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Maricopa County Master Gardeners: Cultivating Plants, People & 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 480-985-0338. Hours: 9 a.m.-noon, Mondays and Thursdays.

Northeast Valley Satellite location: Via Linda Senior Center
18440 E. Via Linda, Scottsdale, AZ 85258. Phone 480-312-3810. Hours: 9 a.m.-4 p.m., Tuesdays and Thursdays.

Urban Horticulture Staff:
Lucy K. Bradley, Extension Agent, 602-470-8086 Ext.323, bradleyl@cals.arizona.edu

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Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, at all events sponsored by the University of Arizona. Call 602/470-8086. Requests should be made as early as possible to allow time to arrange the accommodation.

Cover Photos: (clockwise from top left)
Palm Spray, Janice Austin; Velvet Mesquite, Candice Sherrill; Palm Tree, Janice Austin; Dianthus, Candice Sherrill

Lucy Bradley, Extension Agent, Urban Horticulture
PLANNING AHEAD

Calendar Of Events

by Debora Mortiz, Master Gardener

November 2004

11/6 & 11/13 Rainwater Harvesting 8:00 am to 4:30 pm. In the Australian Outback, everyone does it. In the Sonoran Desert, the rain in vain falls mainly down the drain. See how this bounty is harvested at a housing co-op, on neighborhood streets, in urban homes, and in a community garden. Calculate how much water can be collected off of your roof and find out how you can divert and store rainwater. Brad Lancaster of the Sonoran Permaculture Guild will be our instructor. Co-sponsored by the Arizona-Sonora Desert Museum. Fee includes transportation. Please bring a picnic lunch. Please be sure to indicate your day of choice. $40, $36 TBG and ASDM members Tucson Botanical Gardens (502)326-9686 ext. 10 http://www.tucsonbotanical.org/html/registration_form.html

11/9 “Scentsational” Gardening 6:00 – 9:00 pm. Do you enjoy fragrant blooms and foliage? Join Garden horticulturist, Kirti Mathura, as she familiarizes you with some of the best plants to create an enchanting scented landscape. Desert Botanical Gardens Member $36/Non-Member $45, Limit 30 (480) 941-1225 www.dbg.org

11/3 Tour of ASU Herbarium 10:00 am. Learn what a herbarium is, why herbaria and collections are important, and how to create and mount scientifically useful specimens. The tour is limited to 20 participants. Contact Pamela Saalbach (602) 300-2763 or plantpress@aznps.org

11/4 Preparing Your Landscape for Drought 6:30 - 8:30 pm. City of Phoenix Landscape Workshops. Register through the Desert Botanical Garden at (480) 941-1225 All workshops at the DBG. $10 per workshop. Call Phoenix Water Conservation Office (602) 261-8367 for further information. www.dbg.org

11/9 Arizona Plants for Desert Gardens 6:30 - 8:30 pm. City of Phoenix Landscape Workshops. Register through the Desert Botanical Garden at (480) 941-1225 All workshops at the DBG. $10 per workshop. Call Phoenix Water Conservation Office (602) 261-8367 for further information. www.dbg.org

11/16 Introduction to Southwest Design 6:00 – 9:00 pm. The landscape design process is demystified as Carrie Nimmer, landscape designer, presents the order in which a design is developed and installed for the homeowner. Understanding types of plans, how to read them, and the roles a landscape architect and other experts play in the process save you time and money on your project, big or small. Great for beginners. Desert Botanical Gardens Member $36/Non-Member $45 Limit 30 (480) 941-1225 www.dbg.org

11/8 Not ‘Zero-scapes’ 6:00 – 9:00 pm. Learn seven principles to apply in your home landscape and why: planning/design, soil analysis, irrigation, turf reduction, appropriate plants, mulch, and maintenance. A must for desert newcomers. Desert Botanical Gardens Member $36/Non-Member $45, Limit 30 (480) 941-1225 www.dbg.org

11/14 Champion Trees in Santa Cruz County This will be an all-day tour covering 150+ miles through very scenic country, with short walks to each tree. Tour firmly limited to 15 participants. Ken Morrow (602) 829 8265 torote@mindspring.com

Photo by Candice Sherrill
NOVEMBER 2004 cont.

11/15, 11/22, 11/29 Southwest Planting Design for Beginners
6:00 – 9:00 pm Homeowners can learn the process of planting design, its vocabulary and basic graphics from Carrie Nimmer, landscape designer. Discover the function of each plant type, create a plant palette and develop a design. In-class exercises, lectures and homework will help you refine your ideas, making your planting plan beautiful and functional in the desert. Examples provided. A familiarity with landscape plants is required. A private critique of your work completes this course, to be scheduled the last week of November. Desert Botanical Gardens Member $120/Non-Member $150, Limit 15 (480) 941-1225 www.dbg.org

11/16 Tree and Shrub Pruning 6:30 – 8:30 p.m. City of Phoenix Landscape Workshops. Register through the Desert Botanical Garden at (480) 941-1225 All workshops at the DBG. $10 per workshop. Call Phoenix Water Conservation Office (602) 261-8367 for further information. www.dbg.org

11/20 10:30 am. Butterfly Walk
Adriane Grimaldi invites visitors to our guided walk where you’ll learn to identify colorful butterfly species. Monthly walks monitor Arboretum butterfly populations with a regular tally of species observed and their relative numbers. Meet at the Visitor Center; bring binoculars if you have them, and carry water. Free with admission. Boyce Thompson Arboretum.
http://arboretum.ag.arizona.edu/

11/20 Converting to Xeriscape
9 am - 12 pm. Instructor: Mary Irish. City of Phoenix Landscape Workshops. Register through the Desert Botanical Garden at (480) 941-1225 All workshops at the DBG. $10 per workshop. Call Phoenix Water Conservation Office (602) 261-8367 for further information. www.dbg.org

11/27 & 28 Fall Color Festival
11:00 am – 3:00 pm each day. Bring your visiting guests and visiting family to see lovely Fall foliage at the Arboretum, where Chinese Pistachio trees turn brilliant red, pumpkin-orange and gold during late November and early December. We’ll have beautiful leaves and also live guitar/flute music from the Rusty & Millie duo, alternating from 11 am until 3 pm with storytellers Esther Jeppson Doetsch, Ron Lancaster and Glenda Bonin. Learn why leaves change color; join Author Christine Maxa Nov. 27 at 10 am for a fall foliage slide show followed by a guided tour around our trails. Painters Cindy Carrillo, CJ Rider and others will also offer plein air demonstrations of their craft outdoors around the Arboretum on both days. Free with admission. Boyce Thompson Arboretum (520) 689-2723 http://arboretum.ag.arizona.edu/

DECEMBER 2004

12/11 & 11/26 Edible/Medicinal Plants
10:30 am. Explore the Curandero Trail and learn about edible and medicinal plants of the Sonoran Desert alongside volunteers Jean Groen and Don Wells, authors of "Foods of the Superstitions." Free with admission. Boyce Thompson Arboretum (520) 689-2723 http://arboretum.ag.arizona.edu/

12/11 Roses in the Desert 9:30 am – 12:00 pm. Rosarian and Master Gardener Marylou Coffman has a stunning slide show on spectacular rose varieties, along with great handouts and other resources. Marylou is also an Accredited Judge of the American Rose Society and is considered one of Arizona’s leading authorities on the subject. Her own garden has more than 200 rose varieties and she is co-director and chief judge for the Mesa Community College Rose Garden, one of 26 test gardens for all major rose growers in the country. The Gardens at Carefree Town Center. No charge. http://www.carefree.org/

Photo by Candice Sherrill
THINGS TO EXPECT & DO
From Maricopa County Agriculture Extension web site: http://cals.arizona.edu/maricopa/garden/html/t-tips/t-tips.htm

TURF

December Turf
- Fertilize winter lawns monthly with ammonium nitrate, potassium nitrate or calcium nitrate. Follow application directions on package. Use as needed to maintain good color (usually once every three weeks).
- Identify and correct problems with winter lawns quickly.

VEGETABLES

November Vegetables
Plant Seeds
- Beets, Bok Choy, Broccoli, Cabbage, Chinese Cabbage, Carrots, Cauliflower, Chard, Collard Greens, Endive, Kale, Kohlrabi, Lettuce (Head & Leaf), Mustard, Onions (Bulb & Green), Peas, Radishes, Rutabagas, Spinach, Turnips.

Plant Transplants
- Asparagus, Broccoli, Brussels Sprouts, Cabbage, Chinese Cabbage, Cauliflower, Chard, Kohlrabi, Lettuce (Head & Leaf).

December Vegetables
Plant Seeds
- Beets, Bok Choy, Broccoli, Cabbage, Chinese Cabbage, Carrots, Cauliflower, Collard Greens, Lettuce (Head & Leaf), Mustard, Green Onions, Peas, Radishes, Spinach, Turnips.

Plant Transplants
- Asparagus, Broccoli, Cabbage, Chinese Cabbage, Cauliflower, Kohlrabi, Lettuce (Head & Leaf).

