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It's official!

The National Arborist Association is now Tree Care Industry Association!

The National Arborist Association has become the Tree Care Industry Association (TCIA) by vote of the NAA membership.

Over the past year, the board of directors researched the best way to increase the value of our trade association for members. In addition to fielding ideas from our membership, the NAA also worked with facilitators specializing in strategic planning and integrated marketing to build the best possible future we can for our industry.

What we accomplished as a result of this research is a solid vision of the NAA as the voice of tree care businesses. With this vision comes the need to communicate a clear message to myriad audiences. The name “Tree Care Industry Association” does just that.

The NAA is already branded by two of its high-profile activities: Tree Care Industry magazine and TCI EXPO. From the public’s perspective, “tree care” says exactly who we are, what we do, and what we care about. From the government and the media’s perspective, “industry” says we’re a trade association. That matters a lot when we go to Washington.

A name affects everything. When potential customers go online in search of an arborist, they are going to look under “tree.” When the media goes looking for information on tree care or post-storm activity, they are going to look under “tree.” When the government seeks information on an industry that has to do with trees, they are going to search for “tree” information. In each case, when they see the name “Tree Care Industry Association,” they will know they found exactly what they need.

Our goal is to be clear and concise about who we are and what we do, to any member of the many audiences we deal with.

This name change will be a gradual shift, and the NAA name and logo aren’t going to vanish overnight. Please feel comfortable referring to us as “NAA” while we go through this transition. Check back to this page often to see the status of our name-change progress.

We are thrilled to have the industry and our members embracing this enormous step forward in recognizing the NAA/TCIA as the “voice of the tree care industry!”

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The Enemy Within:

Understanding the Biology and Management of Wood-Borers

Part I: Flatheaded Borers

By Dr. Daniel A. Herms

Trees girdled by borers often decline gradually with dieback occurring from the top down. Photo by Daniel A. Herms.

Wood-borers are the most devastating and difficult to manage of all the insect pests that arborists must confront. By consuming the vascular tissue under the bark of the trunk and main branches, borers sever the vital pipeline between the canopy and the roots, disrupting the flow of nutrients, water, and carbohydrates. Tunneling within the trunk also compromises the structural integrity of the tree, increasing susceptibility to wind and ice damage.

Trunk injury is much harder for the tree to tolerate or repair than injury caused by other insects, such as sapsuckers and defoliators. In many cases, borers preferentially target the weak and sick, colonizing stressed trees that are unable to adequately defend themselves or recover from attack. With much of the nation experiencing severe drought over the last few years, this season is likely to see its share of borer problems, increasing the need for proactive management programs.

The elusive habits of borers make them difficult to control. By concealing themselves under the bark, borers shield themselves from many natural enemies, as well as most pesticides. To prevent infestations, insecticide applications must be timed to coincide with the period of adult emergence and egg laying so that newly hatched larvae are prevented from burrowing into the tree. However, adult activity is difficult to monitor, especially in species for which there are no effective pheromone traps.

The diversity of wood boring insects is tremendous, but the most important species attacking trees in landscapes and urban forests belong primarily to three main groups: flatheaded and roundheaded borers, which are the larvae of beetles (Coleoptera), and clearwing borers, which are larvae of moths (Lepidoptera). The first of this two-part series will focus on the biology and management of flatheaded borers. Roundheaded and clearwing borers will be addressed next month.

What are flatheaded borers?

Flatheaded borers are larvae of beetles (Coleoptera) belonging to the family known as metallic wood-borers (Buprestidae). Flatheaded borers derive their common name from the larval stage, which appears to have a broadly flattened head (but is actually the thorax which mostly conceals the much smaller head). The long, narrow abdomen is also flattened, which serves them well as they excavate serpentine galleries just under the bark. Although larvae are white, adults of many species are brightly colored with a metallic glint, making them favorites of collectors.

Several species belonging to the genus Agrilus are key pests of forest and shade trees, including bronze birch borer (A. anxius), twolined chestnut borer (A. bilineatus), and honeylocust borer (A. difficilis), all of which are native to North America. The emerald ash borer (A. planipennis), which is native to Asia, has generated a great deal of concern since it was discovered devastating ash trees in southeast Michigan this past July. A related species, the flatheaded apple tree borer (Chrysobothris femorata) can also be a pest to many deciduous trees.
Life history of important flatheaded borers

Bronze birch borer

Bronze birch, which is native to the hardwood and boreal forests of the northeastern United States and Canada, is the most thoroughly studied of the flatheaded borers. Its primary hosts include paper birch (Betula papyrifera), and grey birch (B. populifolia). Yellow (B. allegheniensis) and sweet birch (B. lenta) are attacked to a lesser degree, and river birch (B. nigra), which is native to the southeastern United States, is immune.

Native species of birch are highly resistant to bronze birch borer, being attacked only when they are severely weakened by stress. Under normal conditions, bronze birch borer colonization is restricted to suppressed trees and branches, as well as over-mature trees nearing the end of their natural life span. However, dramatic outbreaks have occurred periodically over the last century, triggered by severe drought, fire or widespread defoliation by insects such as forest tent caterpillar. As will be discussed shortly, the Asian and European birches that have been attacked to a lesser degree, and river birch (B. nigra), which is native to the southeastern United States, is immune.

Stressed trees appear to be most susceptible, and twolined chestnut borer has been implicated in the widespread oak mortality that can occur following gypsy moth outbreaks.

Honeylocust borer

Less is known about honeylocust borer (not an officially recognized common name), but its biology is similar to that of bronze birch borer and twolined chestnut borer, which are very similar in appearance. It is apparently restricted to honeylocust (Gleditsia triacanthos). Adult emerge from D-shaped holes beginning in mid-June in Ohio and late-May in Kentucky, and continue for about six weeks. Stressed trees appear to be most susceptible, and infestations have been associated with severe drought and defoliation caused by honeylocust plant bugs. Infestations have been recorded in trees ranging in size from very small (1-inch trunk caliper) to mature.

Emerald ash borer

Emerald ash borer is native to China, eastern Siberia, Korea, and Japan, and was first discovered last July in and around Detroit, Mich., and neighboring Windsor, Ontario, where it was found to be killing thousands of white (Fraxinus americana), green (F. pennsylvanica), and black (F. nigra) ash trees. The scope of the infesta-
tation suggests that it has been established there for at least five years. Another infestation was recently discovered in northwestern Ohio near Toledo. It has been found colonizing even apparently healthy trees in nurseries, intensely managed landscapes, and naturally forested areas, suggesting the potential of this pest to decimate ash trees in North America if it is not contained and eradicated.

Although there has been insufficient time to study emerald ash borer thoroughly, observations so far suggest that its biology is similar to that of its relatives described above. Adults appear to emerge from mid-May into July, also from D-shaped emergence holes (which can be difficult to detect in the rough, furrowed bark of mature trees). Adults, which are similar in shape and size to bronze birch borer, are characterized by their striking, metallic green coloration, and can often be observed crawling on the trunks of host trees. Larvae feed just under the bark on phloem tissue through the summer. Mature larvae overwinter in the outer bark or xylem just inside the phloem.

Rapid callus formation under the bark in response to borer feeding is thought to be an important defense. Photo by Daniel A. Herms.

Flatheaded appletree borer
Flatheaded appletree borer occurs throughout the United States, where it colonizes a great variety of tree species, which is unusual for wood-borers (although this may represent taxonomic confusion surrounding a complex of closely related species). Red maple (Acer rubrum) is a key host, but it has also been recorded from many other species of deciduous forest and shade trees. It commonly infests fruit trees including apple, peaches, plums, and cherries, and is common near abandoned orchards. The biology of this species is similar to other flatheaded borers. There is one generation per year, with adult emergence beginning from early May to early June in Kentucky. Emergence holes are oval, rather than D-shaped. Larvae feed under the bark on phloem tissue. Flatheaded appletree borers prefer stressed trees, and newly transplanted trees are commonly infested.

