a less-than-perfect environment, however, you may have to wait 2 years or longer to sink your teeth into your own home-grown, tree-ripened banana.

Banana plants multiply rapidly. One plant will form a grove in 2 or 3 years, and will need to be restrained to remain attractive.

FLOWERING AND FRUITING

Bananas frequently bloom in Phoenix, but fruit is often stunted and limited to 3 or 4 hands with rather bland flavor. Tasty fruit can be produced here, however. Poor fruit quality may be a function of genetics, but more likely it is the result of nutrient deficiency and inadequate water. Quality can also suffer when the flowering stem is engulfed in a dense banana grove, or grows in close proximity to other hungry, thirsty vegetation. Fruiting exacts a large energy toll from the corm, requiring a lot of food and water to sustain it. Competition for the available nutrients is not helpful. Fertilizers high in potassium (K) are recommended to enhance quality, and are evidently a part of a healthy banana’s diet.

Strictly speaking, there is there is no such thing as one “banana plant” in nature. Multiple stems emerge from a corm that continually enlarges and sends up new shoots. With adequate food and water, you will always have a “herd,” ranging in size from large to small, popping through the soil. To get the best and most fruit, especially under less than ideal conditions, you should limit the population of any group to three stems, staggered in size. You will need one adult (that will be chopped down to a 2-foot stub after the stalk of bananas is harvested), one juvenile, and a baby. Remove all other growth.

You can sever suckers at their base as soon as possible after emergence. Scoop out a hollow and fill the cavity with kerosene to kill the bud that will otherwise continue to grow and consume energy. After the inflorescence has emerged, lop off the flower head as soon as the hands fail to set. The immature, tiny fruits will fall off naturally. Bananas are believed to flower only after a certain number of leaves have been produced. Guesstimates run to 60 leaves, but the number of months it takes to reach the magic number depends upon the plant’s immediate environment. You can count them if you really wish to satisfy your curiosity.

After a stalk of bananas has developed, it may be 5 to 7 months before the fruit is mature and ready to pick. During this period you can protect the stalk from the direct summer sun by covering it loosely with a reflective lightweight material such as an old T-shirt. Harvest by cutting the stalk at the yoke when the ribs on the bananas have practically disappeared and have the appearance of a supermarket banana. Hang in a dark sheltered spot to ripen,
Before planting your banana, you should test the soil’s ability to drain. Dig a post-size hole about 2 feet deep and fill it with water. If it empties within 2 hours, the drainage is ideal. It is very important to note that there is a danger of over-watering once a banana plant has been put in the ground. If you irrigate a banana to the extent that the soil becomes saturated, the roots won’t get air and rot will set in. Learn to adjust the irrigation frequency to the rate at which the water permeates through and out of the root zone with a flushing action. Wet feet can kill bananas any time of the year, but winter is a particularly crucial period; water should not be added until the soil is quite dry during these months. This herb is susceptible to diseases associated with cool, wet, soggy soil. (Our climate does not appear to harbor numerous other diseases that tend to plague the banana in the tropics).

Banana feeder roots can reach as far away from the pseudostem as the tips of the leaves extend outward. A common tendency is to irrigate in a basin tightly encircling the corm, but under those conditions the plant often languishes from malnutrition. Roots will not penetrate into dry soil, and a restricted root system will retard every other feature of the banana plant. So if at all possible, water deeply and feed to the edges of leaves and just beyond.

or leave it protected on the plant. Pick a “hand” at a time, as desired, and let it ripen on the kitchen counter like any other banana.