Both months: Watch for insect and pest problems, identify and manage early to prevent damage.

ROSES

November Roses
End the year’s fertilization this month
Plant container roses from mail-order catalogs, old garden roses in particular.

December Roses
New rose catalogs come out and bare root roses are available at nurseries from the middle to the end of the month.

FRUIT AND NUT TREES

Be prepared to protect citrus from early winter frosts.
Wrap the trunks of young citrus and other cold-tender trees with cloth, cardboard or several layers of newspaper (NOT plastic) to protect them from the winter freeze. Leave them wrapped until the threat of frost has passed in the Spring. Peel color is not a good indicator of maturity or taste in citrus. Give it the taste test. If it is not sweet enough for your liking, leave it on the tree. Up to a point, the longer the fruit is left on the tree the sweeter.

Deciduous fruit trees must receive sufficient chilling for their flower buds to develop properly. Different varieties have different “chilling requirements.” In order to have good fruit set, even in milder winters, choose a variety that requires less than 400 hours of chilling.

LANDSCAPE PLANTS

November Landscape Plants
Cut off spent blooms to stimulate re-bloom.
Water applications should be greatly reduced for the winter.
Plant winter hardy trees, shrubs and vines.
Pre-emergent herbicides can be applied from October through early December for winter annual weed control. Follow the package directions carefully for best results. DO NOT use pre-emergent herbicides where you will be planting seeds this season.
Be prepared for early winter frost.

December Landscape Plants
Cut off spent blooms to stimulate re-bloom.
Reduce irrigation to one deep watering of the root zone per month for the winter.
Plant winter hardy trees, shrubs and vines.
Pre-emergent herbicides can be applied from October through early December for winter annual weed control. Follow the package directions carefully for best results. DO NOT use pre-emergent herbicides where you will be planting seeds this season.
Be prepared for early winter frost.

DON’T . . .

Do not increase opportunities for fungal disease on turf by over watering or watering at night.

DO NOT OVER WATER, this results in root rot. Allow the soil to dry out between watering.
Landscape architects and designers often face many challenges when it comes to choosing the right tree for the right place. So often they must perform this exercise each time they put pen to paper. To simplify the process, perhaps a checklist of environmental conditions could be useful. The list could include tree species by climatic zone, those that can sustain reflected sun or extreme shade, or perhaps poor soil conditions like alkalinity, salinity or inadequate drainage, and let us not forget windy sites. Each tree species must be checked against the list of conditions to determine if they will be satisfactory.

One of the most challenging design features today is ultimate size. With home lot sizes shrinking to postage stamp proportions, trees used 10 years ago might seem a bit large in proportion to these yards. Designers must challenge the plant palette to locate just the right specimen tree that does not become out of balance with the size of the landscape. Some designers have begun using plants once considered large shrubs. These plants are particularly effective as small stature trees especially if they can be found in relatively large containers.

From this perspective the list of suitable species is rather extensive. Of the lesser known plants, *Acacia gregii* (Catclaw Acacia), *Chilopsis linearis* (Desert Willow), *Cordia boissieri* (Texas Olive) and *Vauquelinia californica* (Arizona Rosewood) are just a few possibilities.

Some professionals might think this approach to design is a disgrace to the species, perhaps bordering on 'plant abuse.' Many arborists feel that a tree is not truly a tree unless it naturally reaches a height of 15 feet, without excessive training. But if you review the plant palette for a climatic zone, one may find shrubs of a large stature that will comfortably mature to the desired size, offering shade, screening and beauty.

Small trees might be convenient for use near overhead obstructions such as power lines or overhanging buildings. Occasionally there will be CC&R restrictions that mandate maximum height limitations to maintain unobstructed scenic views of perhaps a lake or the skyline of a valley. Such circumstances require that the designer take into account mature height and foliage density.

On the other end of the spectrum, small properties sometimes demand petite, non-invasive root systems. Plants are often subjected to such treatment in urban conditions. Talk about your plant abuse, this is the ultimate. Restricted root zones, often coupled with reflected heat and glaring sun from concrete driveways and patios, presents the most challenging design requirements. We must find plants that can withstand such harsh conditions. A short list might include *Vitex agnuscastus* (Chaste Tree) *Caesalpinia coccineo* (Cascalote) and *Bauhinia mexicana* (Orchid Tree).
When looking for trees for use in limited root areas, think of soil type and drainage. Many plants found in nature survive in overly moist soils, heavy clay and poor water infiltration. Trees native to riparian areas or bottom lands might be the most successful for use in confined, shallow spaces with limited aeration and drainage. Consider trees such as *Platanus wrightii* (Arizona Sycamore), *Platanus mexicana* (Mexican Sycamore) and *Salix gooddingii* (Goodding’s Willow) and *Salix exigua* (Coyote Willow).

Trees for use near swimming pools offer additional concern. It is incredible how often one hears that palm trees planted near a pool have caused enough damage to warrant removal. Most homeowners and some landscape designers do not realize the relative size of a mature palm tree root system, especially species within the genera *Washingtonia* and *Phoenix*. The narrow space between concrete block masonry walls and swimming pools is far too small in most situations for these potentially large plants. Concrete surfaces such as pool decks are no match for the incredible force exerted by the massive root systems. Choose trees carefully to match the site restrictions. Additionally, avoid trees with potentially invasive roots such as willows and sycamores near water features and septic tanks. And remember, large leaves and abundant leaf or flower litter can wreak havoc with pool filtration systems too. Some trees to consider near pools are *Acacia aneura* (Mulga), *Acacia dealbata* (Shoestring Acacia), *Dalbergia sissoo* (Rosewood) or *Pistacia chinensis* (Willow Pittosporum).

While in the design mode, consider plants with interesting features, such as attractive bark, exquisite branching systems, or flowering habits. Many landscapers recognize these attributes and take advantage of them in the design process. For example, check out the zigzag branch patterns of *Ebenopsis ebana* (Texas Ebony) or the *Ziziphus obtusifolia* (Graythorn). Don’t forget fragrance as a design element, with the sweet smell of grape bubblegum from *Sophora secundiflora* (Texas Mountain Laurel) and the vanilla scent of the *Eysenhardtia orthocarpa* (Kidneywood). Fall color is a prized design factor, for which we should consider the vivid reds and oranges of *Pistacia chinensis* (Chinese Pistache), many of the Oak species including *Quercus buckleyi* and *Q. muehlenbergii*. And spring or summer floral displays abound in nature with *Acacia* and *Parkinsonia* species as prime examples.

There are so many possibilities, just remember to keep everything in perspective. Be open minded, giving consideration to every plant on the palette. Weigh the list of desirable features with the design constraints, gradually reducing the list to match suitability. By finding the right associations, you are sure to find the perfect specialty tree.

Photos: Acacia greggii, and Cordia boissieri, Candice Sherrill; Bauhinia mexicana, Jo Cook; Ebenopsis ebana and Pistacia chinesis, Mountain States Wholesale Nursery.
### Best Sites for...

