



STREET TREE SEMINAR, INC.

Your Los Angeles/Orange Regional Urban Forest Council

P.O. Box 6415
Anaheim, CA 92816-6415



SAVE THE DATE:

October 23, 2014

Energy, Carbon and Water
Balances in Urban Landscapes
Rancho Santa Ana Botanic Gardens
1500 N. College Avenue - Claremont

2014/15 MEETING SCHEDULE

- | | |
|--------|---|
| Oct 23 | Energy, Carbon & Water Balances in Urban Landscapes
-presented by Bob Perry
Rancho Santa Ana Botanic Gardens - 1500 N. College Avenue - Claremont |
| Dec 18 | Annual Scholarship & Officer Installation
Kellogg West Conference Center - Pomona, CA |
| Jan 22 | Western Tree Management Symposium Winter Program |

Interested in hosting a program in your community? We are interested in hearing from you!
Contact heather@streettreeseminar.com

MISSION STATEMENT

"To promote the advancement of urban forestry and provide a forum for tree care professionals to share their experiences, knowledge, and expertise for the benefit of the membership and the enhancement of Southern California's community forests."

VISION STATEMENT

"To enhance the health and beauty of Southern California cities by improving the quality of our community forests."

Remember to email Leon Boroditsky at leon.boroditsky@lacity.org with your reservation



STREET TREE SEMINAR, INC. - Your Los Angeles/Orange Regional Urban Forest Council

STS Newsletter

SEPT/OCT 2014

VOLUME XX ISSUE 5

Summer Palm Walk with Don Hodel

The August 28, 2014 Street Tree Seminar bi-monthly meeting was held at Maggianos Little Italy at the South Coast Plaza in Costa Mesa. Don Hodel was the feature speaker sharing about the diverse palm collection planted at the South Coast Plaza. After giving a power point presentation highlighting some of the more special specimens in the collection including the *Aiphanes horrida* a palm from South America spines up to 9" long covering it's trunk.

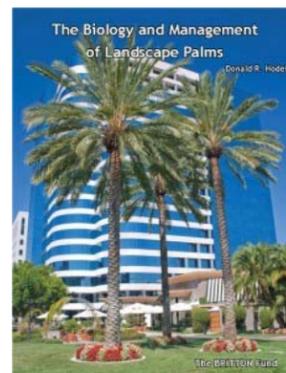


After the presentation, we went for a field trip visiting the collection both on the grounds of the shopping center as well as specimens growing in planters inside the mall. The first stop was the impressive *Roystonea oleracea*, a large palm with impressive stiff and long fronds mounted on a marble column-like trunk.

It was truly a special day having Don lead us through one of the more special and unique collections of palm trees in Southern California.

Some of the other palm trees discussed and visited are as follows:

- | | | |
|----------------------------|-------------------------------------|---------------------------------------|
| <i>Aiphanes horrida</i> | <i>Dypsis leptocheilos</i> | <i>Rhapsis excels</i> |
| <i>Arenga engleri</i> | <i>Jubaea chilensis</i> | <i>Roystonea oleracea</i> |
| <i>Bismarckia nobilis</i> | <i>Jubautia x splendens</i> | <i>Syagrus romanzoffiana</i> |
| <i>Caryota gigas</i> | <i>Livistonia chinensis</i> | <i>Trithrinax brasiliensis</i> |
| <i>Caryota maxima</i> | <i>Livistonia australis</i> | <i>Trithrinax campestris</i> |
| <i>Chamaerops humilis</i> | <i>Phoenix roebellini</i> | <i>Washingtonia robusta</i> |
| <i>Cryosophila nana</i> | <i>Phoenix dactylifera 'Zahidi'</i> | <i>Washingtonia x filibusta</i> |
| <i>Chamaedorea elegans</i> | <i>Phoenix reclinata</i> | <i>Archontophoenix cunninghamiana</i> |
| <i>Howea forsteriana</i> | <i>Pritchardia hillebrandii</i> | |
| <i>Dypsis lutescens</i> | <i>Ravenea rivularis</i> | |