WATERING
The banana needs well-drained, rich organic soil. In warm weather the plant needs plenty of water, but during the winter months when morning temperatures drop to about 55 degrees Fahrenheit, growth virtually shuts down and very little moisture is required. During this time the soil around the plant should be damp, but irrigate only enough to keep it that way. When thirsty, banana leaves tend to fold together to conserve moisture. If you study them, you will soon learn their sign language.
FERTILIZATION
It is often said that an old compost pit is the perfect spot to plant a banana; however, you would still have to fertilize the plant. Bananas can be fed by foliar application weekly with a balanced, soluble fertilizer. Apply by drenching the leaves on both sides during a cool part of the day. It is better to provide frequent light feedings to these herbs only when actively growing, than to supply sporadic, heavy doses of nitrogen that is quickly leached away.

During the active growing season, apply 1/4 cup of ammonium sulfate every 2 weeks on non-fruiting plant groups, and 1/4 cup weekly on fruiting plants. Blend the dry fertilizer into damp soil in a shallow trench at least 18 inches from the clump, and water it in until a probe can be easily inserted 18 inches into the ground. Do not fertilize bananas when the morning temperature drops below 55 degrees. In cold weather, growth has virtually shut down and they cannot use the additional nutrient.

FROST PROTECTION
The average mild Phoenix frost of moderate duration will never kill the corn and roots, but the tender leaves will freeze readily unless they can be covered or otherwise protected. The length of the freeze is often forecast. That information is critical to determine the extent of protection you put in place. One hour at 32 degrees Fahrenheit may inflict minor injury; three hours at 33 degrees could kill every tender thing in your yard.

The shock suffered from losing its foliage will delay fruiting and set the development of a banana back several weeks, thus making the energy you spend saving it a worthwhile effort. Assume that this winter will bring a frost and prepare for it in advance. Depending on the frost severity expected, one or all of the following protective measures can be used if the plants are too tall to be simply covered with a sheet or frost cloth.

First, remove any heavy mulch from the basin until needed again for preserving moisture. You can plug in an air fan and direct the air into the leaves. Use one with the largest volume output you can find. An industrial oscillating fan on a stand works great. You can protect stems by wrapping them with old jackets or blankets. You can drape Christmas tree lights on the leaves, or place floodlight or other heat source underneath. Remember to use electrical devices with caution. In summary, you should grow bananas in full sun in well-drained soil rich in organic material. Water and feed them well during warm weather, let the plants rest during the winter, and protect them from the 2 or 3 mild frosts that occur each year. After that, you can mount a sign in your front yard that reads: TROPICAL FRUIT GROWN HERE.

BANANA RECIPES

BANANA BREAD
(Makes 1 large or 2 small loaves)
3 cups sugar
1 cup butter, softened
4 eggs
2 teaspoons vanilla
3-4 ripe bananas
4 cups all-purpose flour
1 teaspoon baking soda
1 cup milk
Poppy seeds (optional)
In a large bowl, beat all ingredients together in the order given. Spoon into one large or two small greased and floured loaf pans, and bake at 350 degrees for 30-45 minutes or until a tester comes out clean.

BANANAS IN PINEAPPLE JUICE
(Tasty fruit dish for an al fresco brunch)
One banana per person
Unsweetened pineapple juice (canned, or prepared from frozen concentrate)
Slice bananas into attractive bowls and garnish with a sprig of mint. Pass around a pitcher of pineapple juice as you would for milk and cereal. (Guests can sprinkle on a little sugar if they desire).
Where landscape trees are concerned, the best time to avoid pruning problems is before the tree is even put in the ground. The key is to know how much area you have to work with, so you don’t purchase a tree that overfills its space as it matures.

Tucson Botanical Gardens has compiled an extensive list of small trees for urban spaces in southern Arizona. The following is a list of a few highly recommended examples:

**MULGA**
(*Acacia aneura*)
Praised for its compact, upright growth habit, this attractive gray tree from Australia looks good with Sonoran plants.

**BLACKBRUSH**
(*Acacia rigidula*)
Slow growing to 10 or 12 feet and long-lived, this tree resembles Texas Ebony.

**PALO BLANCO**
(*Acacia willardiana*)
Excellent for planting close to structures, because it is slow growing and does not produce lateral branches.

