

# Southwest Trees & Turf

Volume 20, Number 6

November/December 2014

www.swtreesandturf.com

## Calibrate for Water Conservation By Jeffrey Gilbert

Irrigation systems are probably one of the biggest investments made to help maintain landscape plants. They also are both customized for a particular site and probably the most heavily used 'tools', sometimes on a daily basis, especially in the desert Southwest. But unlike other tools, most of the irrigation system is buried and often operated at night and therefore out of sight.

Like any other equipment, the irrigation system requires regular maintenance. And, similar to spray and fertilizer equipment, calibration is essential to guarantee the desired application.

Given the fact that water resources are increasingly scarce and expensive, more frequent calibration of the irrigation system is warranted. Testing and calibration of an irrigation system should be done on at least an annual basis and especially when any significant changes have been made to the system.

### PRECIPITATION RATES

The precipitation rate is one of the most useful pieces of data collected during an audit. The precipitation rate when determined using an audit represents 'real-world' values



*Learning how to audit and calibrate your sprinkler system can save water and money. Photo courtesy: Jeffrey Gilbert*

that account for actual sprinkler spacing, arcs as-set, variable system pressure throughout a zone, wear on the individual components, misaligned sprinklers, blocked patterns and any "customization" that has been done since the system was originally installed.

System pressure can decrease, especially if surrounding areas have been 'built up' with new

residential or other commercial properties since the original installation. Normal wear can increase the orifice size of the nozzles and, in turn, increase overall demand within a zone and lower system pressure.

Modifications that change the nozzle sizes and/or brands of sprinklers within a zone can

**Continued on Page 10**

## Water Conservation by Design By Dan Gregg

The economics behind water conservation are pushing cities to rely on architects and other landscape industry professionals to design spaces that are more energy efficient than ever before. This saves not only natural resources, but also financial resources.

Against the backdrop of megadrought conditions in the Southwest United States, water management has become a priority for businesses — with even greater pressure in the landscape industry to reduce water use. With advanced technologies, heightened attention to design detail, further research into horticulture and a focus on education, professionals in the industry have more technology than ever before to create spaces that reduce water use, yet still are aesthetically pleasing.

### DESIGN

Landscape architects are designing their projects to conserve water by using the topography of the land to create specific areas where water can be drained and then reused. Additionally, architects are sensitive to the types of plants and grasses that are used, ensuring

those that require more water be kept to defined areas, so others are not over or underwatered in the process.

In geographies that lend themselves to hilly terrains, architects are using low areas to capture water. The water is then routed to waterbeds, which let the plants wick water from underneath as needed. In the past, these beds were situated

at the tops of hills and would strictly collect rainwater and not the runoff that is captured at the bottom of the hills.

Understanding the landscape and the uses for the space are key to creating an efficient plan. If the landscape space receives a lot of foot traffic, the design may have to account for more water to be used there. Previously, an architect

**Continued on Page 11**

Southwest Trees & Turf  
PO Box 796  
Orange, CA 92856-6796  
**CHANGE SERVICE REQUESTED**

PRSR STD  
U.S. POSTAGE  
**PAID**  
Palm Desert, CA  
Permit No. 9

### WHAT'S INSIDE

Landscape Maintenance Monthly.....	3
Book of the Month.....	3
Desert Arborist.....	4
Research You Can Use.....	5
Plants at a Glance.....	6
Turf Tips .....	8
Business Corner.....	9
Association Updates.....	9
SWTT 2014 Index.....	10
Tools of the Trade.....	11
Calendar.....	12

### WHO WE ARE

**Publisher**  
Epicenter Management

**Publishing Contact**  
Kathleen Mahoney  
PO Box 796  
Orange, CA 92856  
714.639.2200  
kathleen@epicentermgmt.us  
www.epicentermgmt.com

**Editor**  
Helen M. Stone  
702.454.3057  
helen@swtreesandturf.com

**Southwest Trees & Turf** is a bimonthly publication dedicated to education and professionalism in the arid Southwest. Subscriptions are \$30 for 6 issues. We welcome and encourage all editorial submissions from our readers. Information in this journal may be reproduced for non-profit, educational purposes. Please include source credit if reproducing. Contact the publisher if material is used for any other purpose to obtain written permission.

**Please submit all subscription requests, changes or removals in writing to:**

Southwest Trees & Turf  
PO Box 796  
Orange, CA 92856-6796  
Email: kathleen@epicentermgmt.us

## LETTER FROM THE EDITOR

**“Mama exhorted her children at every opportunity to ‘jump at de sun.’ We might not land on the sun, but at least we would get off the ground.”**

**Zora Neale Hurston, *Dust Tracks on a Road*, 1942**



they were a small business. I imagined someone holding onto a rope or a ledge ... and holding, and holding. Until finally, the rope frayed and snapped or their fingers finally gave out and they plunged to their demise.

Well, now I was the one plunging. I worked hard to stay aloft, but the revenue to keep this publication alive came from advertisers who targeted turf and landscape professionals in the Southwest. And that market had shrunk considerably.

But Rose, like many readers, loved the publication. Although it was a huge risk for her small business, Epicenter Management, she made the leap of faith to get it off the ground again. It took a year of planning and preparation, and we

officially relaunched in January 2014.

And we're still here and planning for 2015! Thank you to everyone who has supported our efforts. All of you who sent in your \$30 subscription payment helped tremendously.

Our advertisers are the backbone of this publication, and I'll ask you again to please look to them first for your product needs. We have some of the best companies in the business in these pages, and they need your support as well!

The Great Recession “officially” began in December 2007 when the housing bubble began to burst and ended in June 2009. But the effects wore on and on and even today, *LA Times* reporter Scott

Martelle recently wrote, “For many, family income and lifestyle have yet to recover – and likely never will ... while Wall Street might be soaring, most of the rest of us are not.”

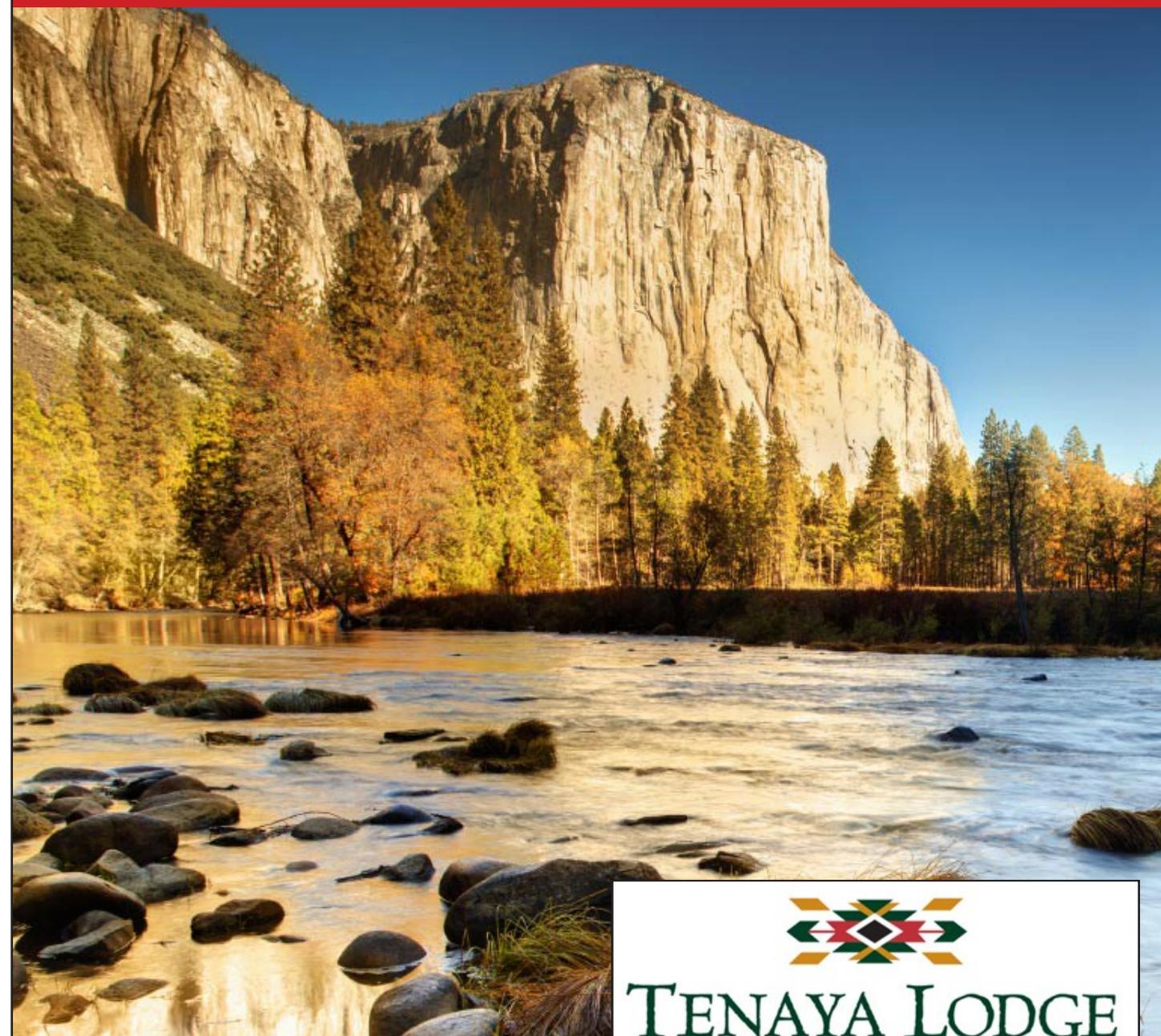
Green shoots are poking through, though. Our annual Desert Green conference had some of the best attendance in a long time. A lot of folks whose funding for conferences was pulled for years were back! And we saw many new faces as well.