Signs and symptoms of wood-borers

Borer infestations can be difficult to detect and diagnose until infestations become severe because of their hidden

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nature, and because their symptoms resemble other causes of tree decline. Symptoms include thin canopies with smaller-than-normal leaves, and branch dieback that often begins in the upper branches, progressing to tree death. Externally, symptoms include the presence of epicormic shoots that sprout from the trunk, oozing of sap and gum from the trunk, and woodpecker damage. Woodpeckers are very good at detecting borer infestations, and their activity can be an effective early-warning system.

Symptoms include serpentine galleries just under the bark, and emergence holes on trunks and branches, which are distinctly D-shaped in the case of many flatheaded borers. Emergence holes are easier to detect on smooth-barked trees such as birches and young trees of other species, but can be very hard to detect on trees with rough bark. Growth of wound-periderm (callus) tissue over larval galleries can result in serpentine welts visible on the bark surface. However, these are difficult to detect on trees with thick bark. In some cases, vigorous callus growth can split the bark, resulting in small cracks through which galleries may be observed. Unlike some other groups of borers, flatheaded borers do not expel sawdust and excrement (known as frass) from the tree as they feed, but rather pack it tightly in the gallery behind them as they mine their way through the phloem.

**Host impact of wood-borers**

Flatheaded borers are commonly referred to as cambial feeders, which is technically correct. However, since the cambial zone is much too thin (only a few cells) to provide much nourishment, they feed primarily on phloem tissue, which girdles the tree. Girdling of the phloem disrupts the transport of carbohydrates from the canopy to the roots, which eventually starve if isolated from their energy supply long enough. As the root system declines, water uptake is reduced, especially during periods of drought, resulting in gradual dieback as the canopy desiccates. Dieback occurs from the top down, as water used first by lower branches fails to reach the upper canopy. Trees often decline over several years before succumbing. However, death can occur very rapidly when trees are overwhelmed by large numbers of beetles that consume most of the phloem tissue.

As they feed on the phloem, larvae of flatheaded borers also engrave the outer layers of the water-conducting sapwood (xylem) as they feed. This actually causes little harm to trees such as birches with a xylem anatomy known as “diffuse porous,” because water is conducted through a number of annual growth rings, most of which are not injured. Rather, flatheaded borers tend to kill diffuse porous species gradually as girdling of phloem starves the roots. On the other hand, “ring porous” trees such as oaks, can be killed rapidly by flatheaded borers, perhaps because their functional xylem, which is thinner than that of diffuse porous species, is also girdled. When the flow of water to the canopy is disrupted, trees die quite suddenly.

**Tree defenses to wood-borers**

Mechanisms of tree resistance to wood-borers are not well understood, but undoubtedly are based on rapid mobilization of physical and chemical defenses at the site of infestation. For example, paper
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birch resistance to bronze birch borer was shown to be highly correlated with the speed at which callus tissue forms in response to experimental wounding. Callus formation is a generalized response to trunk wounds (including mechanical damage such as pruning) that compartmentalizes injury and reestablishes the integrity of the cambium and vascular tissue. Borer larvae can only move through a tree as fast as they can excavate galleries by feeding. If callus tissue (which is highly impregnated with defensive chemicals) grows quickly enough, it may entomb the larvae in an inhospitable environment where it cannot survive. Serpentine welts or ridges visible on the bark surface resulting from callus formation in response to larval feeding, are evidence of a strong wound response. In many cases, failure of emergence holes to form in the vicinity of bark ridges is a common occurrence, indicating that larvae died before completing development. Autopsies have found dead larvae encapsulated within the callus tissue. If callus tissue forms too slowly, larvae may be able to stay one step ahead of the wound response as they feed.

Environmental stress and tree defense
In most cases, flatheaded borers act as secondary, opportunistic pests that can only colonize trees weakened by biotic or abiotic stress. This undoubtedly occurs because severe stress weakens the natural defense system of trees. For example, drought stress has been found to predispose birch trees to attack by bronze birch borer, and gypsy moth defoliation has been found to increase the susceptibility of oak trees to attack by twolined chestnut borer.

Rapid callus growth is associated with vigorous cambial activity and trunk growth, and is very sensitive to stress. Research has shown that strong wound responses are highly dependent on rapid translocation of photosynthate from the canopy to the trunk. Consequently, trunk defenses are highly sensitive to stress such as drought and defoliation that decrease photosynthetic carbon assimilation.

Borer resistant trees: case study with white-barked birches
White-barked birches have always been highly valued as landscape plants. Historically, European white birch (B. pendula) was the most commonly cultivated birch, because it grows rapidly and develops white bark at a young age. However, infestations by bronze birch borer dramatically curtailed its use, and spawned a search for borer resistant birches. In response to this challenge, Dr. David G. Nielsen initiated a 20-year, large-scale study of birch resistance to bronze birch borer at The Ohio State University’s Ohio Agricultural Research and Development Center in Wooster.

Nielsen initiated his study in 1979 by planting seven species of birch (a total of 1,200 trees) in a randomized complete block design. Species tested included the European white birch, mountain birch (B. pubescens), which is also native to Europe, two Asian species, including monarch birch (B. maximowicziana) and Asian white birch (B. platyphylla), as well as three species native to North America, including paper birch (B. papyrifera), grey birch (B. populifolia ‘Whitespire’), and
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Red maple nursery stock girdled by flatheaded apple tree borer. Attacks often occur at the site of graft unions. Photo by Daniel A. Herms.
important to protect trees from defoliation. For example, borer infestations of oak have been associated with gypsy moth defoliation, which decreases the energy reserves of the tree.

Irrigation during drought is probably the single most important thing that can be done to protect both newly planted and mature trees. A replicated field experiment with paper birch found that one inch of irrigation per week was sufficient to prevent bronze birch borer infestations during an outbreak that killed adjacent trees that were not irrigated.

When trees are severely stressed, insecticide applications may be necessary to protect them from borer attack. To be effective, most products must be applied preventatively, in advance of borer attack. Although, this defies the fundamental IPM principle of applying pesticides only when monitoring has shown insect populations to exceed threshold levels, in my opinion it can be justified. The lethal nature of borer attack, coupled with the high value and replacement costs of landscape trees, warrants preventative insecticide applications when trees have been obviously stressed by factors such as drought, defoliation, or transplanting.

Historically, chemical control of borers has emphasized protective bark sprays, the primary objective of which is to kill newly hatched larvae before they can enter the tree. Once inside the tree, most insecticides are ineffective. Dursban has been the industry standard for borer control, but can no longer be used in landscapes and urban forests, although it is still the product of choice in nurseries. Synthetic pyrethroids such as permethrin (Astro) and bifentrin (Talstar) are being tested for their efficacy against flatheaded borers, but to my knowledge solid data are not yet available.