**TEXAS OLIVE**
(*Cordia boissieri*)
This attractive tree has large evergreen leaves and long-blooming white flowers. It tends to stay under 15 feet in height.

**TEXAS EBONY**
(*Ebano ebenopsis*)
Very thorny, but its glossy dark foliage lends a tropical effect to a garden.

**DESERT FERN TREE**
(*Lysiloma watsoni*)
This is a clean native tree with lush, fern-like foliage.

**DESERT MUSEUM PALO VERDE**
(*Parkinsonia*)
A very fast grower that will reach 20 feet. It blooms heavily with yellow and orange flowers.

**TEXAS MOUNTAIN LAUREL**
(*Sophora secundiflora*)
A shrub-like tree with glossy leaves and purple flowers that smell like grape Kool-Aid.

**CHASTE TREE**
(*Vitex agnus castus*)
A deciduous tree with purple or white flowers in summer. It should be kept away from sidewalks due to its BB-like fruit litter.

**FUCHSIA GUM**
(*Eucalyptus forestiana*)
A very small tree, good for patios or large pots.
Spotting Nutrient Deficiencies in Citrus Leaves

Excerpted from AZ1007, “Guide to Common Nutrient Deficiency and Herbicide Injury Symptoms in Citrus”
http://ag.arizona.edu/pubs/crops/az1007/az1007-1.html

NITROGEN
Leaves show general yellowing of foliage, beginning with older leaves and then appearing on younger leaf flush. Leaves become progressively more yellow, with no distinct pattern. In severe cases, leaves will senesce and foliage will become sparse. Nitrogen deficiency often occurs in winter or early spring because of low tree nitrogen reserves, low soil temperatures and/or lack of root activity.

May be confused with iron, manganese and/or zinc deficiencies. Nitrogen deficiency generally occurs on older leaves first, while the other deficiencies occur on younger foliage first. Nitrogen deficiency may also be confused with Princep (simazine) herbicide injury.

IRON
Leaves show yellowing of new leaves. In mild cases leaf veins may remain green (interveinal chlorosis). In severe cases leaves will become ivory-colored with no visible venation followed by leaf and twig abscission. Iron deficiency often appears in winter due to low soil temperatures, and root inactivity. High soil pH will cause iron deficiency, especially in trees on trifoliate or trifoliate hybrid rootstocks, such as ‘Carrizo’, ‘Troyer’, or ‘Swingle’. Iron deficiency will also occur on poorly drained soils.

May be confused with nitrogen, manganese or zinc deficiencies. Iron deficiency symptoms occur on the younger leaves, whereas nitrogen deficiency symptoms occur on the older foliage. Intervenial chlorosis induced by manganese deficiency is less distinct than that caused by iron deficiency. Leaves of zinc-deficient trees exhibit chlorosis symptoms similar to that of iron, but are usually smaller.

MANGANESE
Leaves show interveinal chlorosis on the new foliage. Leaf size is normal. Veins appear green but are fuzzy or mottled; interveinal areas are yellow. Manganese deficiency often appears in winter due to low soil temperatures and root inactivity, but will disappear in the early spring. Only a persistent and severe pattern on the foliage needs correction.

ZINC
New leaves are yellow, mottled and smaller than normal. When symptoms are mild, veins remain green, and interveinal areas are yellow or cream colored. When symptoms are severe, veins turn yellow, especially near the leaf tip. Small green dots in the yellowed area may appear. Necrosis (tissue browning and death) may occur beginning at the leaf tip and margins. Severely affected trees exhibit leaf and twig defoliation. Zinc deficiency is common on trees affected with Macrophylla decline.

May be confused with iron and manganese deficiency. Zinc-deficient leaves are generally smaller than leaves that have iron or manganese deficiency. Necrosis usually occurs only on zinc-deficient leaves.
A survey of the landscape practices and preferences of 1800 homeowners by researchers at Arizona State University has some very interesting results.