We're looking forward to an exciting and productive 2015. I am awash with gratitude for this renewed opportunity and thank you from the bottom of my heart. I hope you have a wonderful holiday season and the coming year brings abundance and good health to you and yours. ♦

Western Chapter ISA invites you...

# NATURE AND SCIENCE OF ARBORICULTURE

**81st Annual WCISA Conference & Trade Show  
Save the Date: April 27-May 1, 2015**



[www.wcisaconnect.com](http://www.wcisaconnect.com)

  
**TENAYA LODGE**  
AT YOSEMITE

## NEWS

### Yuma STMA Show

Yuma Parks and Recreation invites you to its 19th Annual Sports Turf, Tree & Landscape Expo on Thursday, December 4 at the Yuma Civic Center from 8 am to 1:30 pm. Concurrent sessions offer seminars on park and sports turf maintenance.

Registration for the Sports Turf and Equipment Show is only \$10 per person and includes the “famous” tri-tip lunch. Preregistration is encouraged. To purchase tickets and to register, visit [yumaaz.gov/parksandrec](http://yumaaz.gov/parksandrec).

The 19th Sports Turf Golf Tournament will be held Wednesday, December 3 at Desert Hills Golf Course. The cost is \$50 per player and includes green fees, cart, food, and prizes. To register for the tournament, call Rich Walton at 928.373.5209.

Vendor applications are still being accepted.

For more information call 928.373.5243 or email [Joel.Hubbard@yumaaz.gov](mailto:Joel.Hubbard@yumaaz.gov). ♦

### Xeriscape NM

The Xeriscape Council of New Mexico conference will be held February 19-20 at the Sheraton Albuquerque. The theme this year is Watershed CPR: Restoring Natural, Built and Human Environments.

Watersheds are in great need of resuscitation and this year's Land & Water Summit will concentrate on learning about ways to improve watershed health.

This year's Summit will explore options for enhancing watershed management, reducing human impact through the efficient use of water, and illustrating the connections between the watershed and its inhabitants.

For more information, visit [xeriscapenm.com](http://xeriscapenm.com). ♦

# Holiday Wish List 2014

By Dennis Swartzell

Well it's been a while since we last visited the Holiday Wish List. There are so many things to consider that whittling down the list was a challenge. What follows is a great list of really cool stuff, most of which is affordable and certainly usable.

First up is a new line of logoware brought to us by the fine folks at the Western Chapter of the International Society of Arboriculture. The items include a variety of tees, hoodies, hats, drink containers and a tote all with the slogan "Proud to be an Arborist" coupled with the Western Chapter logo.

The gear is nice looking and functional, but the best part is that all the proceeds go directly to The Britton Fund. This non-profit was named in honor of the late John C. Britton who played a major role in the arborist certification program. The Britton Fund supports research and education on trees. For more information visit: [www.thebrittonfund.org](http://www.thebrittonfund.org) For the gear visit: <http://bit.do/ProudArborist>

The next one is a great idea that my business partner John Smith came up with. He picked up some inexpensive plastic mortar mixing tubs for use in drying and prepping soil samples. The units are roughly 26 by 20 inches and easily hold a five gallon bucket of soil. They are great for spreading out a quantity of soil to dry and allow for filling of the sample bags. Now I use several of these bins just about every week to prep my submittals. They nest inside of each other for easy storage. The heavy duty mixing tubs are available at most hardware stores for about \$6 each. Thanks for the great tip, John.

New gadgets include a portable power source for all your electronic gear (smartphone, tablet, GPS). The Brunton® Heavy Metal™ 5500 Portable Power unit has high grade lithium ion cells for fast recharges plus twin USB outlets for powering up multiple devices at once. Small and lightweight, this unit could be a huge time saver in the field. It is priced at \$80 from Forestry Suppliers. [www.forestry-suppliers.com](http://www.forestry-suppliers.com)

For the landscapers who are utilizing multiple bags of fertilizer or other granular products check out the Camel Bag Clip. Picture a giant sized chip clip, but made with a much sturdier grip to lock the top of the bag plus a handy carry handle. Weighing only one pound this unit can clip onto and hold up to 40 pounds. It also is great for bird or dog food, charcoal or anything that comes in a paper or plastic bag. Available from AM Leonard for \$15 [www.amleo.com](http://www.amleo.com)

John Eisenhower from Integrity Tree Service in Phoenix loves his RopeTek Integrated Communication System helmet. The equipment can be installed on standard issue climbing helmets (send them your helmet and they will install and warranty the unit) and features Bluetooth 3.0 technology. Weatherproof, 10 hours of active talk time, two-way communication coupled with integrated hearing protection this system allows climbers to communicate with ground personnel, crane operators, or fellow climbers while protecting their noggin. John uses it for crane removals and carries a spare set (without the helmet) for the crane operator. Affordable and reliable at \$220 each from Tree Stuff.com. Thanks, John.

My buddy Russ Thompson with Sunkissed Horticultural is always coming up with a new gadget. His latest is a handheld camera, periscope, telescope and microscope all rolled up into one unit. The Advanced Borescope Inspection System from Garrett Wade includes a thin, flexible cable (39 inches long) for insertion into really confined spaces with a tiny camera and 4 LED lamps on the tip. The image is transferred to a 2-3/8 inch viewing screen on the hand-held. It projects images as close as one inch or one foot away with an 80 degree field of view. Great for tree cavity inspections or any other place where you really do not want to stick your hands. This item used to be prohibitively expensive and only available to engineers and scientists, but now even we tree guys and gals can afford a unit priced at \$215 at [www.garrettwade.com](http://www.garrettwade.com). Thanks, Russ.

Of course my wish list would not be complete without a book (or two). My occasional road companion and botanist Dr. Richard Spellenberg helped to author two Princeton

Press Field Guides. Rich was the lead on Trees of Western North America and a contributor on Trees of Eastern North America. Both guides are exceptional with easy to read text, side notes, location maps and useful illustrations. Of course I love the *Western Field Guide* (630 species) as it includes all my faves (both native and introduced). It would make a lovely gift for your arborist at \$30 available from fine book stores or online. Richard Spellenberg, Christopher J. Earle, and Gil Nelson with illustrations by David More, 560 pages, Princeton Press, 2014.

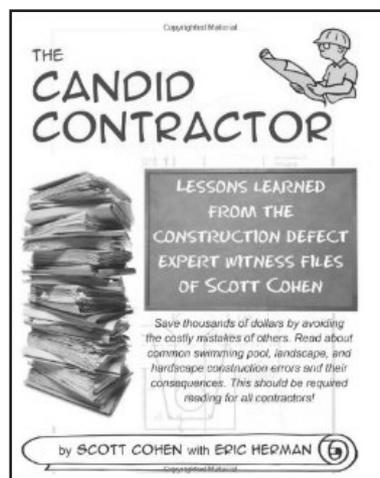
I would like to say Happy Holidays to all the readers of *Southwest Trees & Turf*. May you and yours have a safe and prosperous New Year! ♦

Dennis Swartzell is a consulting arborist with Horticulture Consultants Inc. who has "branched out" as a broker of quality trees and plants. He is based in Las Vegas, NV and can be reached at 702.456.7776 or via e-mail at [arbor-1@cox.net](mailto:arbor-1@cox.net).

## BOOK OF THE MONTH

### The Candid Contractor

By Scott Cohen, with Eric Herman



#### PUBLISHER:

CreateSpace Independent Publishing Platform

#### DETAILS:

Paperback, 114 Pages

#### PRICE:

\$26.61, Amazon.com

In this latest volume, Scott Cohen candidly shares his knowledge from more than 20 years of experience as a licensed landscape, swimming pool, and general contractor.

Cohen has served as a construction defect expert witness for the California Contractor's State License Board (CSLB) for over a decade, inspecting hundreds of construction defect details of swimming pools, outdoor kitchens, ponds, water features, fire features, and more. The candid contractor offers his technical expertise as well as common sense advice to contractors and homeowners who plan to improve their yard.

Scott Cohen is an acclaimed garden designer, landscaper and swimming pool contractor whose award-winning work has been frequently showcased on HGTV and in numerous books and national magazines. A charismatic and entertaining speaker, Cohen is the author of nine design and construction books, including the award-winning Outdoor Kitchen Design Workbook, Poolscapes, and Outdoor Fireplaces and Fire Pits. He is also a construction defect expert witness and serves as a member of the California Contractors Board Industry Expert Program. ♦



Are you  
PROUD  
to be an  
arborist?



Shop new arborist gear at  
<http://bit.do/ProudArborist>

# Trees and Water: The Life Force

By Juan Barba

There are two basic principles of planting trees in the Southwest, but with a myriad of variations. First, plant the green part up. Second, add water. We debate the application of these two rules, how exactly to do each, but they are truisms. Unless you are planting seeds, trees in the arid country we inhabit will need to be watered, rather irrigated, by moistening the soil with water brought by pipes.

Container plants must be irrigated after planting. Apply water by spray, drip or flood, because we don't get enough rainfall to keep a nursery plant from drying.

## HOW MUCH?

The calculation is how much and how often. Sounds simple but the variables are many; the type of water delivery, soil, environment and tree species are only a few factors that come into play.

It is simple at first and becomes complex with time and growth. Simply wet the entire rootball, don't let it dry, and provide enough moisture to the nearby soil so that roots can grow into it with ease. You don't need a lot of water, but you need it frequently. Letting a young tree dry out just one time can set it back severely with dead roots and potting soil resisting re-hydration. It will need time to recover given the best rehab care and may never become acceptable again.

Drip is the most acceptable delivery method these days. Drip is a wonderful irrigation method for young trees. As we practice it, the entire rootball is wetted and roots have irrigated soil to grow into.