<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Seasonal Wet Soil</th>
<th>Windy Areas</th>
<th>Reflected Heat</th>
<th>Shady Spots</th>
<th>Poor Soils</th>
<th>Salt Tolerant</th>
<th>Narrow Spaces</th>
<th>Swimming Pools</th>
<th>Seasonal Color</th>
<th>Small Height</th>
<th>Containers</th>
<th>Lit H2O</th>
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<tbody>
<tr>
<td><em>Acacia aneura</em> (Mulga)</td>
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<td><em>Acacia berlandieri</em> (Guajillo)</td>
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<td><em>Acacia farnesiana</em> syn. <em>smallii</em> (Sweet Acacia)</td>
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<td><em>Acacia greggii</em> (Catchac Acacia)</td>
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<td><em>Acacia occidentalis</em> (Sonoran Catchac)</td>
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<td><em>Acacia rigidula</em> (Blackbrush Acacia)</td>
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<td><em>Acacia saligna</em> (Orange Wattle)</td>
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<td><em>Acacia stenophylla</em> (Shoestring Acacia)</td>
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<td><em>Acacia willardiana</em> (Falo Blanco)</td>
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<td><em>Bauhinia mexicana</em> (Orchid Tree)</td>
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<td><em>Caesalpinia calcalco</em> (Cascalote)</td>
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<td><em>Celis laevigata</em> v. reticulate (Canyon Hackberry)</td>
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<td><em>Celtis occidentalis</em> (Hackberry)</td>
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<td><em>Cercis canadensis</em> v. <em>mexicana</em> (Redbud)</td>
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<td><em>Chilopsis linearis</em> (Desert Willow)</td>
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<td><em>Dalbergia sisoo</em> (Rosewood)</td>
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<td><em>Ebenopsis ebano</em> (Texas Ebony)</td>
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<td><em>Eysenhardtia orthocarpa</em> (Kidneywood)</td>
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<td><em>Fraxinus greggii</em> (Littleleaf Ash)</td>
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<td><em>Fraxinus velutina</em> (Arizona Ash)</td>
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<td><em>Havardia mexicana</em> (Mexican Ebony)</td>
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<td><em>Havardia pallens</em> (Tenaza)</td>
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<td><em>Juglans major</em> (Arizona Walnut)</td>
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<td><em>Leucaena retusa</em> (Golden Leadtree)</td>
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<td><em>Olneya tesota</em> (Ironwood)</td>
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<td><em>Parkinsonia florada</em> (Blue Palo Verde)</td>
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<td><em>Parkinsonia micophylia</em> (Foothill Palo Verde)</td>
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<td><em>Parkinsonia praecox</em> (Sonoran Palo Verde)</td>
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<td><em>Parkinsonia hybrid</em> 'Desert Museum'</td>
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<td><em>Pistacia chinensis</em> (Chinese Pistache)</td>
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<td><em>Pistacia x 'Red Push'</em> (Red Push Pistache)</td>
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<td><em>Pittosporum phillyraeoides</em> (Willow Pittosporum)</td>
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<td><em>Platanus mexicana</em> (Mexican Sycamore)</td>
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<td><em>Platanus wrightii</em> (Arizona Sycamore)</td>
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<td><em>Prospis Phoenix</em> Thornless Mesquite</td>
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<td><em>Prospis glandulosa</em> (Texas Honey Mesquite)</td>
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<td><em>Prospis juliflora</em> (Arizona Honey Mesquite)</td>
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<td><em>Prospis pubescens</em> (Screwbean Mesquite, Tornillo)</td>
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<tr>
<td><em>Quercus buckleyi</em> (Texas Red Oak)</td>
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<td><em>Quercus fusiformis</em> (Escarpment Oak)</td>
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<td><em>Quercus muhlenbergii</em> (Chinquapin Oak)</td>
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<td><em>Quercus polymorpha</em> (Monterrey Oak)</td>
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<td><em>Rhus virens</em> v. <em>chirichiphyla</em> (Evergreen Sumac)</td>
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<td><em>Salix exigua</em> (Coyote Willow)</td>
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<td><em>Salix gooddingii</em> (Goodding's Willow)</td>
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<td>20'-30'</td>
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<td><em>Salix taxifolia</em> (Yewleaf Willow)</td>
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<td><em>Sambucus nigra</em> ssp. <em>cerulea</em> (Elderberry)</td>
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<td><em>Sophora secundiflora</em> (Texas Mountain laurel)</td>
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<td><em>Ungnadia speciosa</em> (Mexican Buckeye)</td>
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<td>12'-25' X</td>
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<td><em>Vauquelinia sp.</em> (Rosewood)</td>
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<td>10'-20' X</td>
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<td><em>Vitis agnus-castus</em> (Monk's Pepper Tree)</td>
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<td>15'-25' X</td>
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<td><em>Zizyphus obtusifolia</em> (Graythorn)</td>
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Reprinted from “Desert Seasons”, Mountain States Wholesale Nursery’s Monthly Newsletter to the Trade; September/October 2004
A BOUNTIFUL GARDEN

A Date With History

By Janice Austin, Master Gardener

The Phoenix area has been called an oasis in the desert, with its many resorts, swimming pools, and also, for its many exotic palm trees. Bold sunset silhouettes of palm trees harken back to an earlier time in Arizona history, when significant numbers of these lofty, swaying palms could be spotted in the landscape. Remnants of the past can be found in older Phoenix neighborhoods, still standing tall today.

Louisa Ballard, a Master Gardener for seven years, and program coordinator of the Arboretum at Arizona State University in Tempe, knows a lot about the Palmae family members cultivated in our area, and about date production, too. Along with horticulturalist, Richard Harris, who put in much of today’s collection, Ballard maintains an extensive variety of palms at the Arboretum.

Ballard explains that historically palms were considered to be ideal trees for a “retirement” state like Arizona, requiring little work and providing little mess—theoretically. Members of the Palmae family, such as Bactris armata, Mexican Blue Palm, and Washingtonia robusta, Mexican Fan Palm, and the shaggier, stockier and sometimes bearded Washingtonia filifera, Californian Fan Palm, lent stately elegance planted along the city’s broad avenues in early Phoenix. Some of these sported the labor-intensive “shovel-cut” pruning, called “pineapple palms” for their distinctive shaping, according to area Horticulture Agent, Terry Mikel. Some of these “pineapple palms” may be seen at Mesa’s Pioneer Park and are quite remarkable as living sculpture.

Beautiful groupings of palms trees may also be seen at these locations, showing how dynamic a feature they may be in landscape design, when planted in multi-columned clusters.

The real star, however, in my eyes, remains Phoenix dactylifera “Medjool,” not only for its tall—up to 80’ in height—and lean lines, but for the sugary, nutritious Middle Eastern staple they produce. Fresh Medjool dates are delectable and can be very successfully cultivated in our zone. This very same variety may be seen growing along the streets of Marrakech, Morocco. The Arboretum’s original date palms were imported from the Middle East in the 19th century and it is reported that they were hung off Tempe’s old Mill Avenue Bridge, dangling in the Salt River to re-hydrate before planting.

Both male and female trees are needed for date production, and Ballard explains that the traditional Old World method of horticulture to ensure pollination included planting small female trees around a larger male tree. Examples of this planting may be seen in front of ASU’s University Club or on Tyler Mall, by the Engineering College.

According to Ballard, there are several steps required for good date production, the first consideration being to periodically let the trees “rest” by cutting off the flower stalks when they emerge in mid-spring. Flower production is heat-related and generally occurs in early to mid-March in the Phoenix area. Ballard advises that date palms be winter-pruned and cleaned out and fertilized in January-February. Palms are high water users, and for fruit production, give your trees regular, deep-watering throughout the production cycle.

Flowering Date Palm

Date palms were cultivated commercially on date farms and by small private growers in the Valley of the Sun, breaking up the low horizon line of the many citrus orchards in the burgeoning metropolis. These were planted from the turn of the century into the 1930’s. One early Arizonan remembers her grandmother climbing up a tall, rickety wooden ladder with a broom and a flower spray to pollinate the family date palms trees they grew to supplement their citrus and egg money.
To pollinate, cut off any variety of male flower and shake the pollen onto the female flowers. Ballard reports that the male flower has a discernibly stronger smell than the female flower. Pollination may be accomplished by climbing up a sturdy ladder, or from a bucket truck, as it is done at the Arboretum. Workers pollinating date flowers from the bucket trucks find themselves covered from head to toe in the gritty, slightly irritating pollen after a day’s work, Ballard reports. Be sure to keep covered with long sleeves and pants and gloves, if you take on this task. This process should be repeated two or three times in the flowering season, and in the Old World method, the male flower branches would be left hanging in the female trees.

By the end of July and into August, the date crew is back up in the trees, covering the developing dates with paper, mesh or cloth—never plastic—covering the developing dates and protecting them from hungry birds. There is a harvest window from late August until the beginning of December, though the later harvest results in drier fruit. Ballard reports that dates ripen like bananas, going from a yellow “kahil” stage, and then into a brown at the peak of ripeness. Ripe fruit is a caramel-brown color and is either hand-picked or bucket-cut, when some of the dates are a little brown. Bulk cut dates are then placed on racks to continue ripening. In processing ripe dates, they are rinsed in water and allowed to sun-dry on black plastic. Occasionally, there is a black fungus on the dates, which can be seen on the date end and will result in a mildew-tasting fruit. Also, rarely — in trees that are closer to the ground — tiny, sucking insects, like spider mites, may be a problem.

Dates may be dried or may be kept in the freezer for up to a year.

Arboretum Palmae Collection:

If you would like to see the incredible assortment of palm tree varieties in one place, it might be worth your while to visit The Arboretum at ASU, which is open to the public seven days a week, dawn to dusk, and free of charge (www.azorarboretum.org). For those looking for a tropical accent, there are some lovely selections to see. Smaller scale palms, like Chamadorea elegans, Parlor Palm, or Caripota ochlandra, the Canton Fishtail Palm, are on display, along with Phoenix roebelenii, Pygmy Date Palm, a Laoatin native which gives a nice tropical effect, growing to 6’ in height. Other notably attractive palm trees include the dramatic Archontophoenix cunninghamiana, King Palm, with a smooth green trunk, pink to purple flowers and a height of 50’ and spread of 10-15’.

Unusual date palms include the small scale Chamaerops humilis, Mediterranean Fan Palm, which is a hardy container plant and fast growing. It produces small, shiny black fruit around its trunk, which might be a little messy, but interesting. Phoenix canariensis, the Canary Island Date Palm, has pretty tropical fronds with a heavy, scaled trunk, with inedible dates. Phoenix reclinata, Senegal Date Palm, is considered to be very desirable in the landscape because of its attractive use in many-trunked grouping. Sabal texana, Rio Grande Palmetto, a Texas native, also produces an edible fruit.

Though commonly called a “palm,” there is also Cycas revoluta, Sago Palm, of various sizes on display. This Palm “imposter” is really an early cone-bearing cycad and is exceptionally slow growing, with more of a Palmae appearance the older it becomes.