Preventive bark sprays must be timed precisely to be effective. Because protective residues must be present on the bark before eggs hatch to prevent infestation, they must be timed to coincide with adult emergence and oviposition, which is difficult to monitor. There are no effective pheromone traps for flatheaded borer adults, as there are for clearwing borers. However, since plant and insect development is temperature dependent, plant phenology can be used to predict adult emergence, if data are available. In Ohio and Michigan, emergence of bronze birch borer adult corresponds very closely and reliably with full bloom of black locust (Robinia pseudoacacia). Since the phenology of the related flatheaded borers seems to be similar, black locust bloom may be a reasonable indicator plant for them as well. Systemic insecticides offer an alternative to protective bark sprays. In trials at Ohio State University, preventive soil injections and trunk injections of imidacloprid (Merit) applied in late April and early May were effective against bronze birch borer. Fall soil injections are also being tested. However, not all trials have found Merit to be consistently effective against bronze birch borer. In particular, Merit may be less effective for severely infested trees, as substantial phloem damage from borer activity probably interferes with uptake and efficient translocation of the insecticide. Studies are underway at Michigan State University to evaluate the effectiveness of Merit against emerald ash borer.

Research at Ohio State University by Dr. Daniel A. Herns demonstrated that trunk injections containing bidrin can also provide effective control of bronze birch borer, if they are timed correctly. Summer trunk injections made after adult emergence (early July – early August) were effective. However, spring injections made prior to adult emergence were not, probably because little feeding occurs in spring, which limits the insect’s exposure to the insecticide. The injections did result in substantial trunk discoloration of birch, a factor that should be considered before a tree is injected repeatedly.

In closing

Plant health care is the key to effective borer management. Trees planted in sites to which they are adapted will be inherently resistant. Research has shown that even white-barked birches can thrive in low-maintenance, Midwestern landscapes, if native species that have evolved with bronze birch borer are planted. Borer resistance can be maintained by minimizing biotic and abiotic stress, but trees that have experienced defoliation, drought, or transplanting stress can be protected with insecticides until they regain their vigor. Flatheaded borers can wreak havoc in landscapes and urban forests, but they don’t have to.

Dr. Daniel A. Herns is a professor in the Department of Entomology at The Ohio State University in Wooster, Ohio.
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The depot will include products from Terex, like Telelect digger derricks, Hi-Ranger aerial devices, and more, plus the alliance member products.

Oncor Receives National Recognition

The National Arbor Day Foundation recently recognized TXU Corp.'s Oncor for its Vegetation Management Program for the third consecutive year. The award recognizes the company for its tree pruning standards and employee and public education programs for 2002.

As a friend to the environment, Oncor takes the steps necessary to properly prune trees while allowing for the safe and reliable delivery of energy. Creating this balance between trees and power lines along with ongoing efforts to educate the public about safety have earned Oncor the honor of being named Tree Line USA Utility for the third consecutive year.

“Oncor is dedicated to delivering the most safe, reliable and efficient electrical service available,” said Tom Baker, Oncor president. “One of the ways we accomplish this is by integrating a professional tree-trimming program into our daily operations.”

Stoll New Product Manager for Stihl Chain Saws

Stihl Inc. has announced the appointment of Günther Stoll to product manager of chain saws. In his new position, Stoll is responsible for managing the entire Stihl chain saw line, including occasional use, mid-range, professional, and electric chain saws, as well as guide bars and saw chains, oil and lubricants, product accessories and personal protective apparel.

Stoll has more than 12 years of experience in the outdoor power equipment industry. He was formerly product manager of chain saws, bars and chains at Andreas Stihl AG & Co. for two years. He also served as a field testing engineer, traveling throughout France, Germany and other countries during his 12-year tenure with the Stihl Group. Stoll graduated from the University of Freiburg, where he studied forestry. He later completed additional studies in federal forest administration and forest research.

Redmax Promotes Gabrielson

Jim Gabrielson has been promoted to deputy general manager of sales and marketing at RedMax, Komatsu Zenoah America, Inc. For the past year, he has been general manager of direct distributing operations, a position that he will continue to hold.

In his new position, Gabrielson is involved in the strategic sales and marketing planning process, and management of the company’s field sales force, as well as managing the company’s direct distributing units in Norcross, Ga., and Denton, Texas.

Gabrielson joined Komatsu Zenoah more than two years ago as sales manager for the central region. The 13 year outdoor power equipment veteran came from Stovall & Co., where he served in various sales and management positions.

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**BugBarrier Tree Band Proven Effective**

The effectiveness of the BugBarrier Tree Band against fall cankerworm has been confirmed and its effectiveness against gypsy moth established. This new product physically traps the target insects, eliminating the need for chemical pesticides to control these pests. After testing against fall cankerworm in Charlotte, N.C., and Toronto, Ontario during the 2001-2002 season, the product was officially launched in Charlotte for the 2002-2003 season. It can be installed on a tree in two minutes or less. A dense, flexible fiber barrier is wrapped around the trunk to fill bark crevices and cut off insects’ escape routes, while letting the bark “breathe.” A film barrier is installed over the fiber. The inside of the film barrier is sticky, eliminating the problem of leaves and other debris sticking to the bark and creating a bridge for the bugs to cross. The fiber also holds the adhesive away from the bark, so it will not leave a stain. When full, the band is removed using scissors or a utility knife. For product information or a list of distributors, contact Jim Thompson, Envirometrics Systems, Inc., PO Box 43001, London, Ontario, N6C 6A2, Canada; Phone: 1-888-276-4104 or 519-438-5723; Web: www.envirometrics.ca.

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Berkshire Tree Staking System

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Managing Multilingual Workers

By Mauricio Velasquez

Our organizations, Diversity Training Group and Spanish Translation Services, are asked to do many things in the landscape and nursery industries. I have been working with ANLA for nearly five years, and I am a regular columnist in their newsletter around multilingual issues. It is time to jump-start a discussion in the tree care industry. This green industry sector has lagged behind the landscape and nursery industries in addressing multicultural issues. We need to create a national dialogue, a forum for presentation and subsequent discussion. The questions we suggest you pose to your challenging and changing industry include:

1. How is the influx of Hispanic-Latino immigrant workers affecting our industry?

2. What will we have to do differently? How do we begin to look at these issues?

3. Will status quo – doing nothing differently – continue to get us the same results in our industry if the workforce, the labor marketplace, is changing dramatically?

4. What are the best practices? What is working? What are the successful strategies that are producing results and what are the minefields we must avoid?

5. What one thing can we do to start dealing with these issues in the most effective manner?

The answers

Our un-addressed diversity issues are like that ugly couch in the living room – we know it is there but we don’t want to talk about it. Funny, people think that by not talking about these issues, they will go away. How untrue. By ignoring these issues we only give them more power to grow and eventually “swamp the boat.” As a bilingual professional who is the son of Latino immigrant parents, this conversation is natural for me. Now it is time to take a stab at the answers. I think the questions are easy to pose, what is much more challenging lies in the discussion of the answers.

1. The influx of Hispanic-Latino immigrant workers is changing everything. How we recruit. How we hire. How we promote the best talent within our companies. How our services are delivered. How we run our organizations. The industry as a whole is at a monumental crossroads. How you deal with your Hispanic/Latino workers can make or break your business!

2. I suggest you rethink everything about your business and start with my answers to question number one above. Keep in mind that the United States is the fourth-largest Spanish-speaking country in the world today and soon will be third. Your industry is just seeing it sooner than most others. For the rest of the country, it is a matter of when, not if. Even where I live, in Herndon, Va., parts of the city are nearly 70 percent Hispanic.

3. You can begin by learning what industry leaders are doing differently. I always say, “Don’t recreate the wheel, take someone else’s and put a whitewall on it.” Maintaining status quo will doom your organization and it will definitely create a competitive disadvantage. I have no doubt that the organizations in your industry that best manage your Hispanic-Latino immigrant workforce issues will survive, thrive and be around for a truly different competitive day.
4. I had the pleasure of polling and surveying over 600 organizations at the most recent ANLA, New England Grows and NJ Nursery and Landscape Expos. When asked, “What one thing are you doing differently around your new Hispanic/Latino workers?” the answers were quite surprising!