Install enough emitters on the rootball to wet it thoroughly, not just the soil surrounding the tree. The fear that any water on the young trunk will be fatal is trumped by the danger of dehydration. We see trees that have surrounding soil properly hydrated but the rootball has dried out and the tree is suffering. Wet the rootball.

## HOW OFTEN?

In time, the irrigation should be scheduled to run longer and less often if it is being managed properly. Just today I saw maturing trees with three 2-GPH (gallons per hour) emitters irrigated for one hour, three times a week. Not enough!

When changing schedules, knowledge of the soil is important. Many Tucson soils are sandy with a hardpan, making scheduling difficult. Many Phoenix soils are clayey and are not conducive to draining, so need irrigation less often with longer irrigation runs. In addition, that nice 15 gallon (#15) Pistache might



Tree roots grow where the water is as shown by this tree after turf removal.

Photo Courtesy: Juan Barba

have three emitters when planted but with growth will need six, then 12, someday 24.

See the pattern? Big trees need big water. For plants-sakes, establish enough emitters for the mature plant on installation. Nobody wants to enlarge the irrigated area under a tree and very few will. You can plug emitters distant from the tree and un-plug them when they are necessary for proper care.

## DELIVER THE GOODS

Yes, drip works well for young trees; that is what it is designed for. In orchards they can lay poly on the surface and roll it up and re-install it when it isn't working properly. It is not as well-designed for burial and care of older shade trees.

We know now that poly and emitters don't last decades but it is often viewed as a system that will. Better management practices stipulate hard pipe rather than poly and have accessible emitters so repairs can be made.

Drip wets the maximum root area when trees are young and the minimum area when they are large. When have you ever seen a cottonwood with enough emitters?

Apparently it doesn't matter where the water is delivered to mature trees, just that sufficient water is. It doesn't matter to the tree if it needs say, 29 emitters, whether they are even distance apart in concentric rings starting near the trunk, scattered randomly under the canopy, or all in a circle at the dripline.

In contrast, flood-irrigated trees seem to perform better as they age. Spray is a method to wet the entire root area, but is the most wasteful irrigation method due to evaporation before water even hits the ground. We conserve water, not waste it...right?

## BUBBLERS BEST?

Bubblers are a method of flood irrigating. Flood irrigating, is more wasteful than drip but less than spray and bubblers are less wasteful than hose delivery. Fixed bubblers should be used rather than adjustable heads so that water calculations can be made.

The University of Arizona has a bulletin showing the calculations for solving bubbler/controller issues. Mounted on PVC pipe on short risers, bubblers deliver from .25 gallons/minute to 2 gallons/minute. That measurement is in minutes, not hours. They will wet a surface area of about 12-18 inches in diameter.

To prevent them from protruding above grade and providing a trip hazard or a maintenance repeat, bubblers can be installed below ground in a canister filled with gravel. Or be

purchased as pop-ups so they retract underground when the valve is off. Since water is delivered rapidly, a berm or retention area is advisable so runoff will be minimal. Bubblers are perfect for deep watering and are probably better suited for clayey soils than sand.

## HOW DEEP?

Deep watering is a bit of a red herring. Roots need air and water, so no matter how deep you attempt to water, if there is no air there will be no roots to speak of. They are actually very similar in their oxygen needs to people.

Sinker/support roots are there at an expense to trees, they are really not extracting much moisture or nutrients. So we look at manageable depths to water and think in terms of two or three feet deep and seldom if ever five feet deep.

Another manageable depth we consider is that on the average, one inch of water will penetrate about six inches of soil. A four-inch deep basin filled rapidly will wet approximately two feet of soil if it isn't extremely dry, more if it is still somewhat wet and still more if it is sandy soil.

One recent learning point was a study by Ursula Schuch and others at the University of Arizona on providing less water than calculated ETo (reference evapotranspiration, the evaporating power of the atmosphere at a specific location and time of the year). All the trees did well at ETo, but some of our desert trees like palo verde performed as well on a fraction of ETo as they did on 80 percent ETo. Other trees such as pine and ash suffered if they were at 80 percent ETo and were dying at low-level ETo.

## AGE MATTERS

It was postulated years ago that if a tree doubles in size, for instance going from a size three-inch caliper to six inches, the cell count increases five times. Will you supply five times as much water?

A tree is about 90 percent water. How about when it goes to 12 inches DBH? Three emitters at installation were excessive; will 24 emitters at 12-inch DBH be enough? Is flood irrigation more attractive for tree health now? It may not be politically correct, but it looks like the truth. ♦

Juan Barba is a consulting arborist in Tucson, AZ. He is the president of Juan J. Barba & Associates. Barba can be reached at 520.622.6938 or e-mail [juanbarba.arborist@gmail.com](mailto:juanbarba.arborist@gmail.com).

Tree Care Professionals Serving Communities Who Care About Trees



### Urban Forestry Management:

- Tree Pruning
- Tree Removal
- Tree Planting
- Tree Site Inventory (GIS/GPS)
- Modern Equipment
- 24/7 Emergency Response
- 75+ Certified Arborists
- 100+ Certified Tree Workers

### Offices:

Anaheim, CA  
 Fresno, CA • Las Vegas, NV  
 Mesa, AZ • Riverside, CA  
 San Diego, CA • San Jose, CA  
 Stockton, CA • Ventura, CA

800-521-3714 [WCAINC.COM](http://WCAINC.COM)

# Avoid Mayhem with Good Irrigation Managers By Bob Morris

Determining the best irrigation schedule for a mixture of landscape plants is difficult at best. When salinity is involved, either in the soil or in the irrigation water, it complicates matters. Let's cover some irrigation do's and don'ts and see how salinity might affect the way we irrigate.

Except for shallow-rooted plants like lawns, annual flowers and vegetables in raised beds, daily irrigations should be avoided any time of the year. Many turfgrasses and annuals have root systems that extend into the soil 12 inches or less. During the heat of the summer and under desert conditions some of these plants may require daily irrigations.

The concept of irrigating non-desert landscape plants is focused on wetting the root system to its entire depth, allowing the soil to drain and re-wetting the soil again when half of this water has been used by the plant or evaporated. When designing a landscape irrigation system we try, to the best of our abilities, to put plants with similar rooting depths on the same valve or station.

## MIXING IT UP

More often than not we are handed an irrigation system with a mixture of plants that have a variety of rooting depths. When deciding an irrigation schedule for a single valve or station we generally have two options; set the number of minutes based on the average rooting depth of all the plants or let the plants with deepest root systems dictate the number of minutes of station runtime.

This decision depends on whether to conserve water or minimize landscape problems. When we decide to under irrigate some plants so the majority receive the correct amount of water, we may see some plant damage. If the under irrigation is not severe, we may see the slowing of plant growth, a decline in density due to leaf drop, or leaf tips, or burning of leaf margins. When plants are severely under irrigated then we begin to see branch die back.

Under irrigating, or applying less water than dictated by a plant's rooting depth, can also impact safety issues. What happens if we under-irrigate large trees such as pines, which have shallow roots to take up water but require deeper roots to anchor it in the soil?

Current irrigation technology is based on time management and varying how water is applied to plants. This technology varies the amount of water applied to plants by changing the number of minutes valves are open, increasing or decreasing the points of water emission or changing the rate of water applied at the point of emission. This translates to increasing or decreasing the number of drip emitters, bubblers, nozzles or spray heads or substituting old points of emission for new ones that have different rates of application.

## CHANGE WITH CAUTION

There are some obvious cases where changes must be made. For example, changes must be made when some plants are receiving excessive amounts of water or not enough water while others on the same valve appear to be watered adequately.

As plants get bigger, they need more water. When plants get bigger, their tops get bigger as well as their root system. Increasing plant size requires the application of higher volumes of water. Increased plant size dictates that the area irrigated under the plant also needs to be increased. Logic tells us we need to increase the amount of water by applying it to a larger area.

Of course increasing the number of minutes is the easiest solution to the problem, but is it the right one?

The quick fix of bumping up the number of minutes creates no new revenue for the landscape maintenance company and is likely a poor solution to an irrigation problem. Is it possible that a discussion of the problem with the owner or supervisor might result in a better solution to the problem for everyone involved? Might this discussion generate revenue, or even a better looking landscape, and also result in water conservation?

## WHEN TO IRRIGATE

The second decision in scheduling irrigations is determining when to apply water. This is a very different question than determining how much water to apply. Unlike the first question, the answer to the second question is implemented solely by determining when to turn the valve on or off.

Research has demonstrated that no irrigation controller, no matter how "smart" it is, can substitute for a knowledgeable irrigation manager. The principal reason is that knowledgeable irrigation managers focus on their irrigation schedules ahead of the irrigation curve, not behind it.

Knowing when to turn an irrigation valve on is half art and half science. The "science" part of it can be handled by many good irrigation controllers. The "art" part of it is staying aware of your irrigation system, how it's operating, monitoring the landscape and paying close attention to current as well as projected future weather conditions, particularly during the summer months.

Three primary weather factors good irrigation managers are constantly monitoring, whether they realize it or not, are current or potential changes in the temperature, wind and sunlight intensity.

## MANAGING THE MAYHEM

In most environments, and in particular desert environments, our everyday irrigation predictions are based on normal, seasonal temperatures, normal wind speed and a clear sky. The single factor most likely to create mayhem in a landscape during the summer months is wind. The second is above normal spikes in temperature. The absolute worst scenario is a spike in daytime temperature accompanied with strong winds and a clear sky. A good irrigation manager stays ahead of the curve by applying water in anticipation of mayhem, not during.

As if this was not difficult enough, salts and salinity add a dimension to the irrigation dilemma which test the abilities of the best irrigation managers. Salts are salts. Without getting too technical, any time a substance is added to water and dissolves you have the

potential for increasing salinity. Any time you add something to the irrigation water or the soil you may affect salinity.