Photos by Janice Austin.
Annuals in the Landscape

By Sandy Turico, Master Gardener

They’re easy to grow, come in an endless range of sizes and colors, are versatile and relatively inexpensive. Annuals are a simple and enjoyable way to liven up your garden. Here and gone in just one growing season; the seed of an annual plant germinates, grows to maturity, blooms, reproduces itself by forming seed and then dies.

Year-round color can be achieved with annuals. In Maricopa County cool-season annuals planted in the fall thrive until spring, a time when the days are warm and the nights cool. Warm-season annuals are usually planted from around February until May, flourishing through our long, hot summers. The list of warm-season annuals may be shorter, but there are still many that do well during the more intense heat of late spring and summer.

Create a cutting garden to help bring the beautiful outdoors into your home. Design an island bed or perhaps a spiral garden. Have some fun with annuals in your vegetable or herb garden. They not only will offer some extra attraction with their lively hues, but may also repel insect pests or attract beneficial insects.

Consider an annual’s color, size, and blooming time when making choices for your landscape. Sketching out your ideas on graph paper might help you to better visualize an attractive design. Curving lines and simple, asymmetrical shapes in your design will contribute to a more natural look. Use taller plants in back and lower ones in the foreground but don’t be too rigid in your planning. Consider the size of an annual flowerbed when planning. You will appreciate having easy access to the bed in order to attend to weeding and other gardening chores. Try to rotate the varieties of flowers you use from season to season to discourage disease.

Color should flow naturally through the landscape. Experiment with flower and foliage colors. Masses of flowers in one color will create a bigger impact; using too many different colors or too many plant varieties may result in a jumbled, confused appearance. If you want to achieve a lively look in your garden, try utilizing complementary colors such as blue and orange or yellow and purple. To visually open up space use the calm, cool colors of green, blue, and purple. The warm hues of red, yellow and orange are stimulating and will draw in the eye and help to define an area. White and pastels sparkle in the dark. Make use of them in the shade and around areas where you relax or entertain guests in the evening. Finally, be aware of the background colors of fences, walls or other plants when choosing colors.

Keep in mind that most annuals require a sunny location although there are those that will tolerate some shade. Well-draining, fertile soil will give your annual plants or seedbed a healthy start and make your gardening chores easier in the long run.

Flower beds may be prepared months ahead of time or right before planting. Loosen your garden soil twelve to eighteen inches and mix in four to six inches of organic material such as compost. Some gardeners choose to add soil sulfur or gypsum to alleviate salt build-up in our alkaline soils while others skip this step.

When it comes to fertilizing, most gardeners have their own preferences and methods. Whether you choose to use organic or chemical fertilizers remember that nitrogen and phosphorus are needed to produce healthy annuals in our desert soils. The exception to this rule is wildflowers, which do well in native soil and do not appreciate soil amendments or fertilizer.

Organic fertilizers such as bonemeal, fish emulsion and manure contribute to the health of your garden soil and are less likely to burn your plants but may be more costly. Nitrogen is essential for foliar growth. Phosphorus will guarantee a healthy root system and assure bloom, but does not easily move through soil, so work it into the soil before you plant where it will reach the root zone. Be sure to follow directions regardless of what kind of fertilizer you decide to use.

Are you ready to add some pizzazz to your landscape? Annuals can be incorporated into your landscape in numerous ways adding instant appeal to your yard. Use them as a focal point in the landscape or blend them with other landscape plantings. Containers, raised beds, hanging baskets and window boxes filled with colorful annuals are an ideal way to provide exciting accents to your home and garden.

Welcome guests to your home by edging pathways leading to entryways; enhance patio and pool settings where you entertain or unwind after a hard day. Interplant annuals with perennials to extend bloom in the garden or utilize them to fill in empty spaces until newly-planted trees and shrubs grow to maturity.

Gaillardia grandiflora

Dianthus chinensis
Better Landscape Design

Continued from previous page

Keep a journal of the type and amount of fertilizer used, and the frequency of applications; note how your annual plants respond. Be aware that container plants will need a more regular fertilization schedule.

Think about the type of irrigation you will use; annuals need regular watering. Since it is best to avoid wetting the foliage when irrigating, consider using soaker hoses or a drip system. Moisten the planting area to a depth of one foot. Let the soil dry out reasonably well before the next watering. Winter annuals may go a week or more between irrigations while your summer annuals may need to be watered every couple of days. Note that container plants dry out faster than those in the ground. Pull weeds regularly as they compete with landscape plants for sun, moisture, and nutrients. Using mulch around you plants will deter weed growth. Organic mulches such as compost, grass clippings, and shredded bark will actually contribute to the health of your soil. Just be sure to avoid placing mulch right next to the stems of the plants. The end of the blooming period will signal the annual to go to seed and then die. “Deadheading” or removing depleted blooms once a week will encourage continued flowering.

Because of their short life cycle annuals must be reseeded or transplanted seasonally. Many annuals self-seed. These “volunteers” may be a delight to some gardeners, an annoyance to others. Using transplants will assure color in your landscape more quickly than growing annuals from seed. When picking out transplants at a nursery try to choose those just beginning to bloom so you will be sure that you get the flower color you desire. Check for healthy foliage and insect damage. If you decide to start your plants from scratch, be sure to purchase seeds packed for the current year.

Here is a list of some popular annuals and wildflower annuals to try out in your garden. Note that some of these plants are actually perennials but are grown in our area as annuals.

Cool-Season Annuals

* Ageratum houstonianum (Ageratum)
* Antirrhinum majus (Snapdragon)
* Calendula officinalis (Calendula)
* Callistephus chinensis (Asters)
* Centaurea cyanus (Cornflower)
* Centaurea moschata (Sweet Sultan)
* Chrysanthemum coccineum (Painted Daisy)
* Chrysanthemum maximum (Shasta daisy) *
* Cleome spinosa (Spider Flower)
* Consolida ambigua (Larkspur)
* Centaurea cyanus (Cornflower)
* Centaurea moschata (Sweet Sultan)
* Delphinium x cultorum (Delphinium) *
* Dianthus barbatus (Sweet William) *
* Digitalis purpurea (Foxglove) *
* Dimorphotheca sinuata (African Daisy)
* Echinacea purpurea (Purple Coneflower)
* Gypsophila elegans (Baby’s Breath)
* Helichrysum bracteatum (Strawflower)
* Heuchera sanguinea (Coral Bells) **
* Iberis amara (Candytuft) *
* Iberis sempervirens (Candytuft) *
* Lathyrus odoratus (Sweet Pea) *
* Limonium sinuatum (Statice)
* Lobelia erinus (Lobelia) *
* Lobularia maritima (Sweet Alyssum) *
* Matthiola incana (Stock)
* Moluccella laevis (Bells of Ireland)
* Myosotis sylvatica (Forget-Me-Not) *
* Nicotiana alata (Flowering Tobacco) *
* Papaver rhoeas (Shirley Poppy)
* Pentas lanceolata (Star Clusters) **
* Petunia x hybrida (Petunia) *
* Phlox drummondii (Phlox) *
* Primula malacoides (Fairy Primrose) **
* Primula polyantha (Primrose) **
* Reseda odorata (Mignonette) *
* Scabiosa spp. (Pincushion Flower)
* Tropaeolum majus (Nasturtium)
* Verbena peruviana (Verbena)
* Viola x wittrockiana (Pansy) *
* Viola tricolor (Johnny-Jump-Up) *
* Viola spp. (Violet) *
**Warm-Season Annuals**

*Capsicum annum* (Ornamental Pepper) *  
*Catharanthus roseus* (Periwinkle)  
*Celosia cristata* (Celosia)  
*Coleus x hybridus* (Coleus) **  
*Cosmos bipinnatus* (Cosmos)  
*Dahlia x hybridia* (Dahlia)  
*Eustoma grandiflorum* (Lisianthus)  
*Gomphrena globosa* (Globe Amaranth)  
*Helichrysum bracteatum* (Strawflower)  
*Impatiens balsamina* (Balsam)*  
*Kochia scoparia* (Kochia)

* Limonium sinuatum (Statice)  
* Mirabilis jalapa (Four O’Clock) *  
* Portulaca grandiflora (Moss Rose)  
* Portulaca x hybrida* (Purslane)  
* Sanvitalia procumbens* (Creeping Zinnia)  
* Tagetes erecta* (Marigold, American & African)  
* Zinnia elegans* (Zinnia)

* Annuals that tolerate partial sun or partial shade  
** Annuals that tolerate shade

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**BOOK REVIEW**

**Buzz: The Intimate Bond Between Humans and Insects**  
by Josie Glausiusz

Reviewed by Sue Hakala, Master Gardener

**Buzz:** will help us all to understand the most numerous life forms on earth just a little bit better. The short descriptions could actually make great bedtime stories for you or your children/grandchildren, as they are so interesting and well written. Seeing the otherworldly photographs of the featured insects by Volker Steger is the reason to obtain this $30 book.