- One of the most common themes in the answers concerned treating these workers as human beings and not as “cattle.” Many participants in my sessions commented that, “If we don’t get a handle on these issues, these workers will stop entering our industry and move on to construction, agriculture and poultry processing. There will be nobody left to employ.”
- Encourage workers to learn English and Spanish (including ESL courses sponsored by employer on-site) to build bridges. Bilingualism is key!
- Translate all policies, procedures, training programs, recruitment flyers, and benefit literature into Spanish. We received so many requests to translate payroll, policies and procedures that we formed a separate company.
- Ask new Hispanic/Latino workers what they need, and then work on delivering it in a reasonable and timely manner. My favorite incentive or retention bonus – long-distance calling cards in $100 increments.
- I am constantly asked, “How do we manage our people?” I will start by saying, “Well, that is the first problem – you are asking me and not the unique individuals that work for you (which by the way, don’t all look, think, act alike).

5. Hire a bilingual person to start translating and building bridges. Also, purchase the English to Spanish industry-specific dictionary and learn a little yourself.

I welcome your comments to this article. Feel free to write, call or e-mail me your feedback to: The Diversity Training Group, 692 Pine Street, Herndon, VA 20170. Phone: 703-478-9191; E-mail: mauriciov@diversitydtg.com; Web: www.diversitydtg.com.

Mauricio Velasquez is president and CEO of Diversity Training Group and Spanish Translation Services, LLC.
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Varese, Italy
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monica.castiglioni@fito-consult.it, or www.fito-consult.it

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Contact: Marian Honeczy, (410) 260-8511
or mhoneczy@dnr.state.md.us

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Orlando, FL
Contact: (352) 332-6986

June 27, 2003
Southern Ohio ISA Summer Meeting
Hamilton County Park District
Sharon Woods, Sharon Centre
Cincinnati, OH
Contact: Alan Klonowski, (216) 544-4737

July 18, 2003
Longwood Gardens 2003 Conference on Woody Plants
Scott Arboretum,
Swarthmore College,
Swarthmore, PA
Contact: (610) 388-1000, Ext. 507

August 3-6, 2003
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Contact: ISA, (217) 355-9411; fax (217) 355-9516,
http://www2.champaign.isa-arbor.com

August 9-13, 2003
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Contact: Kathy Aro, (651) 454-7250,
karo@scisoc.org or www.apsnet.org

August 20-22, 2003
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or Alan Klonowski, (216) 544-4737

November 13-15, 2003
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Tree Care Industry Association
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OSHA Moves On New Crane Standard

OSHA will go forward with the negotiated rulemaking process to update its cranes and derricks standard in response to broad industry support for using that process to revise the standard, OSHA Administrator John Henshaw announced in late February. The agency has published a proposed list of members to serve on the Crane and Derrick Negotiated Rulemaking Advisory Committee. Through negotiation with a 20-person panel, the Committee will develop a proposed revision of the existing construction safety standards for the cranes and derricks.

OSHA views the negotiated rulemaking process as the most effective way to work with the parties that will be significantly affected by the final rule. While it has typically taken OSHA 10 years to promulgate standards through a process of notice and comment, they project that they may promulgate a crane standard by as early as this fall.

The first committee meeting should take place in late spring. Notice of OSHA’s proposed list of committee members appeared in the Feb. 27, 2003 Federal Register and on OSHA’s Web site under Federal Register Notices.

OSHA Contacts High-Hazard Businesses

Approximately 14,200 employers – identified by employer-reported data during a 2002 survey of 93,000 work sites – have been contacted and informed by OSHA that they have higher than average injury and illness rates.

A letter to the employers from OSHA Administrator John Henshaw suggests that they consider hiring an outside safety and health consultant, talking with their insurance carrier, or contacting their state’s workers’ compensation agency for advice.

Employers with 250 or fewer workers can ask for assistance from OSHA’s on-site consultation program. The program is free and confidential and there are no fines even if problems are found.

OSHA’s survey of 2001 injury and illness data from the 93,000 employers was increased from 80,000 surveyed in 2000. The additional 13,000 employers were from the construction industry.

For every 100 full-time workers, the employers contacted by OSHA had six or more injuries or illnesses that resulted in lost work days. The national average is 2.8 injuries for every 100 full-time workers.

The job safety agency has surveyed employers each year since launching the program in 1996. The list does not designate employers that will be targeted for later inspections.

In the States:

California Supreme Court Broadens ADA

The California Supreme Court ruled last week that the state’s protection for the disabled under the Fair Employment and Housing Act (FEHA) is far greater than that provided by the federal Americans with Disabilities Act (ADA). The Court unanimously ruled that, since 1992, FEHA protects an employee whose condition simply “limits” a major life activity. This is broader than the ADA, under which an employee must have an impairment that “substantially limits” a major life activity.

Cases under ADA have been dismissed prior to trial because inclusion of the term “substantially limits” has been interpreted to require a more significant degree of limitation on major life activities. The elimination of the word “substantially” from the California law in 1992 made it significantly easier to establish a disability under California law.

Employers should review and revise policies to make certain they conform to state law, not the federal ADA.

Washington Could Make Ergonomics Standard Voluntary

The Washington State Senate passed a bill Feb. 18 that would turn the state’s ergonomics standard into voluntary guidelines, but the bill may face opposition from House members and the governor.

Under the bill (ESB 5161), Washington’s ergonomics rule would have no force or effect, but remain in place only as voluntary guidelines. In addition, the bill would not allow the state Labor and Industries Department to adopt or amend any similar rules dealing with musculoskeletal disorders in the workplace.

A last minute amendment to the bill also calls for the state labor department to establish an ergonomics resource center, create an ergonomics clearinghouse, establish a small business ergonomics task force, appoint an ergonomics ombudsman, and provide ergonomic assistance awards of up to $5,000 to small businesses.

The bill passed the Republican-controlled Senate by a vote of 30 to 19.

Peter Gerstenberger is vice president of business management, safety and education for the Tree Care Industry Association.
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Dynamic Tree Installation Specifications

By Bonnie Appleton, Carolyn Beatty and Scharlene Floyd

We’ve changed the size and configuration of planting holes. We’ve changed when and with what we may, under certain circumstances, amend backfill soils. We’ve even changed whether or not some form of trunk protection should be applied at transplant for environmental or physical reasons. Unfortunately, there still seem to be portions of tree installation specifications that should be changed so that trees are not the inadvertent victims of often antiquated, or even just plain totally incorrect, practices.

Most landscape tree installation specifications include requirements for some form of tree stabilization or support. If the trees were field grown and their root balls placed in wire baskets when dug, there may also be a recommendation or requirement relative to alteration or removal of the wire basket. These two practices are a source of continuing debate and controversy within the green industry, with nurserymen, landscape designers, architects, contractors and arborists often in heated disagreement about what is best for our trees. We feel it’s time to review these areas of contention and undertake field research that will help resolve these problems to benefit all involved.

Wire baskets

When the field harvesting of trees progressed from bare root harvest to the harvest of a ball of field soil to protect the roots, originally all balls were hand dug, then wrapped with burlap and “laced” or tied with ropes. In 1956 hydraulic harvesting equipment was introduced to the nursery industry. Wire baskets began to appear for containment of the machine-dug ball. Over the years several companies have designed and manufactured a variety of harvesting equipment, while others companies have fabricated many different styles of wire baskets.