More homeowners preferred an oasis-type landscape design combining desert-adapted plants and a small turf area for recreation. However, it seems homeowners with programmable irrigation systems do not adjust their water applications to seasonal changes as recommended by horticulturists and water conservation offices.

Also studied was the effect of frequent pruning on a plant’s water intake. Results showed that frequent pruning had the effect of increasing a plant’s need for water because of the increased production of new leaves to replace those lost. Plants given low irrigation volume and pruned only yearly had the highest water use efficiency.

Plant appearance preferences were evaluated, and survey respondents preferred shrubs with a more natural shape to those formally hedged.

When two yards containing typical desert-adapted plants were compared, the results were surprising. Although the front yards were similar in size and plant material, and contained no turf, the watering practices were dramatically different. One household applied 218,000 more gallons of water per year than the other — a difference of nearly 700 percent. However, “no measurable or visible differences in plant appearance or fitness” could be documented!

What does all this mean? Many homeowners apply more water to their landscapes than the plants really need. Most could safely adjust their irrigation practices and apply water less often without affecting plant appearance or health. Follow the chart below for recommended irrigation schedules.

Remember: “Plants Don’t Save Water, People Do”

Source: Arizona State University Central Arizona, Phoenix Long-Term Ecological Research (CAP-LTER)

http://ces.asu.edu/csrur
Word Wise
Definitions for terms used in this issue…

abscission (Nutrient Deficiencies p. 17)—the natural separation of flowers, fruit or leaves from plants at a special separation layer.

bracts (Going Bananas p. 12)—leaf-like or scale-like plant parts, usually small, sometimes showy or brightly colored, and located just below a flower, a flower stalk, or an inflorescence.

contact herbicides (Coping with Weeds p. 8)—herbicides that kill only those plant parts that they come in contact with, as opposed to translocated herbicides.

corm (Going Bananas p. 12)—a swollen underground stem, usually found in monocot plants, that stores food reserves so that the plant can survive winter or other adversity. Corms may be surrounded by protective skins, and are often dug up and used to propagate the plant.

cultivars (Desert Willow p. 20)—CULTivated VARiety. Cultivars are often hybrids between species, and may represent desirable traits from populations of a single species. They may be registered or trademarked.

dehiscent (Desert Willow p. 20)—opening in some definite way, as the capsule of a plant. Breaking open at maturity to discharge seeds or spores. Opening regularly to let seeds or spores escape by valves, slits, etc., as a capsule or anther.

dodder (Coping with Weeds p. 8)—An annual parasitic wiry twining vine of the genus Cuscuta. Dodder is characterized by the lack of chlorophyll and that fact that it has small scales instead of leaves. Thin stems twine around the host plant, and penetrating suckers withdraw nourishment.

herb (Going Bananas p. 12)—in general, a plant that does not produce wood and therefore is smaller than a shrub or tree; a plant grown for flavoring or medicinal purposes.

inflorescence (Going Bananas p. 12)—a flower head; the flowering part of the plant, particularly the arrangement of flowers on the stem.

interveinal chlorosis (Nutrient Deficiencies p. 12)—abnormal yellowing or blanching of the leaves (due to lack of chlorophyll) between structural vessels of leaves.

lenticels (Desert Willow p. 20)—pores on the surface of plant twigs or stems through which gases pass from inside the stem to the atmosphere or from the atmosphere into the stem.

phreatophyte (Desert Willow p. 20)—a deep-rooted plant that obtains its water from the water table or the layer of soil just above it

pre-emergents (Coping with Weeds p. 20)—herbicides or fertilizers applied before aboveground seedlings emerge.

pseudostem (Going Bananas p. 20)—an erect growth that appears to be a stem with leaves, but is actually overlapping stalks of essentially basal leaves.

rhizomes (Coping with Weeds p. 8)—thickened stems that grow horizontally below or on the soil surface, usually rooting at the nodes and becoming erect at the apex.