Steger tells us he wanted to show the very best feature of his subjects, but getting them to hold still to photograph them under a scanning electron microscope was another matter. So he shock froze them with liquid nitrogen or, dried them slowly exchanging body chemicals for ones he introduced so that they wouldn’t shrink. As the microscope can only produce black and white photos, Steger then color enhanced them with the computer. The results are unearthly; photos include a fly with powder blue eyes and a bedbug with pink eyes.

A cabbage worm, *Pieris rapae*, enlarged 40,000 times and colorized in aqua and green looks good enough to frame. The wardrobe beetle, *Attagenus fasciatus*, looks like a frightened porcupine is known for recycling fur, skin and feathers is especially useful in the landscape, but not in your closet or museum collections.

The business end of the blood sucking stable fly, *Stomoxys calcitrans*, resembles a big rock borer used to carve out tunnels, Barnyard animals and humans suffer from their painful bites. To cut down on breeding grounds for these pests the author suggests that you get rid of hay, manure, spilled feed and wet, fermenting organic material.

A photo of a housefly smashed into a car window may make you smile, but you should know that crushed insects have helped solve crimes. Certain species are found only in certain areas, so identifying those stuck on windshields and grills can place a suspect in a particular area. Insects found in tire treads prove direct contact with the crime scene soil.

One thing to notice while gasping over these photographs is how many of these bugs have hairs and whiskers all over their bodies. No doubt, it helps them to sense the world around them, and to know when trouble is coming on the air currents. So meet your neighbors. The ones that consume our garbage, pollinate our crops, attack our plants, help solve crimes, suck our blood, live in your pajamas, and under your bed in this exquisitely designed book.
The Velvet Mesquite tree, *Prosopis velutina*, has one of the best tasting pods of all mesquite trees. The pods can be ground up or, soaked and used to smoke and flavor foods while cooking. This tree only grows naturally in the Sonoran Desert in Arizona and Sonora, Mexico. Deciduous, it can grow to 55 feet tall, known to put out roots to a depth of 160 feet and in a radius of 50–60 feet in a never-ending search for water. Most of the roots are in the upper three feet of the soil, where water and oxygen are.

Living up to 200 years, Velvet Mesquites grow up to elevations of 5,000 feet. Researchers that have re-photographed the exact same vista in the Sonoran Desert from 50 to 100 years ago, have discovered that the mesquite tree is overtaking the land by out-competing other species as they have deep water-seeking roots. Mesquites lately are retreating to large washes and flood plain areas as the water table drops.

Bees pollinate the tiny flowers of the Velvet Mesquite, and the resulting bean pods are up to eight inches long, with three distinct parts. The pods are most abundant during times of drought when they are most needed, saving the life of many animals and travelers in the past. Mesquite seeds/beans are scattered by animals that ingest them. Passing through the gut actually enhances germination. If not ingested, the seeds need to be tumbled in a wash flood to scarify the seed or weathered so that it can sprout.

Mesquite trees, as with all members of the Legume family, put nitrogen back in to the soil that is starved by drought or over-grazing. Deer, quail and a wide variety of birds find shelter and hiding places within and under the mesquite. Mesquite wood is very hard and is quite attractive in furniture: the sapwood yields a yellow color, the heartwood a reddish-brown color.

**Cooking with Mesquite**

Native Americans and chuckwagon cooks have loved the long-lasting coals and sweet smoky flavor that the mesquite tree gives when burned. There is nothing like mesquite to impart a delicious flavor to foods from vegetables to beef. The smell of poultry basted with tequila, roasting over glowing mesquite coals is fantastic.

If you have cut down a mesquite tree save the wood, dry it, and use it for cooking. It is best to use mesquite with stronger tasting foods that can stand up to the assertive flavor that the wood will impart. Make a wood fire in a barbecue grill, allow it to burn down creating glowing coals which will transmit a savory flavor to any of the following: pork ribs or chops, shrimp, salmon, quail, potatoes, corn, eggplant, squash, wild game, leeks, red pepper, steaks, burgers, chicken, and duck.

Soak dry mesquite chips or pods in some water for at least 30 minutes. Spread them over your barbecue coals to impart a smoky taste to pork, turkey, quail, beans, and salmon or, anything you’d like. Experiment with using the soaked chips or pods in a metal container placed on your barbecue to get a different flavor. Collect and save the pods for this purpose if you can, as they are a renewable resource, the wood isn’t.
Eating Mesquite  
Continued from previous page

Green and juicy pods of the Velvet Mesquite simmered taste like snow peas or cherries. Not yet dry pods can be mashed and soaked in water to produce a nourishing drink. Ripe pods of the Velvet Mesquite are tan streaked with a reddish-purple color. Use a pole to bring down branches so that you can reach the pods to pick them off. Rinse pods to remove dirt. Pat them dry. Place pods on a cookie sheet. Bake at 150 degrees for 3 hours to kill the beetle larva inside, until pods are dry and crispy. Cool then whirl about 15 at a time in your blender for just a few seconds, and then sift twice to remove the fibers and seeds. Keep in an airtight container. Use the flour to make bread or, add to stews to thicken them and provide a protein punch. It is best to take a little taste test of the pods that you might want to use, as some trees produce very bitter tasting pods akin to burnt coffee or molasses. If you want to store the pods for smoking, be sure that they are oven dried, then store them in the freezer.

Up to 1/3 cup of mesquite flour can be substituted for regular flour in cookie, bread, cake and muffin recipes adding a touch of sweetness. Here are some of recipes from Ruth Greenhouse formerly of the Desert Botanical Garden:

Mesquite Cookies
Cream _ cup margarine with 1/2 cup sugar. Add 2 eggs and mix well. Sift together _ cup mesquite flour and 1 1/2 cups regular flour. Mix well. Bake at 375 degrees for 8 to 10 minutes.

Mesquite Tea
Grind 2 cups dry mesquite beans in a blender. Add everything to 2 cups boiling water. Mix and strain through a fine sieve. Add 2 cups cool water. Chill or serve warm.

Computer Corner

by Candice Sherrill, Master Gardener

PEPE LE PEW PAYs A VISIT
Cooper, our beagle, discovered a skunk on the back porch early this morning, and you can probably guess how things progressed from there. As designated guardian of our particular little castle, he wasted no time making Pepe understand that the welcome mat was definitely not out for members of his ilk. The skunk beat a hasty retreat back through the gate, but not before leaving his calling card.

No sooner had he disappeared around the corner of the house, than I heard my husband issue this decree:

“Lemon juice! Get out the lemon juice!”

“No!” I argued as I worked frantically to corral the poor dog in the laundry room off the garage. “It’s tomato juice they always recommend!”

GOOGLE WOMAN TO THE RESCUE!
Springing into my trusty phone booth (Okay, the computer room) I dialed a quick query using “skunk attack” as the search term. Within seconds I was reading this advice from the Amherst Small Animal Hospital in Snyder, New York:

“First, make sure you do not touch your pet for 2 hours after skunk contact. This is the safest approach, as rabies can be carried by skunks and the virus can remain active on the fur of your pet for a short while after the contact.

Mix 1 quart hydrogen peroxide, 1 box of baking soda and 1 bottle of dish detergent. Wearing dish washing gloves, wet the pet’s fur and apply the cleaner thoroughly, avoiding the eyes. Scrub well, rinse, then repeat as needed until the odor is manageable. The odor will not be entirely eliminated but it should be livable. When the pet dries you should be happy with the odor level. If not repeat more baths. The skunk odor will still be evident when the pet is wet for several months.”

Fortunately we had all the recommended ingredients on hand, and Cooper is now resting comfortably on the living room floor—much shinier, fluffier and sweeter-smelling than he was a few hours ago.

(And perhaps a little wiser, as well).

The Amherst Small Animal Hospital’s rabies info can be found at: http://www.asah.net/When_Skunks_Attack.htm

RABIES STATISTICS
And while I’m at it, here’s the URL of a page put out by the Arizona Department of Health Services listing the state’s rabies statistics for 2003: http://micovet.arizona.edu/Courses/MIC438/Rabies%20in%20Arizona,%202003%20-20ADHS.htm
CHILIES

by Carole Zajac, Master Gardener

Chilies, or peppers, are the fruit or pods of plants from the genus Capsicum. The term, chili pepper, is redundant, although you see it written that way a lot; it means pepper pepper. These plants are native to the Americas, but are now used all over the world in many forms: fresh, dried, canned, pickled, and powdered.

The archaeological record shows wild peppers were eaten as far back as 7000 BC and were probably domesticated by 2500 BC.

The Spaniards are responsible for the name, “pepper,” which they thought was related to black pepper, Piper nigrum, a spice they were seeking, among other exotic items, for the spice trading market. Chile plants went back to Europe with Columbus and within a century peppers were passed along the trade routes and eventually found their way into the cuisines of India, China, and Africa.

All peppers are in the same genus, from sweet bell peppers, cayenne, jalapeno, serrano, cherry, Fresno, Hungarian wax (Capsicum annuum), to Tabasco (Capsicum frutescens) and Habanero (Capsicum chinense), the hottest.