Though the advent of mechanical harvesting has been beneficial to the nurserymen and to root ball protection during holding and shipping, many anecdotal reports exist that attribute tree stress, decline or death to wire baskets left intact (unaltered) when B&B trees are installed. This damage is never immediate, but generally occurs years after installation, when burlap may have deteriorated but wire baskets are still intact. The possible involvement of wire baskets in this reported problem is often not detected until tree removal becomes necessary.

Controversy exists within the green industry relative to the need to remove or alter wire baskets during installation. Many
nurseries say removal or alteration is unnecessary, and consequently won’t guarantee plants if such occurs. However, many planting specifications mandate either total basket removal, or require baskets be split and laid into the planting hole, or have their top loops removed or bent back. Specifications requiring alteration or removal do so to prevent detrimental cutting or girdling of tree roots or stems by the wire. This required removal or alteration places landscape contractors in a no win situation, caught between nursery non-removal policies and specification that require removal or alteration. In addition, landscape maintenance personnel often report encountering basket wires sticking above ground, especially if trees were planted shallow. Wire extending above ground poses a danger to people and equipment.

On the other end of a tree’s life, many arborists who remove dying, dead and hazardous trees frequently point to unaltered baskets as “tree killers” when they encounter wires cutting into roots. Many question why removal or alteration is not required of landscape contractors. A negative view of nursery production and landscape installation practices exists within much of the arboricultural community.

To date, limited research has been conducted to specifically address if or how wire baskets should be removed or altered during installation. Wire baskets can last up to 30 years, according to Dr. Gary Watson, tree root physiologist at the Morton Arboretum. Tops of flare roots generally grow into the upper horizontal basket wires, causing partial girdling of roots and restricting vascular flow (xylem water and nutrient transport up and phloem carbohydrate transport down. Though root tissue may eventually grow around the wires and graft together on the other side, this reestablishment of unrestricted vascular transport may take several years.

In addition to the question concerning unrestricted vascular flow, there is also the question of anchoring stability. Trees that appeared to have blown over due to flare

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To begin to address this controversy, this spring we are starting new long-term wire basket alteration research this spring. We’ve conducted a survey of the wire basket manufacturers and found that the product is extremely variable. Of the six companies that responded, four manufacture mainly cone-shaped baskets while the other two manufacture mainly truncated (less angled) and flat-bottomed baskets. One company makes only non-galvanized root girdling have been observed. It has been reported that in Europe, baskets made of supposedly breakable plastic, rather than of wire, are used. However, a literature search did not provide any published reports of what effects the plastic has had on root growth, or of research addressing the practice of wire basket removal, non-removal, or alteration.

Isn’t something wrong here – the tree is holding up the stakes, not the reverse?

Widely used stabilization method: stakes and hose-covered wire guying.

A red maple girdled by guyng attached too long. Now the tree’s vascular system is compressed and the top may snap off.
baskets (the wire is not dipped in zinc), three make mainly galvanized baskets, and two make both types. When asked their objectives when designing their baskets, most manufacturers had stated as a short-term goal creating a basket that makes harvest easy for the grower, while their two major long-term goals were to provide root ball protection and root ball stabilization (once in the landscape). Half of the manufacturers did recommend removing or bending back the top of their baskets at transplant to get the wire loops or "ears" out of the way of elongating roots.

When landscapers were surveyed about their actual tree installation practices relative to wire baskets, one of four things was generally done:

1. nothing (no alteration to the basket);
2. total basket removal, or the two intermediates;
3. removal or bending back of the top portion;
4. vertical splitting of the basket to facilitate laying the basket down into the planting hole.

We will be using these four practices as the treatments in our research. On a yearly basis for the next 10 years we plan to air excavate the roots of the trees in this study to document root growth in response to these various wire basket handling practices. We also hope to add a new root ball packaging method to our research (using a product not yet commercially available) to our research to contrast its use with that of wire baskets for field ball harvesting and root protection.

**Tree stabilization**

Ever drive by a landscape and notice that the trees were holding up the stakes and guying used to stabilize them, instead of what was intended? Tree stabilization systems can be justified for two basic reasons:

1. to keep trees upright and prevent them from shifting while roots grow into the soil surrounding the planting hole, thus anchoring the tree;
2. to prevent vandalism.

From a root growth standpoint, stabilization may be needed where landscape sites are windy, where the tree has a large crown, where the backfill soil is inadequately firm, or where the tree's root ball is loose. From a vandalism standpoint, stabilization may be needed to protect trees from people or from equip-
A stabilization method using nylon tapes put over a branch crotch instead of around the tree trunk, thereby avoiding trunk constriction.

Current tree stabilization systems frequently contribute to deformation, stress or death of trees to which these materials are attached. Shading of one side of the tree by a single stake can lead to uneven trunk development and cause lean in the opposite direction. Due to reduced compression wood formation, rigid staking can lead to reduced trunk caliper and taper formation. In addition, guying that is not removed in a timely fashion can lead to bark abrasion and trunk constriction, the latter blocking movement of materials in tree vascular systems.

Published research on tree stabilization is limited. Research has shown that motion, light and growth regulators influenced trunk development (in particular, reaction wood formation) of most species studied (in particular, reaction wood formation). Trunk staking is often not only unnecessary, but can be detrimental to tree growth. The most recently published research comparing actual trunk support systems involved only one tree species and three systems. No research literature has been found comparing the relatively unknown system of tree stabilization via root ball anchoring with trunk staking. (One article from England mentioned using root ball anchoring but gave no post transplant results).

The most commonly used tree stabilization systems consist of one or more wooden stakes with hose covered wire guying attaching the stakes to the trunk. Unfortunately many of these staking and guying systems restrict trunk movement or cause trunk damage. Even where tree stabilization is justified, above-ground supports are frequently left in place for an excessive period of time, often leading to inferior trunk development and damage. In urban areas, above-ground supports can be a physical safety concern for grounds management personnel, pedestrians, cyclists, and pets due to the potential of accidental contact with entanglement in the stakes or entanglement in guying.

Above-ground trunk staking is no...
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Here's where we need your help. We're trying to compile an accurate assessment of current industry practices, and therefore ask that you please take just a few minutes to complete our questionnaires. Individual responses will be kept confidential but the data will be compiled and used to help refine future research projects, and possibly to help manufacturers improve their products. In advance, thank you for supporting our new research projects!

**WIRE BASKET ALTERATION SURVEY**
A research project of Virginia Tech – Scharlene Floyd and Dr. Bonnie Appleton

1. What is your primary business? (check more than one if applicable)
   - Landscape design
   - Landscape installation
   - Landscape maintenance
   - Tree care
   - Other

2. If you buy or specify field-grown, B&B trees, do you have a preference as to the type of wire basket used to protect the root ball?
   - Yes
   - No

3. Which wire do you prefer?
   - Galvanized
   - Non-galvanized
   - Doesn’t matter

4. Do you prefer baskets made from one continuous strand of wire?
   - Yes
   - No
   - Doesn’t matter

5. How do you recommend or actually handle or modify wire baskets at transplant?
   - No basket removal or modification
   - Remove top loops or top round of wire
   - Total basket removal
   - Split basket vertically and flatten into planting hole
   - Cut bottom out of basket
   - Other (please detail)

6. If you do not modify or do not recommend modifying the wire basket at transplant, do you modify it/recommend modifying it at a later time?
   - No
   - Yes (if yes, when? )

7. If you have an installation job and you disagree with what the planting specifications require relative to handling wire baskets, what do you generally do?

8. Have you ever seen root or trunk damage, on a tree installed with the wire basket intact, that you felt could be attributed to the wire basket? If yes, please describe the damage (Examples – cut or girdled roots, girdled trunks, tree blow over, etc.).

9. Any other information you care to share relative to your experiences with wire baskets?

Many thanks for participating in this survey!