All members in attendance received a copy of Don's publication "The Biology and Maintenance of Landscape Palms". A compendium of articles published by The Britton Fund in 2013. Established in 2006 as a non-profit, 501c(3) corporation, and separate entity from Western Chapter ISA (WCISA), the John Britton Memorial Trust Fund (the Britton Fund) works for the public good to promote priority research and educational opportunities for the advancement in the field of arboriculture in the geographic region of California, Arizona, Nevada and Hawaii. For more information on the fund, please visit www.thebrittonfund.org.



Notes from our August 2014 General Meeting

Our August 2014 meeting was held at Maggiano's in Costa Mesa. Past Presidents in attendance were: Dan Jensen, Kevin Holman, Alan Hudak, Rose Epperson, Art Murphy

Prizes were donated by: Tree Pros, Christy Cuba, Mauget, RPW, Emina Darakjy & The Britton Fund

Raffle Winners: Emina Darakjy, Ann Hope, Robert Wagoner, Ken Pflanzgraf, Delia Juncal, Leon Boroditsky

Next Meeting: Please join us October 23rd in Claremont at the Rancho Santa Ana Botanic Gardens. Bob Perry will be talking to us about Energy, Carbon and Water Balances in Urban Landscapes.

About our speaker: Bob Perry is Professor Emeritus of Landscape Architecture at Cal Poly Pomona. His academic career began in 1972 and still continues today. During this time he has taught in the UCLA Extension Program in

Landscape Architecture, Landscape Architecture Studies at USC, and at Cal Poly University Pomona. His career has been focussed on the study of plants and water conservation. Bob has written two previous books on landscape plants and water conservation including: Trees and Shrubs for Dry California Landscapes, 1980, and Landscape Plants for Western Regions, 1992. His latest effort, Landscape Plants for California Gardens, continues in this tradition. This latest book greatly expands the scope of coverage and thoroughness of photography.

Bob has been a licensed landscape architect since 1972 and has actively participated in many professional projects where his expertise on California native plants and landscapes for water conservation has been applied and refined.

Contact Leon Boroditsky to reserve your spot. leon.boroditsky@lacity.org

Get Involved in a BIGGER Way- Serve on the STS Board of Directors

Have you ever considered how you could make a difference in your community? Become part of the Street Tree Seminar leadership and find out just how easy it is when you join leaders in other communities.

Past president Robert Sartain is now accepting nominations to serve STS in a bigger way. If you are interested in getting more involved or want to nominate a colleague, contact Robert by phone at 661/286-4078 or email him at rstartain@santa-clarita.com

Nominations will be announced at the October meeting and an electronic ballot will go out in November.



2014 Board

2014-15 Grant Programs announced from Cal Fire

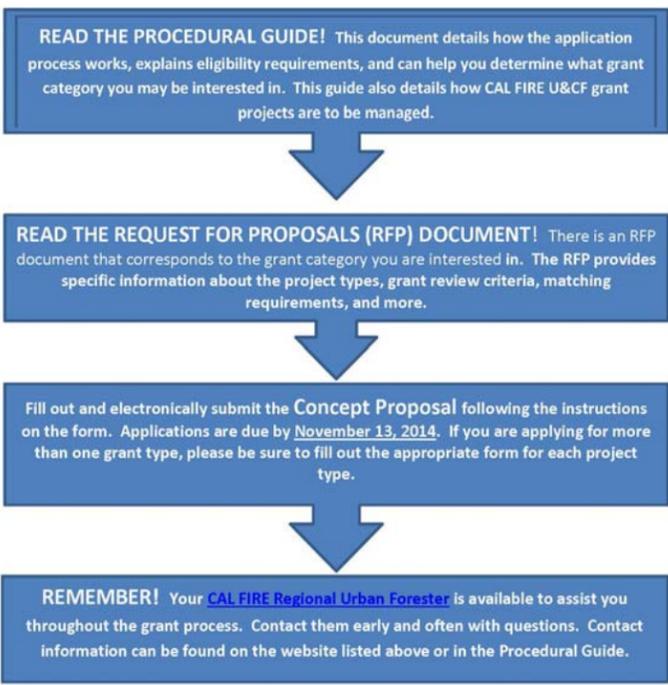


CAL FIRE, Urban and Community Forestry Program have announced their Greenhouse Gas Reduction Fund (GGRF) Grants.