Chilies are part of the Solanaceae family (Nightshade) including tomatoes, eggplant, and potatoes. Just what are chilies? To horticulturists they are fruits; to botanists they are berries; to the produce industry they are vegetables; dried, they are a spice; but to us they can be anything we want them to be.

The compound that makes chilies hot is an alkaloid called capsaicin (capsAY-a-sin), which is not found in any other plant. Glands in the placenta of the pepper fruit produce this compound. It is not surprising that removing seeds and membranes inside the fruit reduces the heat, or leaving them in increases the heat.

Capsaicin is so powerful that it is used now in products that repel animals or even humans, instead of Mace. Chilies are ground up with garlic in a blender with water, strained, then sprayed on plants to make an effective non-toxic insecticide.

Did you ever wonder how chilies are rated on the hotness scale? In 1912 a pharmacologist named Wilbur Scoville came up with the Scoville Organoleptic test to calculate the temperature of peppers used in HEET, a muscle salve. Back then the temperature of a chili was subjectively measured by a majority of three tasters of a five-member panel. Today, computerized liquid chromatography measurement ranges from 0 Scoville units for bell peppers to 5,000 units for jalapenos to 200,000-300,000 units for Habaneros.

Scoville heat units:

<table>
<thead>
<tr>
<th>Chili Type</th>
<th>Scoville Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell</td>
<td>0</td>
</tr>
<tr>
<td>Anaheim</td>
<td>255-1,400</td>
</tr>
<tr>
<td>New Mexico Chilies</td>
<td>250-1,400</td>
</tr>
<tr>
<td>Ancho</td>
<td>2,500-3,000</td>
</tr>
<tr>
<td>Pobiano</td>
<td>2,500-3,000</td>
</tr>
<tr>
<td>Jalapeno</td>
<td>2,500-4,500</td>
</tr>
<tr>
<td>Hungarian</td>
<td>2,500-6,000</td>
</tr>
<tr>
<td>Serrano</td>
<td>7,000-25,000</td>
</tr>
<tr>
<td>Chile de Arbol</td>
<td>15,000-30,000</td>
</tr>
<tr>
<td>Cayenne</td>
<td>35,000</td>
</tr>
<tr>
<td>Chile pequin</td>
<td>40,000</td>
</tr>
<tr>
<td>Tabasco</td>
<td>30,000-50,000</td>
</tr>
<tr>
<td>Habanero</td>
<td>200,000-300,000</td>
</tr>
<tr>
<td>Scotch Bonnet</td>
<td>200,000-300,000</td>
</tr>
</tbody>
</table>

Antidotes for the heat in chilies are sugar, dairy products (sour cream, milk, yogurt) and starches (breads, tortillas, potatoes, or rice).

All peppers, mild and hot, grow well in our climate. Sometimes plants can be grown as perennials if you can protect them from frost damage in winter. However, each year the fruits get a little smaller. Peppers, okra and eggplant do just fine in 100 F plus temperatures. Hot pepper seeds, however, are very slow to germinate. They should be soaked for a few hours prior to sowing. Many seed companies are doing extraordinary things with colors, shapes, and flavors. Check out Burpee Seed Company, Park Seed Company, Johnny’s, and Seeds of Change for some interesting new varieties of both sweet and hot peppers.

Following is a list of chilies found in our area. The numbers following them are a ten-point scale (0 = mild; 10 = very hot) developed by Mark Miller, chef and author of THE GREAT CHILE BOOK.

Fresh:
- Anaheim: 2-3
- Pobiano: 3
- Jalapeno: 5-5
- Korean: 6-7
- Serrano: 7
- Thai: 7-8
- Cayenne: 8
- Habanero: 10
- Scotch Bonnet: 10

Dried:
- New Mexico (chili Colorado): 2-4
- Ancho: 3-5
- (dried Pobiano): 3-5
- Pasilla (chili negro): 5-6
- Chipotle (dried smoked jalapeno) de Arbol: 75
- Cayenne: 8
- Thai: 8
- Habanero: 10
- Scotch Bonnet: 10

Enjoy the chilies of your choice!!
ASK A MASTER GARDENER

How to Trap a Mint
By Carolyn Hills, Master Gardener

Have you ever planted a beautiful little mint plant, and then watched in horror as it grew into a “GREEN MONSTER”, taking over every square inch of your garden bed and choking out your other plants? Hey, it’s not the mint’s fault! They’re made that way!

Mints propagate three ways: They produce flowers, most produce seeds and some propagate by “layering”. When a stem of the plant lies on the ground, it puts out roots. This produces a new plant, which can be separated from the mother plant. This third method of propagation is the one that drives us crazy! Like Bermudagrass, mints put out underground stems (called rhizomes) and rhizomes produce buds from which new plants will grow. Once those rhizomes start invading your garden, it’s almost impossible to find and remove all of them. So, the trick is to keep the “GREEN MONSTER” under control. Here’s how:

Start with a 5-gallon (or larger) pot.

With a pair of garden shears or a tree saw, remove the bottom of the pot.
Dig a hole that is slightly wider than and almost as deep as the pot.

Plant the pot, leaving about one to two inches above ground.

Backfill and tamp down the soil outside of the pot.

Remove the mint from its original pot by gently squeezing the sides of the pot to loosen the soil.

Gently scrape the sides and bottom of the root ball with your fingernails or a garden tool if the plant is root-bound (the roots have circled the pot).

Fill the prepared 5-gallon pot with rich, well-composted soil.

Plant the mint inside of the pot and gently press down the soil.

Be sure to plant the mint in its new pot at the same level that it was in its original pot. Make sure that the soil inside of the pot is at the same level as the soil outside of the pot.
Ask a Master Gardener
Continued from previous page

Water well with a liquid fertilizer or starter solution at half the recommended strength.

Make sure the soil is well-firmed around the plant. Check again after the water soaks in and add soil if necessary.

Remember that mints also propagate by layering. Be sure to trim the stems of your mint so that they don’t lie on the ground and put out roots. Periodically run your hand around the outside of the pot to make sure that no stems have put out roots.

Also, watch for and remove volunteer seedlings. Mints cross breed easily, and most of the seedlings will not taste like the original plant, or even taste very good. Enjoy your mint plant!

Even with these precautions, some mints are able to escape their bounds, so the surest way to keep them under controls is to plant them in a container above ground.
WHAT YOU NEED TO KNOW

How Herbicides Work

By Angela O’Callaghan, Ph.D.

In agriculture and landscape, herbicides (weed killers) are among the most widely used pesticides. While common sense would lead anyone to treat this kind of chemical with respect, many herbicides are labeled “caution” and apparently pose low risk to human health. When it comes to plants, however, they are capable of killing both targets (usually weeds) and non-targets (usually desirable plants), and they cannot distinguish between them.

Some of these chemicals are transported within a plant (“systemic” or “translocated”), while others affect only the tissue on which they land (“contact”). This will determine when and how the compound gets applied. For instance, a contact herbicide that kills leaf tissue won’t be terribly effective if it doesn’t touch and cover the leaf tissue. Applying it as a pre-emergent to the soil will probably be useless for weed control.

The movement of these chemicals within the plant occurs in one or both of the two components of its vascular system. The xylem carries raw materials—water and mineral nutrients, mainly—from the soil solution through the roots, up the stems and into the leaves. Xylem-translocated herbicides are frequently soil applied. The created products of photosynthesis are taken from the leaves and distributed to the rest of the plant via the phloem. Phloem-translocated herbicides are usually applied to the emerged plant.

There is a host of herbicides with many different modes of action. This term refers to the sequence from uptake of the chemical through plant death. It also describes what plant process is affected.

Seedling growth inhibitors kill the young plant before it breaks through the soil. They do not prevent seeds from germinating, rather they attack either the developing shoot or root, or both, underground. Obviously, they are applied to the soil before weeds emerge. Some, like dinitroanilides, are generally used to control grasses, but others, such as EPTC, are effective on both grasses and broadleaves. If a seedling is not killed by a third type of seedling inhibitor, acetochlor, it will show some tissue deformity, but will probably survive, since herbicides of this type are only effective on seedlings.

Photosynthesis inhibitors (e.g. atrazine, linuron, bentazon) are used both individually and in commercial mixtures. These herbicides attack the process where, in the presence of light, a plant takes carbon dioxide and water and converts it into sugar. Without the ability to create sugars, the plant will die. First, however, it will develop interveinal chlorosis, and may look like it has an iron deficiency. There are many herbicides, from a range of different chemical families, which inhibit photosynthesis. Many are xylem-transported, hence are applied to the soil, but not all. Bromoxinil (e.g. Buctril) is applied to, and absorbed into, leaves, where it remains without translocating (contact herbicide).

Because most of these have little effect on grasses, these are applied to kill broadleaved weeds in grassy areas, although bentazon (Basagran®), which is also a contact herbicide, is used to control nutsedge (a monocot) foliage.