Please fill out and return to: Dr. Bonnie Appleton, Hampton Roads AREC, 1444 Diamond Springs Road, Virginia Beach, VA 23455. Or, fax to (757) 363-3950.
systems, will be incorporated into a tree stabilization project that we will likewise also be starting this spring. This study will be just two years in duration, during which time the ability of the product to stabilize the trees will be evaluated, and the actual growth (root establishment, trunk diameter and height development) of the trees will be determined. We will also be looking for any tree damage caused by the products, as well as evaluating them from short- and long-term safety standpoints.

### TREE STABILIZATION SURVEY

Please provide your name, company, position & contact information (email or phone)

1. What type of product(s) do you utilize for tree stabilization when you transplant trees? If more than one, give a %.
   - Above ground trunk stabilization systems (stakes and guying, etc.)
   - Below ground root ball stabilization systems (something that sits on or attaches to the root ball, etc.)
   - Other tree stabilization systems (please describe)

2. If above ground, what materials do you use to stabilize the trunk?
   - Wooden stakes or poles
   - Wire and hose guying
   - Metal poles
   - Rope guying
   - Nylon guying
   - Other types of guying (describe)
   - Other types of poles/stakes (please describe)

3. If above ground, what is the relative strength of the type of stabilization system you use?
   - Rigid
   - Some tree trunk flexing
   - Significant trunk flexing

4. If below ground, how is the root ball held in place?
   - Wooden frame with anchors
   - Metal plate or spikes
   - Other (please describe)

5. What criteria do you use to determine the method of stabilization? (please check all that apply)
   - Trunk or canopy size
   - Location (street, yard, etc.)
   - Planting specifications
   - Conditions of planting site
   - Container vs. field-grown tree (Do you do them differently? Yes/No)
   - Other (please specify)

6. What criteria do you use to select a stabilization method or product?
   **Short Term:**
   - Rapid/Easier installation
   - Cost-effectiveness
   - Availability
   - Stabilization for immediate root growth
   - Other (please describe)
   **Long Term:**
   - Trunk Protection
   - Development of Caliper and taper
   - Ease of removal
   - Safety (of pedestrians, traffic, etc.)
   - Other (please describe)

7. Do you use different systems based on specific landscape situations? If so, please provide examples of situations and associated methods.

8. If you have an installation job where you disagree with the contract's planting specification for tree stabilization, what action do you take?

9. In general, how long do you leave the stabilization system in place?
   - Less than 6 months
   - 6 months to 1 year
   - 1 to 2 years
   - Greater than 2 years
   - Varies based on location, etc.

10. Have you seen or removed trees damaged by stabilization systems? If so, please describe the type of damage seen and its probable cause.

11. Describe what you would consider an ideal tree stabilization system. How long would you leave this system in place?

12. Do you have a specific planting specification that you generally use? If so, please submit a copy if available.

13. What is your primary business? (check more than one if applicable)
   - Landscape design
   - Landscape installation
   - Landscape maintenance
   - Tree care
   - Other
Storm Damage and Restoration Pruning: Latent Nodes as Natural Targets

By Guy Meilleur

"Pruning properly done is one of the most difficult tree treatments. Every branch will be different ... Learn to read trees, inside and out. It is always exciting to see the many many variations on a theme. It is much better to think of them as variations on a theme than exceptions to a rule. Rules are too absolute for mother nature." (Dr. Alex Shigo, A New Tree Biology)

The central leader now ends in "stubs" with laterals much less than one-third their diameter. Retaining this leader keeps the tree's structural integrity.

The headed branches are aiming in the opposite direction from the uncut branches. As they regrow they will restore symmetry to the tree. Their mass at present balances the tree's structure, damping the effect of the wind on the crown over the house.

Ice is not nice to trees. Neither is too much wind, rain or snow. When Mother Nature's storms do a ragged topping job on mature trees, how far back should the arborist cut the broken branches? Is it okay to leave a stub? The evidence supports leaving as much of the remaining canopy volume as possible.

For years we have all heard two rules repeated over and over:
1. For ordinary reduction pruning, cut back to a lateral branch able to assume the terminal role, at least one-third the diameter of the branch being cut.
2. Don't take off more than one-fourth of the canopy at a time.

Ice violation – following the standards

The question arborists are frequently called upon to answer is this: when an extraordinary storm has broken Rule 2, does Rule 1 still apply? Or was Dr. Shigo right about rules and nature? As the old saying goes, "When in doubt - read the directions!" The American National Standards Institute's 2001 edition of the A300 Pruning Standards gives directions all arborists should follow. Representatives of 15 different green industry organizations revise ANSI A300 National Standards every five years, updating them according to the latest arboricultural research and

Note the two small laterals arising just before the branch abruptly narrows; a clear natural target at which to aim the saw.

With no side branches to aim at, this node characterized by swelling and the old branch scar becomes the natural target. The cut is slanted to avoid trapping water and spores, and oriented to the north to lessen cracking.
experience.

Since we are dealing with severely damaged trees, let's look at the A300 Standard under 5.7, Specialty Pruning Standards. 5.7.4.1, "Restoration shall consist of selective pruning to improve structure, form, and appearance of trees that have been severely headed, vandalized or damaged."

Section 4.20, reads "heading: 2. Cutting an older branch or stem back to a stub in order to meet a defined structural objective ... Heading may or may not be an acceptable pruning practice, depending on the application."

(Contrast this with 4.46, "topping: The

A typical reduction cut is made on a line which bisects the angle between a line perpendicular to the branch being removed and the angle of attachment.

reduction of a tree's size using heading cuts that shorten limbs or branches back to a predetermined crown limit. Topping is not an acceptable pruning practice.")

There are a several other types of specialty pruning that properly use heading cuts in situations the arborist does not see every day.

♦ Orchardists have long used heading cuts to make strong branches capable of holding up under a heavy load of fruit. When the branches of fruit trees are pruned, the cuts are made to a weak lateral or at latent nodes. The objective of these cuts is to increase branch taper and therefore increase the load bearing capacity of the branch.

♦ Pollarding, described in ANSI A300 5.7.3, incorporates heading cuts, originally to allow another kind of harvest, not of fruit but of branches for fuel wood. In our modern age of fossil fuel use, pollarding is primarily used to limit tree size.

♦ Bonsai is actually a highly sophisticated form of structural pruning. Creating a miniature version of a forest tree requires close attention to the balance between root structure, crown structure, and environmental conditions.

Nodes as targets

The natural target for a heading cut is to a node, where wound closure will be optimal and re-growth will not result in a "crow's feet" tangle of weak sprouts, but a vigorous flush out of which strong new branches will eventually dominate. The locations of restorative nodal cuts are not predetermined (as topping cuts are), but selected by the arborist in the tree before each cut is made. To find out where, why and how these nodes should be selected, let's look again to the authorities.

In A New Tree Biology Dictionary, Shigo writes, "Pruning cuts that are made

The crack ends at the point where a small upright lateral arises.

The face of the wound shows no evidence of the crack. This lateral's upright direction may give it the terminal role despite its small diameter.
at nodes cause less injury than cuts made at internodes ... A node is the position on a stem or trunk that was occupied by the terminal bud and its associated buds."

In The Manual of Woody Landscape Plants, Michael Dirr’s definition, "node: a joint on a stem, represented by point of origin of a leaf or bud; sometimes represented by a swollen or constricted ring ..." agrees.

Shigo clearly acknowledges that proper cuts can be made at latent nodes, as opposed to the improper practice of topping. In A New Tree Biology, he writes, "Topping is done internodal; proper crown reduction is done at nodes, or at crotches. So the first separation must be nodes – good, internodes – bad."