\$ 17.8 million in Cap-and Trade revenues went to the Cal Fire Urban Forestry Program and 100% of these Funds will be allocated to projects benefiting disadvantaged communities.

The concept proposals are due November 13th 2014.

Get all the information - straight from CalFire's website



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Highlights from Dealing with Drought: A transitional urban forest

This summer's Western Tree Management Symposium (WTMS), held July 24, 2014 at Kellogg West on the Cal Poly Pomona campus, was an amazing event. It seems that the timely topic of the current drought piqued the interest of many arborist. Despite there being many great seminars and workshops and plenty of opportunities for CEU's in Southern California this year (most notably the Annual Conference of the Western Chapter ISA in Pasadena this past April), the symposium was filled to capacity.

Dr. Fred Roth, professor emeritus of plant pathology at Cal Poly Pomona and current president of Street Tree Seminar opened the event talking about many of the challenges facing us: the current drought, new pests and diseases, a seemingly ever increasing population, etc. Good citizens are doing their best to conserve and use water judiciously while established trees are struggling. Water will never be available in Southern California as it was in past. . . How do we deal with this? The first speaker was Eric M. Yoshida from Los Angeles Department of Water and Power (LADWP) LADWP has a long, rich (some might say sordid) and proactive history to obtain and bring water to Los Angeles which forever transformed the population and landscape. In 1903 the first aqueduct was completed and in 1970 the second aqueduct was completed. In 1979 delivery of recycled water commenced, in 2007 the Integrated Resources Plan was completed, in 2008 the Watershed Management Group was formed and 2009 they kicked the Recycled Water Master Plan. Los Angeles obtains its water from various sources including: the Sacramento-San Joaquin River Delta; the Sierra Nevada Mountains; the State Water Project; the Los Angeles Aqueduct; the Colorado River Aqueduct as well as local groundwater, conservation efforts; stormwater capture and recycled water programs.

Since 1970 Los Angeles' population has risen by more than a million people. Despite the increase in population, water demands are lower than they were in 1970. However, Los Angeles still faces many challenges to its water supply: the Bay-Delta and Colorado River future supply allocations are not guaranteed and thus uncertain, pumping restrictions, as well as other threats to water supply; the L.A. Aqueduct supply reduction due to Owens Lake dust mitigation; groundwater contamination in the San Fernando Basin; climate



Summer Western Tree Symposium By Leon Boroditsky

The next speaker was Dennis Swartzell graduated from the University of Georgia with Bachelor of Science in Agriculture with an emphasis on Floriculture. He was director of Landscape, Grounds and Arboretum for the University of Nevada, Las Vegas where he retired as Director Emeritus. Dennis is a Board Certified Master Arborist, past president of the Western Chapter of the ISA, Secretary-Treasurer of the Britton Fund and a newly elected member of the ISA Board of Directors.

change impacts, and carbon footprint. water/energy nexus, Due to these uncertainties, LADWP is attempting to reduce dependency on imported water. Stormwater and watershed management programs contribute to a more reliable and sustainable local water supplies. LADWP's Stormwater Capture Master Plan (SCMP) outlines LADWP's strategies to implement stormwater and watershed management programs and projects in the City of Los Angeles. These programs and projects will help contribute to more reliable and sustainable local water supplies.