senesce (Nutrient Deficiencies p. 17)—to reach later maturity; grow old.

stolons (Coping with Weeds p. 8)—ground-lying or trailing stem that produces roots at the nodes.

terminal inflorescence (Going Bananas p. 12)—a flower head formed at the tip of a stem or twig.

venation (Nutrient Deficiencies p. 17)—the arrangement of veins in a leaf.
Desert Willow
Indigenous Imposter

**by Cathy Rymer, Master Gardener, Certified Arborist, Water Conservation Specialist Town of Gilbert**

**BOTANICAL NAME**
*Chilopsis linearis*

**COMMON NAMES**
Desert Willow, Desert Catalpa, Flowering Willow, False Willow, Jano

Although the long, narrow leaves of this plant are reminiscent of willows, this imposter isn’t a willow at all. Rather, it is a close relative of the catalpa tree, and a member of the trumpet vine family (*Bignoniaceae*), which also includes the genus *Teoma*. Desert Willow is drought-tolerant, and can be found growing naturally along our ephemeral streambeds or washes, where it offers natural protection against flood and erosion damage. From May through October colorful, lightly scented tubular flowers appear, making this attractive tree a popular choice for local urban landscaping.

Desert Willow grows as a deciduous large shrub or small tree that can reach 25 feet in height and 20 feet in width. Even without its familiar green foliage during the colder months, the silhouette of *Chilopsis linearis* is unmistakable on the western horizon in early evening. Its branches seem to zigzag their way to the edges of the leaf canopy, while long, narrow, papery pods hang decoratively and release their treasured seeds to hungry birds throughout the winter season.

**CLASSIFICATION & RANGE**
This strikingly beautiful plant primarily occupies dry washes, intermittent streams, and other watercourses of the damp canyon lands of deserts and mountain foothills between 1,500 and 5,000 feet in elevation throughout much of the southwestern United States and into Mexico. It is classed as a phreatophyte, and is an indicator that during part of the year water is not too far below the surface. One of the few trees in this region that is not a legume, it reminds us of the Sonoran Desert’s tropical heritage.

A long-lived component of somewhat-stable desert wash communities, Desert Willows often establish themselves in freshly deposited channel sediments following seasonal water runoff. Under this scenario, plants may trap sediments as they develop, leading to the formation of islands within the channel.

In its natural setting, common associates of Desert Willow include blue palo verde (*Cercidium floridum*), desert ironwood (*Olneya tesota*), catclaw acacia (*Acacia greggii*), smoketree (*Dalea spinosa*), mesquites (*Prosopis spp.*), desert broom (*Baccharis sarothroides*), netleaf hackberry (*Celtis reticulata*), and littleleaf sumac (*Rhus microphylla*).

**DESCRIPTION**
The natural form of this tree is multi-trunked with a graceful appearance. The long, narrow, straight or curving leaves are simple, linear, alternate, and range between 5 and 12 inches long and 1/4 to 1 inch wide with a surprisingly tough, leathery texture. The foliage on some trees can be aromatic with a slightly medicinal fragrance. The attractive white, burgundy, or pink trumpet-shaped, orchid-like flowers have distinctive yellow throats that serve as visual nectar guides for pollinators. Blooms appear in terminal clusters from May through October. The resulting seedpods are dehiscent, 4 to 9in long, and cling persistently on branches throughout winter. The bark of *Chilopsis linearis* is smooth when young, but develops rough fissures with age. Prominent lenticels are noticeable on new growth. Plants drop leaves in late fall following the first hard frost, yet they are cold hardy to 0 degrees Fahrenheit.

**PROPAGATION & CARE**
Adaptable to most soils as long as drainage is good, this tree prefers full sun but will tolerate partial shade. Established plants are considered drought-tolerant, requiring only the deep, infrequent irrigations recommended for most desert-adapted trees. Little maintenance is required for this tree, but minor selective pruning may
be appropriate if a more tree-like form is desired. Fallen leaves and seedpods will blend into a coarse groundcover, eliminating the need to rake or remove them.