Why make heading cuts?
Count the reasons!

After severe storm damage, there are at least five reasons to apply heading cuts that make them an acceptable practice:
1. Retain a safe branch structure
2. Reduce the risk of windthrow
3. Fend off fungus
4. Stop sunscald
5. Conserve our canopy

Any of these reasons may be enough to warrant leaving the bottom of a branch in a tree. If all five apply, there can be little question that heading cuts are proper for restoration pruning. In contrast, look at the practice of removing all damaged branches back to their origins or big laterals and ask what the reason is for it. Let’s take a closer look at the tree industry’s standards, as well as conclusions drawn by its top researchers. We’ll see that there is little support for gouging bigger holes in brutalized tree canopies by removing sound wood.

Though many will initially object to a stub left in the tree, it is important to think about what will grow from this branch that has been cut back to a healthy node. An arborist who is called upon to restore a damaged tree several years after the damage occurred will notice that there are already many sprouts originating from stubs. Some of these may have grown into branches. Some can be encouraged to grow into new branches or develop apical dominance through proper selection and management. We must think long and hard before deciding that a damaged tree has to be further damaged by cutting all damaged branches back toward the heart of the tree.

1. Retain a safe structure

Structure is the first reason to leave as much dynamic mass – as much moving, living bulk – as possible in a severely damaged tree. If cutting back to laterals or the branch’s origin will open up even bigger gaps in the crown and expose the remaining branches to higher stresses and strains, is it the proper technique?

Cornell University’s Karl Niklas discussed this question in his keynote address at the Tree Structure and Mechanics Conference in October 2001 in Savannah, Ga. He said, “One important approach to describing adaptive tree morphology is to explore stem and root ‘safety factors.’ ... The ‘safety factor’ can be surprisingly instructive, even in terms of practical horticultural concerns such as the effects of pruning on mechanical stability.”

Niklas also noted that “... most plants have a modular construction ... Stems growing in sheltered sites within the same tree canopy can have lower load-bearing capacities ... When exposed by the removal of neighboring stems, leaves or roots, previously sheltered and mechanically reliable body parts may deform or break even under wind conditions that are ‘normal.’”

So the “damping effect” of branches in a tree can prevent future breakage of branches that still have foliage on their ends. The weight of side branches can also reduce the movement of stems they are attached to by increasing overall mass. As a result, more force is required to overcome the inertia of the stems.

The trunks and scaffolds of trees also contain reaction wood that has formed over many years of bearing the load of their canopies. Removal of too much weight will change the tension and compression forces in the trunk and scaffolds. The tree can adapt by adding more wood in areas under load stress but will be more vulnerable to additional storm damage while this process takes place.

Nelda Matheny and James R. Clark point out in their book, Evaluation of Hazard Trees in Urban Areas, that maintaining a strong central leader is also important to the structure of many species, especially in trees with excursive growth forms, those that exhibit strong apical dominance. Excursive trees act to replace a damaged central stem with a new one. This may result in multiple leaders with weak branch attachments. Retaining as much of a broken central stem as possible and managing the resulting sprouts to control apical dominance can promote good tree structure.

The goal is to leave the tree as safe as possible, even if some see the immediate effect of nodal cuts as “topping” or improperly leaving stubs. It’s nature’s storms that did the topping job and left the stubs; the conservative arborist further reduces the crown as little as possible.
2. Reduce the risk of windthrow

If removing the damaged branches back to the center of the tree will remove large amounts of weight from one side, this could increase the potential for uprooting of the tree. According to Claus Mattheck and Helge Breloer in "The Body Language of Trees," a lopsided crown reduces the soil friction with the tree's roots on the side where weight has been removed. If the weight has been removed from the windward side, "The crown shape and the wind then combine forces to lift the pruned side of the crown, so reducing the normal stress and indeed perhaps transforming it into tensile stresses (i.e., lift!). When this happens, the effective sliding surface between the root-ball and the ground is so severely reduced that the tree blows over far more easily."

Since storm damage from wind often occurs on the windward side of the crown, the weight conserved by cutting at a node could increase the stability of the tree's root system in the soil.

3. Fend off fungus

Decay is another good reason to make nodal cuts just below the storm-caused wounds. As Schwarze, Engels and Mattheck remind us in 2001's "Fungal Strategies of Wood Decay in Trees," large wounds on trunks are unlikely to close before they start cracking and become "motorways for decay-causing fungi and bacteria" racing into the heart of the tree. Trees rely on suberin (a fungus-inhibiting corky material) formed in the cell walls of the cambium to form a barrier zone. With the increasing acidification of our atmosphere, some of that suberin is washed off. Callusing cambium can be exposed to infection, just as desubered dogwood leaves are exposed to lethal anthracnose. Now more than ever, our strategy must be to minimize the size of wounds, the infection courts that we must leave behind.

4. Stop sunscald

Another reason for retaining branches that nature topped is sun injury. Bark loss from sun injury exposes the wood to cracking and decay pathogens. These injuries are slow to heal because the bark in the tree's interior is thin to begin with, and the sun also dries the tissue at the edge of the visible injury so it cannot form callus tissue effectively. Like a big pruning cut on a stem, sun-damaged bark is a slow-sealing type of infection court we must avoid creating.

5. Conserve our canopy

Canopy conservation is the ultimate reason for minimizing crown losses. When nature radically removes portions of our tree canopy, it's up to the arborist to be as conservative as possible. Trees are a living system. When a tree is damaged by storms, the balance between roots and canopy is altered. The tree will respond by sending up watersprouts in an effort to restore the balance. The more material is removed from the tree, the greater the imbalance becomes. At a certain point there will no longer enough photosynthesis to support growth, nutrient storage, and defense, and the tree will decline. Diameter growth may suffer if the live crown ratio -- the relative proportion of green crown to overall tree height -- is reduced to 40 percent or less. Reduction in diameter growth slows down wood production and the closure of wounds. The more of the tree we leave, the more benefits, such as clean air and water, we conserve. If we look to the A300 Standards and the tree industry's leading scientists for guidance in dealing with damaged trees, we see that restoration pruning calls for leaving as much canopy as we can to benefit the tree, the tree owner and the community.

In the years to come

Aftercare is often very easy, but it is important to communicate to the client that the restoration process will take several phases to complete. From most heading cuts a flush of sprouts will grow. Branches in the upper canopy that have been headed back are now more likely to support the weight of a climber since the extra weight of their tips has been removed by the storm. The strongest sprouts can be trained to become your new branches. Simply remove the weaker and more poorly placed sprouts to make room for the best. These can be shortened if they are too rangy, and side branches can be thinned if they are too crowded. On mature oaks, every three years is about right. Some branches that were headed back in 1996 after Hurricane Fran just got their second thinning. They now have three strongly attached, naturally looking branch ends to carry on the growth of the tree. What once looked like stubs have grown into attractive, symmetrical portions of our valuable tree canopy.

Guy Meilleur is a consulting arborist with Better Tree Care Associates in Apex, N.C.
Because trees grow everywhere, an arborist is never really off duty. Recently, I was renewing an old friendship with Rob, who was a good friend in my teenage years. After high school, Rob went to college, and I was inducted into the Army. We lost touch. He became a college professor, and after the Army I learned how to trim trees. We met again at his mom’s funeral this year. As we sat drinking coffee and visiting, I noticed that my friend’s Monterey pine trees were in distress. We discussed the trees, and later I came back with my crew to help.