LADWP is also involved with the San Fernando Groundwater Remediation Project where they are cleaning up contaminated water to meet drinking water regulations. The project includes 115 wells with an estimated cost of 600-900 million dollars. Groundwater remediation programs have public health benefits, environmental benefits and prevents further loss of groundwater resource. LADWP is also involved in the Los Angeles River Restoration Project where they are balancing water supply needs with the benefits of having a restored Los Angeles River. The restoration project will address water needs, water quality, flood control, connecting communities, habitat restoration and recreation.

Dennis talked about the effect of drought on trees. His topics included: immediate and long-term impact of drought; what damage occurs to trees; how to recognize drought symptoms; secondary issues for drought-stressed trees; and recommendations for survival. He reminded us of some of the benefits of tree including: exceptional cooling by reducing the heat island effect; they help to mitigate pollution and collect dust and particulates; carbon sequestration; tame the wind; intercept storm water and reduce run-off and soil erosion.

The current "Megadrought" started in 2000 and is considered the 5th most severe drought in history. The worst being in the 1950's and the second worst in the 1930's (the one known as the "Dust Bowl.") Droughts tend to occur every 20-30 years. As a result of the drought struck communities are restricting water and the cost for water has increased significantly. This trend of rising costs will continue as supplies decrease, populations increase and weather conditions change for the worse.

The general impacts of drought are as follows: landscapes are often considered non-essential thus lawns are the first to be shut down and trees in turf areas suffer. Some trees are generally unaffected including trees in non-turf areas and arid adapted trees. Turf reduction efforts may also take a toll causing loss of roots during conversion and increase in the heat island effect.

Dennis told us that trees require a lot of water to stay alive: the Arizona Municipal Water Authority estimates that a mature desert trees need up to 4,000 gallons per year. Large trees require more water as they grow. Root depth is determined by oxygen availability and soil compaction severely limits the availability of oxygen. As well, oxygen is necessary for water and nutrient uptake.



Great entry to our meeting area!

Continued on page 4

Highlights from WTMS Summer 2014 continued

The first sign of the impact of drought on trees are usually slow and subtle including temporary wilting; leaves are off-color or dull in appearance and may become sunburn (located in the center of the leaf.) As well, leaves burn along edges (marginal necrosis) often due to high salinity – leaf scorch and trees may shed their leaves – especially in arid adapted trees.

The effects of prolonged drought can result in stunted growth – reduction in shoot length and leaf size; sunscald, especially on large limbs and trunks exposed to the sun as well as branch dieback and branch shedding. Sunscald on the trunk and major limbs occurs mostly on south or west side of trunk and opens up the tree to possible flat-headed borer attack and sooty canker infection.

Dennis shared the mechanics of water deprivation. He said that the sudden onset of heat creates a high water demand. If irrigation is supplied the condition is temporary. However, prolonged drought is a much more serious problem. Columns of water in the xylem tissue are broken which creates cavitation as well as a permanent wilting point with no recovery. Extended drought also causes salinity build-up in the root zone. Salts are naturally occurring in the native soil as well as in irrigation water. However, rainwater is salt-free and dissolves salts and moves them away from the root zone – known as leaching. Insufficient leaching of salts results in damage.

Dennis also discussed what can be done to save our trees during this “Megadrought.” He began with mature trees. He suggested that we need to provide the deepest irrigation possible -- even if only once per month it can be lifesaving. He said to target the hottest, driest months and to concentrate efforts on saving the best trees. Provide deep, infrequent soaking beyond the drip line to a depth of at least 2 feet. He also said that vertical mulching may be a useful tool for deep watering. He said to design a sound and thoughtful irrigation system watering to the size of the mature canopy and spreading the emitters over a large area.