Two types of plant damage result from excess salts or salinity in the soil or irrigation water; the type of salt may be directly toxic to the plant (as is the case with plain old table salt) and competition with the plant for water.

Any type of salt will dissolve in water adding to a general increase in salinity. Slow release fertilizers are less of a problem in this regard than fast or quick release fertilizers. When salts of any kind are added to the soil, these salts compete with the plant for soil moisture.

In other words the salinity of the soil "pulls" or holds on to water, making water less available to the plant. This means that when salinity is a problem, we need to irrigate more frequently to reduce plant stress. This is particularly true in summer months.

Two basic concepts when irrigating to avoid salinity problems are dilution and flushing. Keep the salts diluted and add enough water to flush these salts below the rootzone. This requires that the soil drains adequately. ♦

Bob Morris is a consultant for Viragrow, Inc. For more information, visit [www.viragrow.com](http://www.viragrow.com).





## GPS Fleet and Asset Tracking

Business Intelligence for Small to Medium Sized Fleets

**Optimize Equipment Use and Reduce Idle Time**

- ✓ **Automatic Vehicle Location & Routing 24/7**  
With Networkfleet's web-based interface, you get quick access 24/7 to location and diagnostic information on every aspect of your fleet.
- ✓ **Increase Driver Productivity**  
Locate and delegate vehicle closest to job, verify vehicle stops, and quickly locate broke down vehicles.
- ✓ **Increase Fleet Safety & Security**  
Protect your vehicles in case of theft or break down with free roadside assistance, speed violation reports, and nationwide stolen vehicle recovery.
- ✓ **Reduce Operating Costs**  
Eliminate unauthorized vehicle usage, identify under-utilized vehicles, and reduce costly idle time.

"On average we're saving the company more than \$100,000 in overtime each year. This doesn't include savings from lower fuel usage and improved fuel efficiency from being able to monitor driver's speeds."  
-Gary Smith, Operations Manager, Pak West Paper & Packaging


**Toll Free: 855-477-4771 Ext. #2424**  
[www.USAFleetSolutions.com](http://www.USAFleetSolutions.com)


BUILT TO  
**CONSERVE**

**THE HUNTER MP ROTATOR.  
 THE INDUSTRY'S MOST  
 EFFICIENT NOZZLE.**

**THE MP ROTATOR'S UNIFORM DISTRIBUTION RESULTS IN 30% LESS WATER USE**  
when compared to traditional sprays, and covers distances of up to 35'. And now, the  
**NEW** MP800SR offers increased versatility for spaces as tight as 6'.




MP800SR      MP1000

**Hunter®**

**RESIDENTIAL & COMMERCIAL IRRIGATION | Built on Innovation**  
Learn more. Visit [hunterindustries.com](http://hunterindustries.com)

# Apache Plume Shines in Desert Landscapes

By Joe Pearl

After spending a few days in New Mexico for the annual balloon festival, I noticed Apache plume all over the valley. Seems like the landscapers in Albuquerque are quite fond of *Fallugia paradoxa* for landscape uses. Sadly, living in the surrounding area of Phoenix, AZ, I rarely see this as a landscape plant. Why that's the case is unknown to me, but maybe after some of our local landscapers and nurserymen read this, Apache plume will become more available, and used more often!

What makes this plant so desirable is that it is very durable. It can survive the extreme heat of the valley and other low lying, desert regions, and also take temperatures as low as 30 degrees below

zero. I personally do not want to check out how they survive a temperature of -30, but I will believe who said that!

So, USDA zones from 4 - 7 are where one might find them growing, but by looking at a map, one will be surprised to see that these feathery delights can be found all across Texas to Oklahoma, west to California and into Utah and Nevada. They are native to our deserts from southern California east to Texas. The Hopi people steep the leaves for a hair tonic.

So there are no excuses why one can't find a use for this plant in a landscape. As a semi-deciduous to semi-evergreen plant, it can be placed in virtually any garden design.

Growing to a height of almost six feet and spreading to about five feet in width, they are not giants, so they can be used for a variety of locations. Whether they are planted as a foundation plant or a median landscape plant, they fit in easily. While I personally probably wouldn't use them as a foundation planting, in medians or along sidewalks are ideal spots. They are considered to be moderate in growth rate, so monthly pruning is by all means

not required. Perhaps quarterly

pruning and of course pruning for traffic clearance are acceptable.

However, if the plant gets too rangy or sparse, it can be cut clear back to the ground and should come back with a nice compact shape. Whatever you do, please don't shear this shrub!

Locations for the Apache plume are simple, sun, sun, sun! They can tolerate some shade, but they are fine in as much sun as available. In extreme hot, sunny locales, a little bit of shade might be graciously accepted by these lovely plants. However, they will survive and even thrive in reflected heat. They are also recommended for erosion control on slopes.

As a desert native, they will grow in almost any type of soil. In fact, they are recommended for alkaline soils, which most of us deal with on a regular basis. Planted in a rich garden soil full of organic matter, they can get rangy and will produce fewer flowers.

Like most of the plants I have written about, they are true drought-tolerant plants. They need an even amount of water after planting provided on a regular basis, like all new plants. Once adapted to an area, they can have the amount of water reduced, and they do tend to fend for themselves.

So, how does one describe the Apache plume? They are easily identified by their lovely little white flowers, about a 1/4-inch in diameter, found in the spring and



Apache plume takes reflected heat and thrives on low water while covering itself with showy, feathery fruit.

Photos courtesy: Helen M. Stone

sometimes in the fall. They have a yellow center to each flower as well.

Once the blooms are finished, they are followed up by a showy stalk a few inches in length. This is where the common name comes from, as the feathery fruit is said to resemble an Apache headdress. These remain on the plant for a while, but if you tire of the look, do a selective pruning and they are gone! As mentioned earlier, they are considered to be a semi-evergreen plant. The foliage is a nice dark green, small leaflet. Between the feathery stalks and the lovely little white flowers, they are easy to identify.

So what plants look nice alongside these? Being a relatively open-looking plant, yet not too open, they can be planted with fairy dusters, rosewoods, desert honeysuckle and Mexican bird of paradise, among many other plants. I like them as an accent plant, but they are great in a wide-open area, planted in mass with other flowering desert flora. Creative minds will allow for a creative landscape. It is hard to go wrong with an Apache plume! ♦

Joe Pearl is a horticulture consultant in Mesa, AZ

## NEWS

### Artificial Turf Spotlighted

A story aired on NBC Nightly News in October spotlighted the concerns that some people have expressed about the safety of artificial turf fields in light of health challenges that a number of young athletes are experiencing or have experienced. While noting that these fields have been declared safe playing surfaces by the EPA, the story raised questions and highlights the fact that additional research about the safety question is merited.

Since then, the use of artificial turf and the recycled tires that are used as mulch has been questioned across the nation. Schools and parks have halted plans to install fields as parents worry about the link between the turf and cancer in young athletes.

The EPA has declared the turf safe to play on, but its findings are being widely questioned.

"This just became a very big issue for a lot of parents. You have to know that people are very, very concerned," said Edison Elementary parent Adrienne Alitowski in the Glendale, CA News Press.

The California Office of Environmental Health Hazard Assessment conducted a safety study on artificial turf in 2010 to determine whether turf made from tires poses a health hazard due to people inhaling volatile organic compounds.

"We found no evidence of hazards from inhalation or from bacterial infections... but did find more skin abrasions from artificial turf than from natural grass," said Sam Delson, deputy director for external and legislative affairs. "However, we did not evaluate all possible health issues from artificial turf."

Stay tuned... ♦



**STOVER**  
SEED COMPANY

For over 80 years the specialty seed source for:

-Native Grasses and Wildflowers

-Kikuyu, Paspalum, Hybrid Bermuda

-Bentgrassess, Fine Fescues, Ryegrasses

Golf Course Representatives:

Jim Culley 213-268-3193

Don Lewis 213-247-3266

Marcus Coulombe 213-760-0524

Home Office: 800-621-0315

[www.stoverseed.com](http://www.stoverseed.com)

SAFE FOR THE ENVIRONMENT



Helps prevent fertilizer leaching into ground water.

**GRO POWER** INC.

[www.gropower.com](http://www.gropower.com) • (800) 473-1307

# Jazzed about Jujube

By Dr. Jacqueline A. Soule

quickly grows to reach 15 to 30 feet tall, and spreads 10 to 20 feet wide with branches growing in a zig-zag pattern. It tends to a narrow crown, rather than a spreading one.

In autumn the leaves turn pale to golden yellow, dropping to reveal a striking architecture and allowing sunlight to strike the home in winter for some helpful passive heating. Deep rooted, I have not heard of it causing issues with walls. The wood is very hard and strong, and, like all fruit wood, can be used for cooking.

What is not to like? Plants tend to be thorny, but this is highly variable. Thorniness is not an issue, since fruit is easily harvested by simply allowing it to drop. Fruit is generally the size of a large cherry, with taste and consistency of a dried date. Fruit is reddish to brown when ripe, its smooth skin wrinkling like a date as it dries. Like a date, each fruit has a single pit inside.

Flowers are fragrant but small, about 1/4-inch across, and white or greenish-yellow. Pollination needs of the jujube are not clearly defined, but appear to be done by ants or other insects and possibly by the wind. Most jujube cultivars produce fruit without cross-pollination. Jujube fruiting is well protected from late frosts by flowering only after all chance of cold weather has passed.

Most jujubes are self-fertile but yields are better with cross-pollination, even with another plant of the same variety. Jujube requires 100 to 150 chill hours.

Jujubes should be given a warm, sunny location, but are

otherwise relatively undemanding. Given adequate heat and sun, the trees will thrive without any special care. Another excellent tree for the beginner, or for an aging gardener who wants less to maintain.