Easily propagated from seed, Desert Willow can also be grown vegetatively from cuttings and is a fast grower in urban landscapes. Individuals have been selected from the wild, cross pollinated with other specimens, cloned, and marketed with characteristics such as specific flower color or growth habit. Some of the newer varieties are “Rio Salado,” “Lucretia Hamilton,” “Warren Jones,” and “Lois Adams.” Russian hybridizers from Tashkent, Uzbekistan crossed the catalpa (*Catalpa bignonioides*) with the Desert Willow, which resulted in the Chitalpa (*Chitalpa tashkentensis*), a tree that produces no seeds.

**LANDSCAPE USES**

In hot, dry areas the attractive form, willow-like leaves, and beautiful blooms of *Chilopsis linearis* are a welcome sight. It is a must-have for luring hummingbirds into a landscape, and even small native birds such as verdins will search out the nectar-producing flowers (although they tend to pierce the flower at the base as a shortcut). When placed on the south, east or west sides of homes, Desert Willows provide shade in the summer while allowing ambient heating in the winter. You can lend contrast to this tree’s deciduous winter appearance by planting evergreen shrubs and groundcovers nearby. It is one of the few native trees that will tolerate growing in a lawn area even with year-round irrigation and maintenance. Planted in groups, the Desert Willow can be used as a screen or windbreak. It also provides shelter for nesting birds.

**HISTORY & FOLKLORE**

The strong yet flexible wood of Desert Willow was used by Native Americans to craft their hunting bows. The wood has also been used by the Pima to construct houses, thatch roofs, and in the making of baskets to store mesquite beans, acorns and other foods. The fibrous bark was used to make nets and fabrics.

It is important to wildlife because it provides nesting sites and cover. Animals such as deer and birds also consume the leaves, fruit and the flower’s nectar. Birds eat the white-fringed seeds, and the nectar is used by bees for honey.

**MEDICINAL USES**

The Desert Willow’s flowers, leaves and bark have all been used in hot poultices and as a soothing tea for coughs. Other known uses were as treatments to guard against yeast infections, athlete’s foot and as first aid for scrapes and scratches. Tea (from the flowers) produces a natural anti-oxidant, which promotes cardiovascular health and regulates glucose metabolism.

By including one of these trees in your landscape, you can have color and fragrance; attract native birds and other wildlife; and have shade and/or sun in places where it’s needed. If you’re looking for a specific flower color, shop at local nurseries when the trees are in bloom. Desert Willow trees propagated from seed can vary in their flower production and color intensity. Named cultivars that are propagated vegetatively will be consistent in these characteristics. Look for a tree with good vigor and a profusion of blooms in the color you like.

Watch for Desert Willow gracing the cover of the new Landscape Plants for the Arizona Desert brochure featuring more than 200 low-water use plants, each with a full-color photo and description. Contact your city’s water conservation office or the Arizona Municipal Water Users Association at http://www.amwua.org or call 602-248-8482.

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The Northwest Valley Citrus Clinic will be held on Saturday, January 31, 2004 in Waddell at the U of A Citrus Agricultural Center, located North of I-10. Take the Cotton Lane off ramp North to Greenway Road. Take Greenway Road west for about two miles and follow the signs to the University of Arizona Citrus Agricultural Center.

Ticket Prices: $5.00 advance purchase or $8.00 at the gate.

Gates will open at 8:30 a.m. at each event with the clinic running from 9:00 a.m. to noon, followed by a one-hour question-and-answer period from noon to 1:00 p.m.

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Please dress for the weather, wear walking shoes and bring a chair if you would like to sit. Information: Maricopa County Cooperative Extension at 602-470-1556 and press 1013 for Northwest Valley or 1012 for East Valley. On the Web: http://ag.arizona.edu/maricopa/garden

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