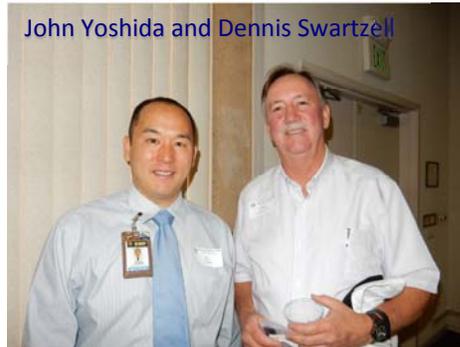
He also suggested conducting tests to determine salinity levels in both soil and water. Dennis suggests eliminating fertilizations during a drought. Fertilizers are salts too. As well, there is no need to push growth during a drought as that puts more strain on the trees trying to maintain the new growth. If fertilization is necessary use light applications of slow-release nitrogen and only during the correct season and only if rainfall is expected to be consistent.

Another important cultural practice that can help mitigate the effects of drought is the use of mulch. Dennis suggested using

up to 12 inch depth (? Did I hear that right?) of course wood chips extending as far as possible. Spread the mulch wide and deep and avoid mulch “volcanos.” Mulch has the benefit of retaining moisture, takes in water at a higher rate, reduces runoff, and keeps soil surfaces cooler. He also suggests removing competing plants. If you remove sod, don’t do it mechanically as

trees roots are intertwined with turf. Instead, eliminate turf chemically with the use of herbicides.

Another practice Dennis suggested was pruning which can reduce the amount of leaf area thus transpiration is reduced lowering water demand. Avoid over pruning which can cause sunscald. As well, heavy pruning may lead to insect problems.



John Yoshida and Dennis Swartzell

Dennis next talked about saving young trees. To begin with, make species selection carefully. Plant natives or arid adapted trees and match the tree species to the site. Irrigate routinely to aid in establishment. Young trees that are properly established are better suited to withstand drought. Invest in soil prep and good irrigation systems. Providing ample rooting area is critical. Install sufficient numbers of emitters and plan for the mature size of the tree. As well, install quality valves, filters and emitters. And mulch the soil surface.

The last 5 decades were the warmest in 600 years. Climate change is real! (And it’s anthropogenic!) Climatologists predict 90 more years of drought in the already arid southwest where temperatures may rise as much as 9 degrees. As well, the population is expected to continue expanding with over 7 million more people arriving in the Sun Corridor before 2040. Drought is likely to continue and trees are needed now more than ever! We need to protect our tree population; plant more trees now and figure out how to properly care for the trees of our future.

Megan Morris was our next speaker. Megan is the owner and program director for the Wildlife Training Institute which combines her two loves of conservation ecology and tree care. Megan came to talk to us about the Wildlife Training Institute’s program of becoming a Certified Wildlife Protector. She asked us to think about the impact of our work on wildlife and suggested that there are compelling moral and ethical reasons, that public perception, and the risk of huge monetary fines and even jail time are all good reasons to become wildlife aware. And if that was not enough incentive, she was offering a 40% discount and an additional CEU for participants in the WTMS.

Megan went on to discuss several of the laws that protect wildlife from Federal Laws to state and local laws that protect wildlife.

Highlights from WTMS Summer 2014 continued

Most with hefty fines and even prison terms imposed to violators. California state law makes it illegal to take, possess or needlessly destroy the nest of any bird. The cities of Santa Ana, Yorba Linda, San Juan Capistrano, Dana Point and Villa Park are designated bird sanctuaries making it illegal to kill or injure any species of wild birds or molest or damage the nest or the eggs of any wild birds within the city. Los Angeles and Burbank prohibit killing song birds as well as disturbing or damaging their nests. The City of Anaheim prohibits killing, maiming, wounding or destroying any insectivorous bird including swallow, mockingbird and blackbird. Most cities and counties prohibit the killing, destruction, removal, or disturbance of any birds, bird nests, and wildlife within park boundaries including Orange County, San Bernardino County and Santa Barbara County.

The urban environment is teeming with wildlife and it's extremely important to be cognizant of your work zone. Megan suggests a pre-work survey conducted no more than a week in advance of the tree work. Go out in the early morning or late afternoon, walk around each tree and shrub and search at least 100' in all directions around the work site. She suggests you use binoculars and follow branches out to their tips looking for dark objects as well as holes and cavities.