Jujubes tolerate many types of soils, soils with high salinity or high alkalinity, but prefer a sandy, well-drained soil over heavy, poorly drained soil.

One of the outstanding qualities of the jujube tree are its tolerance of drought conditions. Regular watering, though, is important to assure a quality fruit crop, generally 20 inches of water per year in non-dormant months. Like all trees, water should be applied so that it reaches the three-foot depth.

This leads to one other possible issue with the plants. In very wet sites, jujubes may spread underground and new plants emerge nearby, eventually forming a thicket. On dry sites or with reduced irrigation this is not an issue.

Fertilizer requirements have not been studied, but jujubes appear to do well with little or no fertilization. Light broadcast applications of a balanced fertilizer at two-month intervals during the growing season will speed growth.

## Recommended Varieties

- 'Ga' has larger fruit and is good for Upper Desert Zone.
- 'Lang' is almost spineless and dries well.
- 'Li' is nearly thornless and needs a second plant as pollinator.
- 'Sherwood' is best for Desert Zones and can self pollinate.
- 'So' is a more dwarf form, good for small spaces.
- 'Sugar Cane' is spiny but sweetest of all, and needs to cross pollinate with 'So,' 'Li,' or 'Lang.'

Unpruned trees produce as well as trees that have been pruned. If you chose to prune, do so in winter when plants are dormant. There are no known pests in the New World.

With luscious green foliage, fragrant flowers, edible fruit, golden autumn foliage, no known pests, and fast growing habit, this tree may find a home in many Southwestern yards. ♦

*Dr. Jacqueline A. Soule is an award-winning garden writer and author of 11 books, most of them on landscape plants and gardening in the Southwest. She currently lives, teaches and writes in Tucson, AZ, where she also serves as chair of the Advisory Board of the Desert Legume Program. More about her online at GardeningWithSoule.com*



**As a fruiting tree that tolerates drought and offers great garden interest, jujube is a natural choice for desert landscapes.**

*Photo courtesy: Jacqueline Soule (copyright; printed with permission)*

If you were at the recent 18th Annual Desert Green Conference in Las Vegas, you may have heard me speak on "Edible Landscaping." More here on that topic with a focus on one tree that could be part of virtually any Southwestern edible landscape design – the jujube, *Ziziphus jujuba*.

I appreciate this tree because it survives up to 120 degrees and down to minus 20F. An upright, deciduous shade tree with medium textured bright green leaves, it

## NEWS

### Hunter Promotions

Hunter Industries announced the hiring of a new product manager to support its MP Rotator® and sprays product lines. Kelsey Jacquard joins the product management team after four years as a mechanical engineer at Hunter. As an accomplished engineer, she worked on point source emitter design and development and several valve product improvement projects. She looks forward to assuming her new role and continuing Hunter's legacy of innovation for these essential business segments.

In addition, Stephanie Brownell, who had been serving as the company's tax director and corporate secretary, has been promoted to chief financial officer.

"We are pleased to announce this well-deserved promotion for Stephanie," said Greg Hunter, President of Hunter Industries. "She will provide critical strategic



**Kelsey Jacquard Stephanie Brownell**

financial oversight that will enable us to grow and expand our core values of customer satisfaction, innovation, family and citizenship. Her 19 years with Hunter Industries is an excellent example of our teams' tenure and dedication to our success."

Brownell has been with Hunter Industries since 1995. She graduated from San Diego State University, holds a master's degree in taxation, and is a Certified Public Accountant. She has served on the Board of Directors at Hunter Industries since 2010. ♦

**Ingredients:** Grass seed, fertilizer, AquaSmart, water-efficient nozzles, smart controller, soil moisture sensors. May contain traces of water and sunshine.

\*Water and sunshine may vary state to state. Please see your local branch for more details.

ASK ABOUT THE AMAZING BENEFITS OF **AquaSmart**  
A SOIL ENHANCEMENT PRODUCT

**EWING**  
www.ewing1.com/locations

IRRIGATION & WATER MANAGEMENT | TURF PRODUCTS | LANDSCAPE LIGHTING | RAINWATER HARVESTING | EROSION CONTROL | HARDSCAPE

## TURF TIPS

# Subsurface Drip Irrigation (SDI) for Turf

By Bernd Leinauer



A cut through a drip line under bermudagrass. There is extensive rooting all around the drip line but there are no roots inside. The drip line is clear.

Photos courtesy: Bernd Leinauer

Sprinkler systems are the most commonly used irrigation systems for turf-dominated landscapes despite their inefficiencies due to losses from run-off, wind drift, and evaporation. Subsurface irrigation systems, on the other hand are considered to irrigate more efficiently as they apply water directly to the rootzone, thereby avoiding problems such as over-spray, runoff, and wind drift.

and horticultural crops as well as trees.

Subsurface drip irrigation systems irrigate more efficiently because they apply water from emitters placed within the rootzone. Advantages of SDI include the uninterrupted use of the turf area during irrigation, energy savings as a result of lower operating water pressure, no human exposure to irrigation water, reduced disease pressure, and potential water savings because irrigation is limited to the turf area and is not affected by wind drift or evaporation.

Arguments against the use of SDI include high installation costs, difficulty in determining spacing and depth of pipes or emitters, a perceived inability to establish turf from seed or sod when using SDI, a perceived interference with regular maintenance, and a perceived inability to leach salts.

The suitability of SDI for turf was first demonstrated 40 years ago by Dr. George Snyder (1974) but the technology has never gained significant market acceptance. However, SDI has recently begun to receive greater attention in the context of water conservation and has been mandated by some water agencies for narrow and irregularly shaped turf areas.

Research conducted at New Mexico State University investigating various aspects of

managing subsurface drip irrigated lawns has shown that turf irrigated from a SDI system can be fertilized with granular fertilizer without a loss in color or quality. If sufficient soil water is present, nutrients from the granule will become plant available regardless of whether water is applied from the surface or subsurface.

However, most large turf areas with an SDI system have an injection system and apply liquid fertilizer. Home lawns can also be fertilized with a hose-end foliar/liquid fertilization system.

If granular pesticide applications require watering-in from the surface either hand watering or a temporary surface irrigation system may have to be used. However, most turf pests can also be controlled by foliar pesticide applications.

Core aeration can be applied if the drip lines are installed below the penetration depth of the core aerator. Deep tine aerification cannot be conducted on turf with SDI.

Our studies have also shown that SDI systems are less effective than sprinkler systems at leaching salts from soils in the absence of adequate rainfall, particularly for rootzone depths above the drip lines and salinity accumulation can reach higher levels in drip-irrigated turf compared to sprinkler irrigated. However, warm season grasses like seashore paspalum, bermudagrass, and inland saltgrass, and cool season tall fescue

did not exhibit a decline in summer quality despite these salinity fluctuations in the rootzone even in a desert environment.

Another question that we get asked frequently is about the cost of installing SDI. This question cannot be answered with a single number, as cost for material and installation (labor) depends on the soil type, and size and shape of the area to be irrigated.

Subsurface Drip Irrigation systems for areas that require a large number of connections to the header lines can be significantly more expensive than a pop-up sprinkler system for the same area. However, a SDI system for areas with only few connections to the header lines (e.g. long and relatively narrow areas of turf) can be cheaper than a sprinkler system.

There is no data available on the longevity of SDI systems. Our SDI systems to irrigate the research plots all have filters (disk, screen, or sand – regardless of the water quality applied) and flush valves to prevent clogging from sediments or other particles. Potential root intrusion can be addressed by using either ROOTGUARD® technology (e.g. Toro DL2000®) from Toro or the TECHFILTER® system from Netafim. Our oldest SDI system was installed in spring of 2003 and is still working fine. ♦

Bernd Leinauer is a Turfgrass Extension Specialist with New Mexico State University in Las Cruces, NM



Comparison between bermudagrass that has been irrigated for 3 years at 50% of ETo. Drip irrigated bermudagrass has much higher quality (better visual appearance) than sprinkler irrigated. The plots were next to one another.

Photos courtesy: Bernd Leinauer

## GET IT TODAY

### OUR NEW CATALOG & PRICE LIST APP



Netafim's free and easy to use mobile app for quick and hassle-free navigation.

- Product and pricing info at your fingertips
- Email pages directly from the app
- Locate a Netafim Distributor



(888) NETAFIM  
WWW.NETAFIMUSA.COM



## THERE'S A NEW GRASS IN TOWN!

LESS WATER + LESS FERTILIZER = MORE \$ IN YOUR POCKET  
and a "GREENER" grass for the environment

# Paspalum

- Platinum T.E. and Sea Spray available
- Extreme salt tolerance
- Advanced striping ability
- Shorter dormancy period
- Versatile mowing heights from 1/4" – 1"
- Uses 66% less nitrogen than bermuda

### WEST COAST TURF

Ask us about kikuyu and St. Augustine, too!

www.westcoastturf.com  
888/893-8873

## NEWS

### Doing More with Less

94. 39. 50. 88. 96. No, these are not this week's winning lottery numbers. Instead, they represent a much better bet. The numbers are the percentage of Global Soil Survey (GSS) participants whose potassium (94%), phosphorus (39%), calcium (50%), magnesium (88%) and sulfur (96%) inputs fall significantly below the levels proposed in conventional soil nutrient guidelines for turf. The survey shows they saved money and increased environmental sustainability at the same time they produced good quality turf.

Celebrating its first anniversary, the GSS for Sustainable Turf is a collaboration among turf managers and researchers whose goal is to refine nutrient guidelines so that turf managers can supply turf with precisely the nutrients that the turf needs – no more and no less. To accomplish that goal, turf managers from around the world joined the Survey and collected soil samples from

areas with good performing turf and submitted them for analysis. The results were evaluated by scientists at the Asian Turfgrass Center and PACE Turf, who compared them against both conventional soil guidelines, as well as against the newly developed Minimum Levels for Sustainable Nutrition (MLSN) guidelines.