The category of cell membrane disruptors contains two sets of herbicides, attacking two different plant systems, but they result in the same symptoms. They cause leaves to appear as if they had been sunburned, and scorching is actually what happens. Most require light in order to be active, and are used for broadleaved weeds.
One group inhibits a particular step in photosynthesis, with the result that the plant tissue accumulates oxidants, which burn it. These affect only the tissue where they are applied, although there are reports of some instances where paraquat and diquat will move out of leaves and on to roots of certain plants.

Another group attacks the process that manufactures cell components required for photosynthesis. The outcome here again is the build-up of oxidants, which burn the leaf tissue. Although mostly applied post emergence, and usually considered contact herbicides, some, like fomesafen, are also translocated in the xylem.

**Amino acid synthesis inhibitors** interfere with protein production, causing the plant to die. Again, two different sets of chemicals, working on two different plant process for manufacturing of amino acids (protein building blocks), come under this heading. They are used for both grassy and broadleaved weeds.

The first works on what are called the branched-chain amino acids. Symptoms on plants include stunted growth, followed by foliage becoming pale, yellow to white, and ultimately dying. These chemicals have names that start with “ima-“ (e.g. imazaquin) or end in one of two suffixes: “sulfuron” (e.g. halosulfuron) or “sulam”, (e.g. flumetsulam). Many are translocated in both the xylem and the phloem, which permits them to be applied to foliage or to the soil.

The other set contains glyphosate (Roundup®, Rodeo® and Touchdown®). This compound interferes with production of the aromatic amino acids and causes stunted or deformed growth and chlorosis before plants die. Glyphosate needs to be applied to foliage because it is translocated in the phloem, and because it becomes tightly bound to soil particles.

**Lipid synthesis inhibitors** are used to control grasses by interfering with fat production, essential for all membranes in plant cells. Older leave frequently turn colors – purple, orange or red – before becoming necrotic. The central growing point becomes easy to remove from plants treated with lipid synthesis inhibitors. Those compounds with chemical names ending in “fop” are phloem translocated; hence they are applied to emerged plants. The other group of these herbicides have chemical names ending in “dim” and these are translocated in both xylem and phloem. As a result, these can be applied both pre- and post- emergence (soil or foliar).

**Nitrogen metabolism inhibitors** (glufosinate) prevent plants (both grasses and broadleaves) from using nitrogen, a nutrient involved in virtually all plant functions. When nitrogen-using processes are interrupted, ammonium accumulates within the cells and causes cell death. Other toxic events also occur, all of which result in plant death. The first symptoms are chlorosis and wilting. These proceed most rapidly when there is bright sunlight, high humidity and moist soil. Glufosinate does not translocate well in either the xylem or the phloem, hence it is used as a contact herbicide.

**Pigment inhibitors** (e.g. Zorial® or Callisto®) prevent plants from creating the compounds that protect from excess sunlight (carotenoids). Many of these pigments are the reds, oranges and purples, which appear in leaf tissue and they serve as antioxidants. Leaves of plants (usually broadleaved) treated with these herbicides develop interveinal chlorosis and may even become bleached white before turning necrotic. Most pigment inhibitors are translocated in the xylem, although some also move through the phloem.

If an herbicide is not applied in a manner where it’s most effective – systemic vs. contact, grass control vs. broadleaf, xylem vs. phloem translocated – then the result is a waste of money and possible risk to the environment. Recognizing what’s in a formulation allows the applicator to make intelligent choices with herbicides.

**Angela O’Callaghan, Ph.D. is a horticulture specialist with the University of Nevada Cooperative Extension.**

Article reprinted from Southwest Trees & Turf, January 2004.

Photo by Candice Sherrill.
SONORAN ORIGINALS

The Unappreciated Smell of Rain

by Patti Bayham, Master Gardener

How can we live in a desert and not appreciate the smell of rain? Yet we do. Is it better to be hated or not even to be noticed? How does it feel to know that you are a key player, yet you are not recognized as are others who are less hardy than you but greater in stature and more unique in character? Lastly, should we find ways more often to “order” things other than by the alphabet? Those whose names begin with “Z” must get tired of being at the end of every list!

Tucked away at the end of the list of Sonoran Desert plants is the Zygophyllaceae family, caltrop. It is a small family, with only about 250 species, yet it includes one of the most abundant and important plants in North American deserts: Larrea tridentate, the creosote bush. The best-known member of the caltrop family is the dreaded puncture vine, or goat-head (Tribulus terestris), a weed introduced from Europe and notorious for clamping to rubber tires. A much more desirable caltrop relative of creosote bush is the showy Arizona poppy, Kallstroemia grandiflora.

Larrea tridentate’s common name, creosote bush, often makes people think it must smell like the petroleum-based product that is used as a wood preservative. Those who know the Mojave, Sonoran, and/or Chihuahuan Deserts, however, know that this is an unfortunate mis-association. The smell of creosote is quite strong and distinctive, but it is what gives our desert a characteristic refreshing smell after rains.

Creosote is an amazing and beautiful plant, but it is so common that we tend to look past it and never ask the questions everyone asks about saguaros, agaves, and other more imposing plants in North American deserts. We talk about how old saguaros are before they put on their first arms and how old the largest specimens must be, yet creosote bushes may live to be more than 11,000 years old! As the creosote bush matures and individual stems die off, new stems sprout from the outer edge of the root crown. Through the course of centuries this ring of new growth breaks apart into separate bushes, each a clone of the original. Creosote bush clones may be among the world’s oldest living organisms. Average longevity at one study site in California was determined to be 1,250 years; at a second site it was 625 years.

This is a surprisingly drought-tolerant plant, having been known to live for 2-3 years with no rain at all. All long-lived desert plants have adapted in some significant way to conserve water. Three characteristics of Larrea tridentate which make it particularly drought tolerant are: (1) a resinous coating on its leaves, which makes them attractively shiny and bright while serving to minimize transpiration, (2) drought-deciduousness to the extent that it will not only drop its leaves, but also its branches, in extremely dry periods in order to conserve moisture for the root crown, and (3) the ability to inhibit germination and growth of other plants around it, to the extent that moisture and soil conditions will limit survival.

Creosote bush is “the single most widely-used and frequently-employed medicinal herb in the Sonoran Desert” Its leaves have been used for centuries to make antisepsics, emetics, and tea. Various peoples have thought that it helps to cure fevers, influenza, sinusitis, colds, upset stomachs, arthritis, anemia, and fungal infections. It may also be useful in treatment of allergies, autoimmunity diseases, and premenstrual syndrome. Today it is being researched as a possible cancer treatment due to its antioxidant characteristics. The same resinous substances that are deposited on its leaves are used to make sealants and glues. American Indians of the Southwest often used creosote extracts to seal pottery and to repair tools.

Other non-medicinal uses include serving as an insecticide, disinfectant, mild sunscreen or massage oil, and prevention of rancidity of vegetable oils.

Natural growing creosote is commonly found on gentle slopes, valley floors, and in desert washes.

Site elevation is typically 5,000 feet or less. It has a relatively shallow taproot (30”-35”) and several secondary lateral roots that run for about 10’ in length 1’ below ground level. Creosote is very often found above layers of caliche.

As indicated above, creosote reproduces vegetatively by sprouting from the outer ring of its root crown. It also reproduces sexually, but age distribution studies have shown that many years may pass under natural conditions without any new successful germination and survival in a particular area. Summer rains are required for flowering to occur, however too much rain will result in diseased flowers.
Sonoran Originals
Continued from previous page.

Three to six inches per year seems to result in the highest germination rates (20%-60%). Seed weight and structure reflect reliance upon tumbling as the primary means of distribution. Rodents, who like to burrow beneath creosote bushes, also probably play a significant role in dispersion and “planting” of seeds. White bursage is very often found as a nurse plant for successful seedlings. In his studies Dr. Joe McAuliffe, Director of Research at Phoenix’s Desert Botanical Garden, found that 85.5% of all young creosote bushes were beneath white bursage.

Creosote bush is an evergreen shrub that prefers full sunlight and has a long blooming period. Set against its shiny dark green leaves, 5-petaled yellow flowers that are up to 1” in diameter bloom off and on from spring through fall; they are most abundant in the springtime and after rains. Following the flowers, globe-shaped fuzzy white seed capsules are up to 1-1/2” in diameter continue to attract attention as they stand out against creosote’s dark foliage. With consistent water, although not much more than 7” per year, creosote will grow to be a denser shrub. In its natural setting it tends to be quite open and wispy, with most leaves clustered at the tips of branches. Height can range from 4’-12’, depending upon the amount of water and sunlight. Some people think creosote bush has an oriental feel due to its open and sculptural nature.

Many different animals use creosote bush for habitat, including squirrels, kangaroo rats, desert woodrats, and reptiles. Desert tortoises often burrow into areas where creosote roots will hold surrounding soil stable. “Seventy-one percent of desert tortoise burrows studied near San Bernadino California, were associated with creosote bush.” Creosote is generally unpalatable to wildlife, although jackrabbits do eat the leaves. Many insect species rely upon the plant. In fact, there are 22 species of bees and other insects such as the creosote katydid and creosote grasshopper, that are specific to it.