Megan shared a story from Oakland where a tree crew was working on some ficus trees located over a parking lot. The trees were the home to a colony of herons. The birds were dropping copious amounts of poop all over the cars and the crews were hired to trim the trees back off the parking lot. It did not take long for people in the neighborhood to get wind of what was happening, as the neighbors were very aware and very fond of the colony of herons. As the crews were working many baby black crowned herons fell out the trees and the crews kept working as if nothing had happened. The outcry was swift and loud and the sheriff's department was called. The crew leader ended up paying for the birds to be rehabilitated and even after he had done that, his family was harassed.

The Oakland story illustrates that it really is in our best interest to be wildlife aware. Protecting birds and wildlife is important for moral, ethical, and legal reasons as well as for avoiding heavy fines, potential jail time and huge public backlash. It's hypocritical for arborists to claim that one of the benefits of trees is wildlife habitat and then completely disregard the wildlife and the habitat.

The next speaker was Chuck Mills

whose topic was "Connecting Water, Climate and Trees – the advocates landscape for supporting urban forestry. Chuck has been an integral part of California ReLeaf for 20 years and was a founding Board Member when it incorporated as a nonprofit in 2004. He served on the Board of Directors through 2010 and at that time joined the staff as Program Director, the position he holds today.

Chuck began by giving us a little background on California ReLeaf whose mission statement is to empower grassroots efforts and build strategic partnerships that preserve, protect and enhance California's urban and community forests. ReLeaf provides outreach, education and communications to almost 90 regional and local urban forestry groups statewide; member organizations have planted nearly 2 million trees across California since 1989; provided almost \$9 million in grants to support over 800 projects matched with \$11.7 million in volunteer hours, in-kind contributions, and other funds; worked with partners to secure \$40 million in bond funds for urban forestry in Propositions 12, 40, and 84; established California Arbor Week; brought Urban Forestry Act of 1978 into 21st Century via legislation.

California ReLeaf's 2013-2014 successes include: the preserved Environmental Enhancement and Mitigation Program (EEM); they advocated for trees as eligible energy efficiency upgrades under Proposition 39 implementation programs; helped establish new Active Transportation (AT) Program; integrated urban forestry into current water bond bills; advocated for urban forestry via public comment on State Programs (i.e. 2014 Scoping Plan, EGPR, State Water Plan); secured \$17.8 million for urban forestry in 2014-15 state budget. These successes were made in wake of one of the greatest economic crises in California history. Where the California State budget had zero dollars for urban forestry grants, zero dollars for urban greening grants; zero dollars for EEM program grants and only 9 million dollars for urban streams grants.

Chuck was extremely excited to tell us that the 2014-15 California State budget was 180 degrees from where it was the previous year with the following funding levels: EEM Program Grants = \$11.1 million; Urban Forestry Grants = \$15.7 million; AT Program Grants = \$138.5 million; Water-Energy Grants = \$19 million; Urban Streams Grants = \$8 million; SGC Program Grants = \$130 million. Much of this funding can be traced directly to CAP and Trade dollars. As well, Urban and Community Forestry Program



Great networking and discussions!

Highlights from WTMS Summer 2014 continued

(CAL FIRE) will be accepting applications for grants: eligible applicants include cities, counties, nonprofits, qualifying districts; eligible projects include at least green infrastructure, urban wood utilization... maybe more. As well, there is money for the Environmental Enhancement and Mitigation Program with emphasis on open space and urban forestry that provide additional mitigation for transportation projects. RFPs projected for Fall/Winter 2014 and eligible applicants include public agencies and nonprofits. Overall there's over 300 million dollars going into programs that directly or indirectly enhance the urban forest. For more information you can go to www.californiareleaf.org/resources/public-grants.