"The first year of results from the GSS have broken new ground," said Dr. Larry Stowell of PACE Turf, one of the Survey's founding organizations. "The data shows that good performing turf can be produced at nutrient levels much lower than conventional guidelines suggest."

Stowell said the survey's data have been added to the database of thousands of soil samples that were used to create the MLSN guidelines. The survey's annual report, as well as the new and improved guidelines, are now publicly available at [http://www.paceturf.org/journal/global\\_soil\\_survey\\_update](http://www.paceturf.org/journal/global_soil_survey_update). ♦

# Giving Thanks for the Gift of Knowledge

By Rose Epperson



Here we are at the final issue of our first year relaunching *Southwest Trees & Turf*. Typically at this time of year we are giving thanks and consider what gifts to give our friends and loved ones. Let's see if I can do the season justice....

I find myself grateful for the tree and landscape community in the Southwest; thank you for your support of our efforts to bring back *Southwest Trees & Turf*. My gratitude for the passion that our editor and my friend Helen Stone has for the legacy of the paper continues to grow with each issue.

At the top of my "thankfulness" list is the willingness of Kathleen Mahoney, who has taken on the production side of *SWTT* with the goal of providing you, the reader, with valuable information in a format that works. Her flexibility when my crazy vision may not be in 20/20 focus is a blessing. Joni Mitchell said it best in her hit, "Twisted," the final line of the song states "And you know two

heads are better than one." Well, imagine three!

The opportunity to celebrate is endless. We are looking at 2015 with new ideas and goals to further your experience with the hope of a growing readership and continued support from our partners and advertisers.

As a business owner, I spend this time of year reflecting on goals and progress made during the year, as well as looking ahead at the year to come. It's the time of year that I evaluate our performance both individually and as a team. In order to make the most of it, we pull from our business "tool bag" our knowledge of the planning process. We reflect on where we have been, look at the environment around us and set a series of SMART goals for the coming year.

What are SMART goals? *Specific, Measurable, Attainable, Realistic, and Timed*. We set a series of objectives to "get us there" and schedule periodic meetings to report on our progress and tweak things along the way. And yes, we do periodically change direction during the year, but not without careful consideration of the results of our actions and what resources or additional skills we may need to proceed successfully.

I have often shared the wisdom of my college business professor, Robert Ash, as a guide in how to

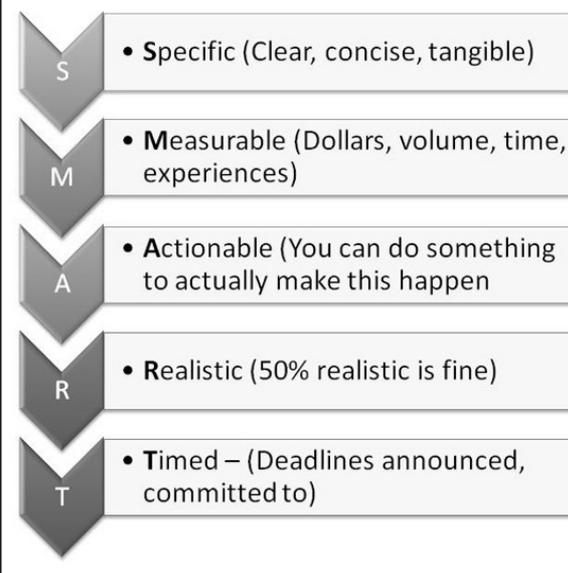
be successful in business and leadership. In our relaunch issue, we published his 20 Principles of Management.

I revisit these 20 nuggets of knowledge frequently as a source of inspiration – this month's principle #10 caught my eye. "**Get Educated - Get Your Employees Educated - Education is a lifelong process. We must refresh to renew. We must keep abreast of change or fall behind. We must constantly update our own knowledge and skills.**"

I am an advocate of lifelong learning. In order to maintain a competitive edge, we need to continually update our skills and take advantage of new and improved programs and processes. I encourage my team to continue to expand their knowledge and skills through technical training, certification programs and continuing education offerings.

We live in a time where technology is constantly changing and the opportunity to participate in programs has taken on a 24/7 schedule. There are traditional educational courses and certifications, however these can be

## S.M.A.R.T. Goals Defined



augmented by a plethora of online offerings that take learning to a new level.

Whether you choose to gather with like-minded professionals, like at Desert Green this month, take a course at a local community college or learning center, or burn the midnight oil online with web-based distance learning, I challenge you to set a goal for 2015 to increase your knowledge in at least one subject. Sharing the power of life learning experience with you is such a pleasure. I'd love to hear your story and watch the results that expanding your education can provide you. You can send them to me at [rose@epicentermgmt.us](mailto:rose@epicentermgmt.us). ♦

## ASSOCIATION UPDATES



**CAUFC**  
California Urban  
Forests Council  
[www.caufc.org](http://www.caufc.org)



**ACTC**  
Arizona Community  
Tree Council  
[www.aztrees.org](http://www.aztrees.org)



**ANA**  
Arizona Nursery  
Association  
[www.azna.org](http://www.azna.org)

### Menlo Park: Celebrates Completion of El Camino Real Tree Project

Trees for Menlo, a non-profit, just completed a 15 year project of planting 350 London plane trees on the sidewalks and center medians of El Camino Real along the entire one mile length of this roadway in the City of Menlo Park, CA. They received the Lady Bird Johnson award from the Arbor Day Foundation, "for demonstrating what other cities should try and emulate." Trees had 286 private donors and the strong fiscal and political support of the City of Menlo Park, which made this project possible. For the full article, visit [www.caufc.org](http://www.caufc.org). ♦

### NEEF Requests Applications for Capacity-Building Grants

The National Education Foundation along with the support of Toyota Motor Sales USA will award capacity-building grants of up to \$5,000 to "Friends Groups," which are defined as nonprofit, community-based organizations whose core mission is to improve and promote the responsible use of a public land or water site in the United States. For information on application and link to apply, visit [www.caufc.org](http://www.caufc.org). ♦

### ACTC Conference Wrap-Up

2014's ACTC Conference, Trees, the Law and Social Responsibility, goes down in the books as a success. Thanks to ACTC's generous sponsors, conference vendors, knowledgeable speakers, attentive participants, helpful volunteers, Prescott Resort & Conference Center, and ACTC's new executive director, Beverly Babb, everyone left with a sense of accomplishment and time well spent. The prize raffle and auction raised over \$3,000 to support ACTC's education and tree planting mission. Thanks for all of the contributed prizes, purchased tickets, and item bids.

Planning for 2015's conference is already underway. Jim Clark, Vice President of Hort-Science is our keynote. Jim's expertise spans management of individual trees to urban forestry. Mark your calendar for September 18-19, 2015. We will be in Prescott one more year. Plan on staying the weekend, catch Saturday's Plant Health Care Class and enjoy all Prescott has to offer. In the meantime, take another look at your conference program. If the opportunity arises, do business with the sponsors and vendors listed. Let them know you are an ACTC member, and you appreciate their support. It is the Arizona COMMUNITY Tree Council. We are all in this together. Thanks for being part of it. ♦

### Proposed Neonicotinoid Ban by LAC in City of Tucson

Neonicotinoid bans are popping up across the US as an issue for the horticulture industry to deal with. The latest is a proposed ban by the City of Tucson to not use them on their properties and the latest draft encourages the city to not purchase plant material from nurseries who use neonicotinoids. Fortunately, ANA Board Member Les Shipley is a member of the LAC and is representing the business community. They encouraged the city to not move this proposal on to City Council, and the issue was referred back to a subcommittee. For more details call Cheryl at 480.966.1610.

To read more about the issue and the bee and pollinator stewardship initiative visit [www.americanhort.org](http://www.americanhort.org). ♦

### New Member Service Endorsed by ANA

ANA has recently endorsed SBGA as a benefits provider. They will provide credit card processing, payroll, web management, capital funding and shipping programs to our members at discounted pricing.

Whether you need to accept payments on your website, through a virtual terminal or on your smart phone, SBGA can accommodate you. SBGA aims to bring members the very best in back office management solutions. Please give Scott Norris a call today with any questions at 800.889.7242 x 7865 or email him at [scott.norris@sbga.com](mailto:scott.norris@sbga.com). ♦

## SOUTHWEST TREES &amp; TURF 2014 INDEX

We've had a great year here at *Southwest Trees & Turf*, and we are so happy that we were able to share it with you! Here is a complete index of our many informative and interesting articles from the past year.

Remember, all of our past issues can be accessed by subscribers online! Turn to the back page of this issue for details, and be sure to visit [www.swtreesandturf.com](http://www.swtreesandturf.com)! Happy Holidays, and see you next year!

## COVER STORIES

**January/February:**

~Poa annua: A True Survivor

David M. Kopec

~Professional of the Year:

Lisa Ortega

Helen M. Stone

**March/April:**

~Drought and Tree Diseases

Dr. Jim Downer

~Tree Worker Safety:

Five Steps to Survival

Dr. John Ball

**May/June:**

~Soft and Sharp

David Christiani

~Facts about Fertilization

Helen M. Stone

**July/August:**

~Pruning Palm Trees

M.L. Robinson

~Sustainability on a Budget

Richard Adkins

**September/October:**

~Fall is in the Air

Shirl McMAYON

~Plant Introductions:

Nuts and Bolts

George Hull

**November/December:**

~Calibrate for Water

Conservation

Jeffrey Gilbert

~Water Conservation by Design

Dan Gregg

## LANDSCAPE MAINTENANCE

By Dennis Swartzell

**January/February:**

~First Defense Against Pests

**March/April:**

~Perils on the Horizon

**May/June:**

~Mycorrhizae: Miracle or Myth?