There is indeed much we should appreciate about Larrea tridentate. Next time you smell rain in the desert, take time to appreciate the beauty, toughness, and widely diversified value of that plant from which the fresh smell of desert rain emanates.

Resources:


Arizona-Sonora Desert Museum, A Natural History of the Sonoran Desert, p. 263.

Photos:
Larrea tridentate in bloom by Tanya Beth Kinsey firefly@fireflyforest.com
http://www.fireflyforest.com/flowers/
Larrea tridentate in the landscape by Mountain States Wholesale Nursery.

As an ornamental plant, Larrea tridentate is not yet recognized as an attractive addition to most landscapes. Like many other desert-adapted plants, when given the favorable and consistent conditions of a maintained yard or garden its size, fullness, blooming frequency and richness of color are all enhanced.
The East Valley holds some hidden treasures for horticultural enthusiasts. One of these treasures is found at Tempe’s Daley Park, 1625 S. College Avenue. This park is home to a remarkable Carob Tree, Ceratonia siliqua. The tree features a uniquely stooped trunk and multiple, low cradling branches that create a natural, shaded playground for children. The low-set branches invite climbing and daydreaming under the tree’s broad, evergreen canopy. Like a magnet, this historic tree draws visitors by its unusual shape and is the focal point of this small city park. According to horticultural agent Terry Mikel, the unusual form of the tree is the result of an old injury.

Carob Trees are found throughout the Mediterranean, Middle East and North Africa. Spanish missionaries introduced the carob into the American Southwest and Mexico. In 1856, the United States Patent Office brought seed from Spain and distributed 8,000 seedlings in the southern states. Many carob trees were planted in Texas, Arizona, California and Florida as ornamental and avenue shade trees.

Originally cultivated in the Mediterranean as a food source, the trees produce edible seed pods called “St. John’s Bread.” The pods are light to dark brown, flat and straight, with a glossy, tough exterior. The unripe pod is green and astringent, but the ripe pod may be chewed as a sweetmeat. Don’t eat the seeds, though. The broken pod produces an odor like Limburger cheese because of its 1.3% isobutyric acid content. Historically, hungry farmers have lived on the pods in times of famine, though in better times the seed pods are given to livestock as a tasty, supplemental fodder.

Most of us have unsuspectingly partaken of the carob tree’s bounty in one form or another. Commercially, carob flour is produced from the seed pods and is used in breakfast foods, candy bars, and as a stabilizer and thickener in bakery goods, ice cream, salad dressings, sauces, cheese, salami, bologna, canned meats and fish, jelly, mustard, and other food products’. The flour is also used in the production of dog biscuits and in flavoring uncuraed tobacco. The seeds are used in the “manufacture of cosmetics, pharmaceutical products, detergents, paint, ink, shoe polish, adhesives, sizing for textiles, photographic paper, insecticides and match heads.”

Today, there are many common cultivars and more than 80 clone varieties being researched as potential human food sources. Trees are male, female, and hermaphrodite, according to the variety. Carob trees are considered slow-growing, slightly harder than citrus and young trees can suffer frost damage. They are drought-tolerant, flourish in climates with warm to hot summers, and do well in soils with good drainage.

Once you have visited Daley Park’s uncommon carob tree, you may fall under its spell and wish to give one a home in your own backyard!


Photo by Janice Austin.
Definition of Terms Used in This Issue

By Candice Sherrill, Master Gardener

alkaline (Annuals p. 11)—with a pH level above 7. Alkaline soils are basic rather than acidic, and considered “sweet.”

annual (Annuals p. 11)—a plant that germinates from seed, flowers, sets seed, and dies in the same year, compared to a biennial (two seasons) or perennial (three or more seasons) plant.

antioxidant (Underappreciated Smell of Rain p. 22)—a substance that inhibits the destructive effects of oxidation, for example in the body or in foodstuffs and plastics.

arboretum (A Date with History p. 9)—a place where trees, shrubs and herbaceous plants are cultivated for scientific or educational purposes.

caliche (Underappreciated Smell of Rain p. 22)—a crust of calcium carbonate formed on stony soils of arid regions.

evergreen (Underappreciated Smell of Rain p. 22)—having green leaves through the winter; not deciduous.

foliar (Annuals p. 11)—pertaining to the leaves or foliage of plants.

heartwood (Velvet Mesquite p. 14)—the harder, innermost, and usually darker-colored wood comprising the interior of a tree trunk or branch.

lateral root (Underappreciated Smell of Rain p. 22)—a secondary root growing from a dominant or “parent” root.

organic fertilizer (Annuals p. 11)—a fertilizer whose molecules contain carbon and hydrogen atoms.

perennial (Annuals p. 11)—a plant whose life cycle lasts for three or more seasons; lasting year after year.

resinous (Underappreciated Smell of Rain p. 22)—describing organic substances formed in plant secretions, which are usually transparent or translucent, flammable, and insoluble in water.

sapwood (Velvet Mesquite p. 14)—the softer, newer, usually lighter-colored wood between the inner bark of a tree and the heartwood; the wood that actively transports water.

scarify (Velvet Mesquite p. 14)—to cut or soften the outer layer of a hard seed to hasten germination.

taproot (Underappreciated Smell of Rain p. 22)—the main root of a plant, having a single, dominant axis.

transpiration (Underappreciated Smell of Rain p. 22)—the act of giving off or exuding water vapor from a living body through a membrane or pores, especially in leaves.

tripartite (A Date with History p. 9)—divided into or composed of three parts.
At last! Whitney Cranshaw has put together a book on bugs that I have been wishing for. All 656 pages are packed with useful information on garden bugs, making this, as he boasts, the ultimate guide to backyard bugs. Dedicated to “entomology educators, and the Cooperative Extension system which so well fosters the spirit of shared learning,” you will like this book.

Not able to include the well over 100,000 plus insects that inhabit North America, Cranshaw focuses in on those 1,420 most likely to be encountered by gardeners, and most likely to injure plants in our backyards. After perusing garden books, a review of handouts produced by Cooperative Extensions around the country was done to see what insects people encounter the most, databases were checked and universities contacted to contribute suggestions. The result is a comprehensive compilation of all those bugs you love to hate.

Organized under chapter headings such as leaf chewers; flower, fruit and seed feeders; sap suckers; stem and twig damagers; trunk and branch borers; root, tuber and bulb feeders; beneficials and more, Cranshaw makes it easy to find the culprit that you may be trying to identify.

Identification is simplified: No thumbing through pages to see a small photo of a bug mentioned pages before. It’s right there, right next to the description, big and easy to see. Treating correctly for the insect that you may be battling is essential, and knowing the good guys is too. Without the aid of this book, I would have squashed an assassin bug just this morning. They love to eat other bugs, its death would have been a loss for my garden.

A big appendix lists plants and the insects that are most attracted to them. For instance, under citrus are listed 21 scales, 3 mites, 5 leaf chewers, 1 peelminder, and 9 other sucking insects that might be attacking your tree. Under rose are listed the flower chewers; gall makers, scales, flower-sucking and other sucking insects, mites, cane borers, and root feeders attracted to this plant. An 18-page index lists the insects by their Latin and common names for those who know them. Published this year for $30 on acid-free paper, it is a must-have book for all insect fighters and lovers, gardeners and entomologists.
Is Your Gardening Library Complete?

*Desert Gardening for Beginners: How to Grow Vegetables, Flowers and Herbs in an Arid Climate* covers all the basics for desert gardeners. There are chapters on desert soil characteristics, soil preparation, removing Bermuda grass, garden design and location, making compost, cultivation techniques, effective watering, managing insects, diagnosing problems, as well as specific tips for vegetables, flowers and herbs. As an added bonus, the book includes three planting calendars that provide the best months to sow hundreds of vegetables, flowers and herbs for maximum success.

$8.95

*Desert Landscaping for Beginners* covers successful landscaping in the Southwest requires a different set of techniques than used by gardeners in most of the Country. *Desert Landscaping for Beginners* contains the latest research-based information from the University of Arizona, written in user-friendly language. Each chapter was written by a local expert with years of experience in that subject. The 224-page book includes illustrations, resources and index

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Regardless of your gardening experience, you can easily save money on utility bills, conserve water, reduce yard waste sent to landfills, and create a low-maintenance landscape that is in balance with its natural surroundings. *Earth-Friendly Desert Gardening* shows you how.

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Northwest Valley Satellite location: Property Owners & Residents Association (PORA) Office
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Master Gardener Citrus Clinic
East Valley
held at the
Greenfield Citrus Nursery
2558 E. Lehi Rd., Mesa

Saturday, January 22, 2005
8:30 a.m. - 12:00 p.m.

Master Gardener Citrus Clinic
Northwest Valley
held at the
Citrus Agricultural Center
Waddell, Arizona

Saturday, January 29, 2005
8:30 a.m. - 12:00 p.m.

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For more information call
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