Just before the lunch break, Rose Epperson honored California ReLeaf for their 25 year anniversary. As can be seen from Chuck's talk, they are a very successful organization. After lunch, Janet Hartin discussed Sustainability and Water Conservation in our Landscapes. Janet is an environmental horticulturist with the University of California Cooperative Extension in San Bernardino County specializing in sustainable landscapes in Southern California. Over her 30 year career she has conducted and collaborated on research in water conservation and minimum irrigation; water quality protection; green waste use; and low maintenance pest resistant landscapes.



The main areas that Janet talked about were irrigation and soil management, use of greenwaste and preventative integrated pest management. Irrigation scheduling involves applying the right amount of water at the right time. Sounds very straight forward, yet so many landscape managers improperly irrigate. The factors involved in irrigation scheduling include the plant's water use, soil holding capacity, water infiltration rates, the plant's rooting depth and the output of the irrigation system. The plant's water use varies by species, is influenced by microclimate and varies by density of planting – multi-tiered plantings use more water than do single-tiered. Janet then discussed evapotranspiration (ET) and how to determine it for a given landscape species. Et is affect by solar radiation, temperature, wind speed and relative humidity. She went on to introduce California Irrigation Management Information System (www.cimis.water.ca.gov) which has over 145 automated weather stations throughout California to help landscape managers irrigate more efficiently.

Janet also said that determining when to irrigate was just as important as determining how much to irrigate. The factors affecting

frequency of irrigation include the soil's water holding capacity, water infiltration rate, depth of rooting and irrigation method and output. Determining your soil texture is very important to figuring out the soil's holding capacity: is it a clay, sandy loam etc. Get your hands soiled: nothing can beat the good old "feel" test. As well, use a soil probe get down and dirty, poke around and look at your soil.

The last irrigation related issue Janet touched on was smart irrigation controllers. Smart irrigation controllers' scheduling is based on measured weather conditions, plant type, and site conditions; they incorporate ET into irrigation scheduling and there are many types of controllers now available. The controllers are only as smart as the "smarty" or "dummy" who programs them.

Janet's next area of discussion was integrated pest management and sustainability. Droughts make plants more susceptible to diseases and pest. Drought damage develops in plants when the transpiration rate exceeds the rate of water available for root absorption. Recently transplanted plants are at greatest risk of drought damage due to root loss. Concerning biotic disorders, she introduced The Disease Triangle where the Susceptible Host; the Disease; and the Favorable Environment all need to align for disease to infect a plant. 90% of the diseases are fungal based and Janet touched on few common one's: powdery mildew; anthracnose on sycamore; and verticillium wilt. Another disease spreading throughout Southern California is bacterial leaf scorch or *Xylella fastidiosa*. It's also known as Pierce's Disease when found on grapes. It's being spread by an invasive specie of sharpshooter which has widened its host range. She also touched on engraver beetles which commonly attack certain species of drought stressed pines.

Abiotic disorders often result from a number of factors: temperature (either too high or too low); soil moisture and relative humidity (either too high or too low); nutrients (deficit or toxicity); light (either too much or too little); poor air circulation; and the soil's physical and chemical properties. Air pollution is an abiotic disorder where the injury varies with concentration and duration of pollutant, sensitivity of the plant, and environmental (abiotic) conditions affecting the plant before and during exposure. Symptoms include chlorosis (yellowing) and premature foliar senescence (death) or reduced growth. Ozone and sulfur dioxide are two more common pollutants that damage trees. There are lists available of species tolerance to both these pollutants.

To avoid both abiotic and biotic disorders implement sound cultural practices such as proper plant selection, planting technique

Highlights from WTMS Summer 2014 continued

and planting location, and maintenance. As well it's very important to select climatically and micro-climatically well adapted landscape plants.

Our final speaker was Jerrold (Jerry) Turney who talked about Pest and Diseases Associated With Drought and Deficit Irrigation. Jerry received his Bachelor of Science from Cal Poly Pomona and a Doctorate in Plant Pathology from UC Riverside. He is former President of the Entomological Association of Southern California and has been working with Los Angeles County since 2000 as their Senior Biologist and Plant Pathologist.