**July/August:**

~Wrong Tree, Wrong Place

**September/October:**

~Finally It's Fall

**November/December:**

~Holiday Wishlist 2014

## TURF TIPS

**January/February:**

~Think Microclimates During Transition

Bruce Shank

**March/April:**

~Chemistry: Dare to Understand It

Bruce Shank

**May/June:**

~Acidity and Alkalinity: A Demolition Derby

Bruce Shank

**July/August:**

~Yellow Light: Caution

Dr. David Kopec

**September/October:**

~Yellow Light: Caution, Part II

Dr. David Kopec

**November/December:**

~Subsurface Drip Irrigation (SDI)

For Turf

Bernd Leinauer

## BUSINESS CORNER

By Rose Epperson

**January/February:**

~The Business of Management and

Robert Ash's 20 Principles of Management

**March/April:**

~Delegating Effectively

For Your Business

**May/June:**

~The Nature of Change

**July/August:**

~Building a Better Team

**September/October:**

~Growing Your Business

**November/December:**

~Giving Thanks for the

Gift of Knowledge

## BOOK OF THE MONTH

**January/February:**

~Biology and Management of

Landscape Palms

Don Hodel

**March/April:**

~Structural Pruning

Ed Gilman, Brian Kempf,

Jim Clark, Nelda Matheny

**May/June:**

~Nanise: A Navajo Herbal

Vernan O. Mayes, Barbara

Bayless Lacy

**July/August:**

~Lush & Efficient: Landscape

Gardening in the Coachella Valley

**September/October:**

~Trees of Western

North America

Richard Spellenberg,

Christopher J. Earle, Gil Nelson

**November/December:**

~The Candid Contractor

Scott Cohen, Eric Herman

## RESEARCH YOU CAN USE

By Robert Morris

**January/February:**

~Water Quality Affects

Plant Growth

**March/April:**

~Compost's Role in

Quality Landscapes

**May/June:**

~Are Organic Fertilizers

Really Organic?

**July/August:**

~Mulch Magic and Desert Soils

**September/October:**

~A Soil is a Soil is a Soil

**November/December:**

~Avoid Mayhem with

Good Irrigation Managers

## SAFETY MATTERS

**March/April:**

~Protection: The Eyes Have It

Rick Stillion

## OTHER

**January/February:**

~The Drought Effect

Summer Ortiz

## THE DESERT ARBORIST

By Juan Barba

**January/February:**

~TWORK

**March/April:**

~Blue Stain and Bark Beetles

**May/June:**

~Soil Management: Touch It or Test It

**July/August:**

~Fatal Accidents: Nobody Wins

**September/October:**

~Southwest Tree Moving: Know and Grow

**November/December:**

~Trees and Water: The Life Force

## PLANTS AT A GLANCE

**January/February:**

~Fremont Indigobush

(*Psoralea fremontii*)

Alice Newton

~Shrubby Germander

(*Teucrium fruticans* 'Azura')

Russell Harrison

**March/April:**

~Sugar Bush (*Rhus ovata*)

Joe Pearl

~Orchid Tree (*Bauhinia*)

Pete Duncombe

**May/June:**

~Arizona Wild Cotton

(*Gossypium thurberi*)

Dr. Jacqueline A. Soule

~Desert Willow (*Chilopsis linearis*)

Alice Newton

**July/August:**

~Damianita (*Chrysactinia mexicana*)

Joe Pearl

~Mountain Mahogany

(*Cercocarpus ledifolius*)

Pete Duncombe

**September/October:**

~Fernbush (*Chamaebatiaria millefolium*)

Dan Smeal

~Desert Lavender (*Hyptis emoryi*)

Dr. Jacqueline A. Soule

**November/December:**

~Apache Plume (*Fallugia paradoxa*)

Joe Pearl

~Jujube (*Ziziphus jujuba*)

Dr. Jacqueline A. Soule

## Calibrate Continued from Page 1

increase or decrease operating pressure. The combination of wear and repairs can result in the undesirable outcome of different precipitation rates within a zone. The need to install one or more additional sprinklers within a zone to cover 'dry spots' given that in the past there was no problem may be a symptom of decreasing system pressure.

Precipitation rates provided in manufacturers catalogs and included in some 'smart' controllers represent 'gross precipitation rates.' These values do not account for any losses due to drift, off-target application or evaporation as do the values collected from an actual audit. These gross precipitation rates assume precise spacing, unchanging pressure on all heads within a zone and exact arc settings of, for example, 180 or 360 degrees etc.

There is an assumption made that all of the water that passes through the nozzle will reach the turf. Combined with distance measurements for sprinkler spacing that are obtained in zero-wind, these 'gross' precipitation rates can misrepresent real-world values. Using these gross precipitation rates to calculate runtimes can result in deficit applications of desired water.

Increasing importance and desire to conserve water makes knowing the precipitation rate of an irrigation system even more essential. Reliance on 'smart' technology still depends on accurate determination of precipitation rates to ensure minimal waste and acceptable distribution uniformity or 'DU.'

Determination of precipitation rates improves overall distribution uniformity by balancing the application rate across multiple zones. For example, in large sport fields and golf course fairways where more than one zone is used to irrigate, knowing the precipitation rate of each individual zone balances the overall applied water and improves DU.

Older controllers without all of the new technology can be just as effective in applying irrigation, given the proper calibration of the system and good management practices. Irrigation management relies on accurate assessments of the precipitation rates of the system. After all, what really matters is the precise application of a pre-determined amount of water at the appropriate interval and time-of-day.

**CALIBRATION**

Performing a catch cup test is the best way to determine precipitation rates. Using catch cups will provide the most realistic values

and account for the actual conditions at the site. The more catch cups used, the more accurate the final results will be. And using catch cups with a larger surface area, given the use of the same number of cups, will increase accuracy since a greater percentage of the lawn area can be represented.

The results from an actual catch cup test represent the 'net precipitation rate.' These values can differ from the gross precipitation rates provided in a catalog by as much as 10-25 percent, sometimes more. This means that not all of the water that passes through a sprinkler nozzle actually reaches the desired turf area.

To confirm this fact, record the meter readings before and after conducting a catch cup test. The ratio of the average depth collected in the cups divided by the depth applied by the gallons of water across the given lawn area will be the application efficiency of the system.

In addition to the determination of the precipitation rate and the DU, graphing the depth in inches collected in each cup as a 'surface response' can be very useful. By graphing the catch cup data using a spreadsheet program, a visual representation of the overall distribution of coverage can be displayed. This 'picture' of the various depths of water looks similar

to a topographical map and can be a much better way to diagnose problem areas than reliance on a single 'grade' as provided by DU.

Short of performing a catch cup test, taking meter readings, recording the runtime and determining the landscape area can provide another means of accessing the application rate of a sprinkler system or zone. Measuring the working pressure and spacing between each sprinkler can be used to adjust the precipitation rate as given in a catalog, remembering that not all of the water will reach the turf.

If the existing measurements are collected from the field for the spacing between sprinklers within a row and the distance between rows, a more accurate value can be obtained compared to the fixed spacing listed in a catalog. As discussed earlier, these are 'gross' precipitation rates and will vary from those determined via an actual catch cup test.

With more frequent testing and calibration, maximum performance of the irrigation system can be achieved, reducing water waste while maintaining optimum plant health. ♦

Jeffrey Gilbert is a Senior Research Specialist at the School of Plant Sciences at the University of Arizona, Tucson.

## INCREDIBLE INJECTABLE INSECTICIDE

Dinocide™ is a new injectable insecticide from Mauget that is commonly effective within a week of its application.

Dinocide™ contains dinotefuran, an insecticide widely used on forest, woodland and ornamental trees and shrubs and known for its speed of action. By delivering dinotefuran using Mauget's patented micro-injection system, Dinocide™ can yield results in as little as three days.

Injection with Dinocide™ is aimed at controlling scale insects, including Japanese beetles, emerald ash borers, mealybugs and flathead borers.



Dinocide™ is translaminar, which means that its active ingredients can pass from a tree's xylem to its phloem. This capability makes Dinocide™ uniquely effective against pests like the conifer bark beetle, which do their damage in the phloem layer.

Introduction of Dinocide™ will occur on a state-by-state basis between December 2014 and June 2015. Individual tree care professionals are encouraged to contact a local Mauget distributor in their state for availability details. ♦

## EFFORTLESSLY EFFICIENT ENGINE

Dixie Chopper chose to power its Zee 2 zero-turn mower with a 23 gross horsepower Briggs & Stratton commercial turf engine.

The Briggs and Stratton commercial turf engines are purposely built to meet the harsh working environments zero-turn mowers are expected to work in every day. The engine line features a patented integrated cyclonic air filtration system that offers five steps of debris management to provide unprecedented dust and particle filtration.

The cyclonic air filtration system will withstand a maintenance



interval of 250 hours under normal use. Plus, its tool-less air-cleaner cover makes changing the air filter easier than ever.

## JAUNTY JOB SITE VEHICLE



Gravelly by Polaris has announced the Atlas, the Ultimate Job Site Vehicle (JSV).

This JSV is powered by either a Polaris EFI gas engine or a Kohler 3 cylinder diesel engine with a towing capacity of 2,000 pounds. The cargo bed has a 1,250 pound capacity and holds 18 cubic feet of material.

Visit [www.gravellyatlas.com](http://www.gravellyatlas.com) for information, and get ready to haul some mass! ♦

## LUMINOUS LIGHTING

FX Luminaire announces the release of the new VE, a hanging LED fixture that complements both commercial and residential landscapes with soft, overhead illumination. "The VE was designed specifically to illuminate from above to highlight seating areas, focal points, and landscaping features," said Ryan Williams, FX Luminaire Product Manager.