The first disease Jerry discussed was *Botryosphaeria* Canker and Branch Dieback. In the drought of the mid to late 80's Brooks and Ferrin (1993) determined that *B. dothidea* was responsible for dieback on more than 50 species in the chaparral. In their study field inoculations made in September 1990 resulted in rapid disease development; in one week cankers were 60-80 mm long and most of the branches were killed after 6 weeks. As well, all visible canker growth ceased with the onset of the first rains in November. Symptoms include rough, sunken, dark brown to black areas form around wounds or natural openings in the bark. The wood and pith of the branch is blackened or turn dark brown. Dead bark falls off the cankered area and leaves on affected branches wilt as affected branches die. The cankers enlarge along the branch more quickly than around its circumference. Its host range include: Horsechestnut, redbud, dogwood, beech, walnut, tulip poplar, sweetgum, crabapple, pine, oak, rhododendron, azalea, rose, willow, elm, yew, and many other woody ornamentals, (Pen State Extension.) And from our chaparral the species range includes but is not limited to: *Artemesia*, *Calcedrus*, *Arbutus*, *Arctostaphylos*, *Cercis*, *Quercus*, *Garrya*, *Umbellularia*, *Myrica*, *Ceanothus*, *Cercocarpus*, *Heteromeles*, *Ribes*, *Fremontodendron*, *Sequoiadendron* (Brooks and Ferrin)

Another disease trend Jerry talked was *Ficus microcarpa* Branch Canker. Several species of *Botryosphaeria* have been isolated from diseased *Ficus microcarpa* including *B. dothidea*, *Neofusicoccum luteum*, *N. mediterraneum*, *N. parvum*. At first it was thought to be sooty canker caused by *Natrassia mangiferae*. (*Natrassia mangiferae* has undergone a recent taxonomic change to *Neofusicoccum mangiferae*.) The symptoms of this sooty canker initially begin with slightly discolored leaves and

crown thinning which may be limited to one branch; twig and leaf dieback lead to branch dieback and dead patches in the crown. If the disease progresses into the trunk or roots, the tree will die. To control *Ficus* Branch Canker avoid pruning in wet conditions; prune cankered branches 5 inches below the canker; prune out dead branches that are producing spores; avoid severe pruning and root pruning and sterilize pruning tools.

Another new disease trending in Southern California is called Foamy Canker Disease which affects coast live oak. It's been detected in Monterey, Santa Barbara, Ventura, Los Angeles, Orange and Riverside counties. The fungus *Geosmithia pallida* was isolated from cankers in association with the western oak bark beetle (WOBB) (*Pseudopityophthorus pubipennis*.) Foamy Canker Disease symptoms include wet cankers with seeping from the entry holes caused by WOBB. Cutting into the bark reveals pholem necrosis surrounding the entry hole; there are multiple entry holes on the trunk and branches with reddish sap may ooze from the entry holes with a prolific foamy liquid running down the trunk.

Another oldie but goodie rearing its head as a result of the drought is the Pine Bark Beetle. Large numbers of pines are dying in dry landscapes across Southern California affecting Canary Island and Aleppo pines. The different species of beetle include: *Dendroctonus*, *Ips*, Mountain pine beetle (MPB) (*Dendroctonus ponderosae*.) At the beginning of 2013 264,000 acres of trees in Colorado were infested by the mountain pine beetle. This is a much smaller area than the 1.15 million acres that were infested in 2008. This is primarily because the 2008 beetle outbreak killed off most of the vulnerable trees. The current outbreak in the Rocky Mountain National Park began in 1996 and has caused the destruction of millions of acres of ponderosa and lodgepole pine trees.

Again, as with the other speakers, Jerry emphasized that just getting down a few deep soakings and mulch, mulch can go a long way to helping our drought stressed survive.

As you can see the day was bountiful in information on how to incorporate good practices into our programs and project to combat the issues related to drought. Many thanks to all our presenters for sharing their expertise with our attendees.