The VE is available in a choice of four metal finishes on a copper sleeve, and ten powder coat finishes made of anodized die cast aluminum with 1 or 3 LED for any application. An optional perforated sleeve can be used to create a starlight effect. Each fixture includes four colored filters (amber, blue, green, and frosted) for color temperature customization. The VE is zoneable with the Luxor controller and dimmable as an option.

For more information, please visit <http://www.fxl.com/>. ♦

## By Design *Continued from Page 1*

would design landscapes for different activities, but it is now no longer just the function, but also the water used in the activities that are important considerations. The more foot traffic in a particular zone, like in areas of high activity, the greater the possibility of higher water uses. The focus on these areas has led to a better use of water in landscape design.

Using surface area runoff when excess water from rain flows over the land is a way to save energy and money for businesses that desire to keep water onsite. It's becoming more common to install underground tanks to collect water and pump it out through the irrigation system. But where does that water come from?

One design tactic that is appearing more frequently is the use of permeable surfaces in spaces such as parking lots where grass grows both around and throughout the concrete surface in a grid pattern. This grid pattern enables water to seep in, collect and be re-used instead of being diverted into storm drains, over burdening the drainage system.

Other areas where excess water gathers include the condensation of air conditioning units and the roof, which is the largest collector. Water collection from the roof is a growing practice among those seeking to be more

water-conscious, though this is normally seen in commercial buildings rather than residential.

### RAINWATER HARVESTING

The technique of rainwater harvesting continues to grow in popularity, both for residential and commercial properties. The rainwater harvesting system collects rain from the roof or other nonpermeable surfaces in basins or tanks and recycles it for irrigation and other applications. Homeowners and businesses using this technique save money by avoiding the need to buy water from a municipality, and also contribute to water preservation efforts.

Rainwater harvesting is particularly useful in areas where there are restrictions on lawn watering. In these areas, the rainwater can be pumped through a hose or irrigation system and used on the landscape. The system usually follows an easy retrofit process, making it a simple solution for those seeking water-saving alternatives.

### TECHNOLOGY

During the past 30 years irrigation technology has improved greatly, with the largest advancements in controllers. Older electro-mechanical units had no program flexibility, but newer digital units are highly customizable to meet any variety of water needs or fit local water conservation

guidelines and personalized landscape designs.

Today's controllers enable the user to separate certain areas of the landscape, like beds and turf, and use different watering levels for each. This ensures that each area remains watered to optimal levels, while conserving where possible. Larger, more advanced systems even use satellite weather data to provide the user with daily evapo-transpiration values to better manage water use.

Pump stations have also evolved. New software programs manage power and efficiency better than ever before with the use of variable frequency drives (VFD). VFD technology enables the control of the AC motor speed and torque by varying the input frequency and voltage to match the system demands. As demand increases, the VFD speeds up to match the needs of the irrigation system, which helps control efficiency.

### EDUCATION

Throughout the Southwest U.S., there is an increased push to educate the public about water conservation needs. Some municipalities have water conservation programs to encourage residents to take part in the effort by using techniques like rainwater harvesting.

For example, Fort Worth, Texas sells rain barrels to homeowners so they can collect water for applications such as watering the lawn or garden. The city has also launched a marketing campaign to encourage residents to conserve water.

### THE FUTURE

Water conservation will continue to be a hot topic among landscape industry professionals for the foreseeable future. The market is poised for an increase in measurement tools, such as flow sensors and moisture sensors. Reverse osmosis system use is on the rise across the U.S. in order to utilize all water resources available.

Landscape architects will continue to design spaces that are not only functional, but also help conserve water. By encouraging the use of water management systems and informing customers of these methods, the U.S. can continue to curb its water usage, saving not only this diminishing resource, but also money. ♦

*Dan Gregg is the central regional sales manager for Flowtronex Prepackaged Pump Stations, a Xylem Applied Water Systems brand. He is a registered landscape architect, Texas Licensed Irrigator and EPA Water Sense partner with more than 35 years of experience in landscape irrigation design, consultation and sales.*

## CALENDAR

## November 19-20

Irrigation Association Annual Trade Show, Phoenix Convention Center, Phoenix, AZ. Educational conference Nov. 17-12. Visit [www.irrigation.org](http://www.irrigation.org) for more information.

## November 21-22

ASLA Annual Meeting & Expo, Denver, CO. For information and to register, please visit <http://www.aslameeting2014.com>.

## December 3

The 19th Annual Sports Turf, Tree & Landscape Expo Golf Tournament begins at noon. Registration is \$50, and includes greens fee, cart, prizes and food. Register by calling Rich Walton at 928.373.5209.

## December 4

The Sports Turf, Tree & Landscape Expo will be hosted at Yuma Civic Center from 8AM-1:30 PM. General Admission is \$10, and includes the famous tri-tip lunch. To purchase tickets and register, please visit [yumaaz.gov/parksandrec](http://yumaaz.gov/parksandrec) or call 928.373.5243.

## February 12, 2015

The NorCal Spring Trade Show has partnered with the California Landscape Contractors Association to produce the newly rebranded NorCal Landscape & Nursery Show, held this year in San Mateo, CA. Register early to avoid the lines. [www.norcaltradeshows.com](http://www.norcaltradeshows.com).

## February 19-20, 2015

The 2015 Land & Water Summit, hosted by Xeriscape Council of New Mexico, will take place at the Sheraton Airport in Albuquerque, NM. Early bird registration rates end on January 16, 2015. For more information and to register, please visit [www.xeriscapenm.com](http://www.xeriscapenm.com).

## February 22-27

The next Municipal Forestry Institute will be held at the Oregon Garden Resort in Silverton, OR. The all-inclusive registration fee of \$1999 (or \$1899 for SMA members) covers all course materials, lodging, meals, and transportation. For more information and to apply, please visit [www.urbanforestry.com](http://www.urbanforestry.com). Course registration closes on December 1, 2014.

## March 7-10, 2015

The 28th California Small Farm Conference, held in San Diego, CA. Information is available online at <http://www.californiafarmconference.com>.

## March 10-13

The CPRS Conference & Expo's theme for 2015 is "Superheroes of the Community" and will take place at the Sacramento Convention Center. To register for the conference, please visit <https://www.cprsmembers.org/cprsonline/>.

## March 18-19, 2015

The Cost of Not Maintaining Trees Symposium, hosted by the ISA, the FL Urban Forestry Council, and the FL-ISA Chapter, will take place at the University of South Florida in Tampa, FL. For more information or to register, go to: [www.isa-arbor.com/symposia](http://www.isa-arbor.com/symposia).

## March 31-April 1, 2015

The 3rd Annual Indoor Agriculture Conference is taking place at the MeetLV in downtown Las Vegas, NV. The conference will be a chance for commercial growers to see and experience new technology, meet with funders, and learn from some of the most successful companies in the industry. Ticket prices are from \$299. For more information, please visit [www.indoor.ag](http://www.indoor.ag).

## April 27-May 1

The WCISA 81st Annual Conference, titled "Nature and Science in Arboriculture", promises to feature a variety of informative speakers on a wide range of subjects. To find more information and to register, please visit [wcisacconnect.com](http://wcisacconnect.com).

Send your calendar items at least eight weeks in advance to:

Southwest Trees & Turf

PO Box 796

Orange, CA 92856

E-mail: [helen@swtreesandturf.com](mailto:helen@swtreesandturf.com);  
[kathleen@epicentermgmt.us](mailto:kathleen@epicentermgmt.us)

## BECOME A SUBSCRIBER TODAY!

## Southwest Trees &amp; Turf 2014 Subscription Form

Southwest Trees & Turf offers many benefits to subscribers, including:

- Articles on the latest and most topical topics related to the American Southwest!
- Access to our online archives!
- Special offers from our advertisers!

And more!

One Year Subscription: \$30

## Contact Information

Name: \_\_\_\_\_ Company: \_\_\_\_\_

Address: \_\_\_\_\_ PO Box #: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Industry (check one):

- Landscape Architect    Resort/Commercial    Consultant/Educator    Landscape Contractor  
 Golf Course    Arborist    Supplier    Sports Turf/Parks/Government  
 Nursery    Other (Please Specify): \_\_\_\_\_

## Payment Information

You can pay by (check one):

- Visa    AmEx    MasterCard    Check

Total Enclosed: \$ \_\_\_\_\_

For credit card payment, fill out the information below:

Card Number: \_\_\_\_\_ Exp. Date: \_\_\_\_\_ Security Code: \_\_\_\_\_

Signature: \_\_\_\_\_

Please make checks payable to:  
Epicenter Management

And mail to:

Southwest Trees & Turf  
PO Box 796  
Orange, CA 92856-6796

Interested in advertising? Please contact [kathleen@epicentermgmt.us](mailto:kathleen@epicentermgmt.us)

You can also subscribe online!  
Visit [www.swtreesandturf.com](http://www.swtreesandturf.com) today!

Questions? Comments?

Phone: 714.639.2200

E-Mail: [kathleen@epicentermgmt.us](mailto:kathleen@epicentermgmt.us)



## Subscribers Can Now Access STT Archives Online!

Do you want to read some of Southwest Trees & Turf's old articles? Was there a particular story that caught your eye? Want to see how things have changed in the turf industry over the last 3 years? Now you can!

Subscribers to Southwest Trees & Turf have unlimited access to the new Archives section at our revamped website - check it out!

Just visit our website at [www.swtreesandturf.com](http://www.swtreesandturf.com), click the "STT Archives" tab, and enter in the password for access to all STT issues from 2011 - present. We hope you enjoy this new feature of Southwest Trees & Turf!

Archives Password:  
**ChristmasTree2014**