Provenances

Monterey pine trees, *Pinus radiata*, are native to the Central California coast. They originate in three relatively small coastal areas: Año Nuevo, north of Santa Cruz; the Monterey Peninsula, south of Santa Cruz; and Cambria, further to the south. Natural populations are also found on the Mexican islands of Cedros (*Pinus radiata*, var. *cedrosensis*), and Guadalupe (*Pinus radiata*, var. *binata*). Among nursery stock, there is a great deal of variation between provenances, with a mixture of the Año Nuevo and Monterey provenances believed to be the main genetic basis of modern *radiata* pine.
A world traveler

Monterey pine (radiata pine) has found its way around the world. As early as 1850 it was introduced to Australia as an ornamental tree. Later, it was brought to New Zealand, where it has become a valuable plantation tree for the timber industry. It is used there for a wide range of purposes, including light construction, furniture, flooring, moldings, paneling, veneers and pulpwood. New Zealanders are constantly working to improve the genetic characteristics of radiata pine for use as a timber tree.

Back in the U.S.

In the United States, Monterey pine is chiefly used as an ornamental tree. However, it is also commonly grown as a Christmas tree, with most production in coastal Southern California. A very fast-growing tree, it can grow an incredible 6 feet per year when young, reaching 50 feet in as little as 12 years! Radiata pine enjoys about the same life span as humans, 75 to 100 years, and can grow 80 to 100 feet tall at maturity.

Like many pinus species, Monterey pines have a rough, thick protective outer bark (rhytidome). Attractive 2- to 6-inch long bright green needles, in groups of 2 to 3, are borne in reddish brown papery sheaths (fascicles). Interesting clusters of 3- to 6-inch lopsided cones may persist for many years on branches. The tree grows into a shapely broad cone in youth, and develops a rounded flattish crown at maturity. Perhaps because of its rapid growth and attractive features, radiata pine, until recently, was the most widely planted pine tree in California.

Monterey pine problems

In its coastal native habitat, the radiata species is besieged with problems. These trees tend to be shallow rooted, and wind throw is a problem on shallow soils. Several species of bark beetle larvae mine the bark cambium of weakened trees. Sequoia pitch moth larvae create unsightly pitch tubes. Monterey pine and Nantucket tip moth larvae damage branch tips and needles. Wood-boring insects feed on the trees sapwood. Pine diplodia fungus causes needle and twig dieback, and canker fungus causes deformed growths on branches. Wood is often rendered useless for service because of blue stain (Ceratocystis) fungi that are introduced into sapwood by bark beetles. In spite of all this, healthy trees have thrived and the species has evolved, successfully adapting to the rigors of their native habitat. It is the weakened, stressed and sick trees that fall prey to nature’s destroyers and recyclers.

Or so it was, until 1986, when an exotic fungus disease, pitch canker (Fusarium circinatum) appeared on the scene.

By 1995, the disease had spread to locations throughout the ecological sections of province 261A - central California coast, and 261B - the Southern California coast. Thousands of trees have died from an emerging pest complex, consisting of the pine pitch canker and native insect vectors (mostly bark beetles). Disturbingly, the disease has also affected Bishop pine and seven other pine species, as well as Douglas fir trees. The lack of pitch canker-resistant planting stock and the potential spread of the disease have led the California Department of Forestry to stop the sales of Monterey, Bishop and Monterey X knob (hybrid) cone pine seedlings from its nurseries. Quarantine measures have also been implemented in an attempt to slow the spread of the disease.

These include not removing diseased wood from the area, chipping in place, and sterilization of chainsaws and trimming tools. On the bright side, there is new evidence emerging that otherwise healthy Monterey pines infected with pitch canker are successfully resisting,

The initial response to remove every infected tree may have been an understandable overreaction. Radiata pine is unlikely to remain a favored amenity tree because of the losses in ornamental plantings, and an uncertain future.

Rob’s trees

Before starting the job, I inspected Rob’s two Monterey pine trees. There were several holes in the ground around the drip line of the trees. They had been trimmed a few years ago, and treated with soil injections of Merit 75 WSP (imidacloprid) for bark beetles. The trees had received soil injections of imidacloprid each spring. Despite the treatment, the pines had more dead limbs and foliage dieback.

The job

When my crew arrived at the site, we discussed job safety, and started right to work. Trees A and B were 15 meters (50 feet) tall, and 0.6 meters (24 inches) dbh. Climbers were instructed to remove all dead and dying limbs, twigs and needles. Only damaged or unsafe green limbs were removed. Both trees needed as much healthy foliage, cambium and sapwood as possible to support the symplast (living portions) of the tree.

The trees were climbed without spurs. Spurs can damage bark cambium and sapwood, causing pitch to bleed and thus attracting bark beetles. Spur wounds can also become sites of infection.

As the trees were being trimmed, I inspected the upper trunk, limbs and canopy. All limbs were carefully lowered by rigging over the landscaped yard below.

Results

The lower and upper trunk and limbs of both pines had old bark beetle exit holes. Tree A displayed some needle and twig dieback. I suspected diplodia tip blight, Diplodia pinastri, or bark beetles, but further investigation revealed that the culprit was the Monterey pine tip moth Rhycacionia pasadenana. Both trees had a few pitch masses from sequoia pitch moth Synanthedon sequoiae. Removed limbs were carefully inspected for pests, diseases and cultural contributors to the trees’ condition. Several limbs had resin-incrusted cankers associated with insect damage. A few limbs that were damaged during past trimmings had to be removed.

The problems associated with the presence of dead, dying and damaged limbs were relieved by trimming. Most of the dead limbs that were removed died as a result of past bark beetle damage. Other limbs, some large, died from continued bark beetle damage in spite of the chemical treatments the trees had received.

The approximate age of the trees (26 years) was determined by counting the annual rings at the base of a large limb. Resin exudation from tracheids in the radial aspect (cross section) of several live limbs indicated good capillary pressure. (Pines protect themselves from bark beetle infestation by exuding resin.) Potassium iodide (KI) staining showed adequate starch storage in live sapwood. (Stored
Both trees had globs of whitish pitch tubes caused by sequoia pine moth. The moth lays a single egg, and the bleeding is messy, but not much of a hazard to the health of the tree. When on a limb, a canker can form due to the larvae damage. If they girdle the limb, it will die. This limb is dying above the cankers. Chemical controls have not been entirely effective. Soil injections of imidacloprid should be continued, with special attention to label recommendations for proper timing of application, method, and dosage. Bark beetles are difficult to control, and just a few can cause a lot of damage; therefore a preventative regimen needs to be added. A strong repellant that will establish a long-lasting (one or more months) protective barrier such as Cypermethrin should be applied with a sprayer to the bark. A spreader sticker should be used so that the chemical will penetrate into rough bark crevices and spread evenly. Timing is important.

The first application of Cypermethrin should be in early spring to prevent over-wintering bark beetle females from laying eggs under the bark. In California, there can be several cycles of infestation and repeat applications may be necessary. An option for treating larvae feeding behind bark is PT-Cykick. This is an aerosol formulation of Cypermethrin that comes with a straw that can be inserted into beetle exit holes. Trees should be monitored for effectiveness of the treatments. Always read and follow label directions carefully. Commercial chemical application requirements differ from state to state, so be sure to check with your local agricultural commissioner.

Monterey pine trees need adequate irrigation during the dry summer months. Studies have shown that coastal trees receive a steady supplemental water supply from fog. Monterey pine trees often fail to thrive when planted too far outside their native coastal habitat.

**Summary**

In time, properly managed trees can recover. Sometimes, however, despite our best efforts, the bark beetles win. It is important to acknowledge when the battle has been lost. Dying trees should be removed promptly, limbs chipped, and wood debarked, or stored in sealed plastic bags for several months, to kill any under-bark larvae.

John Stepp is the owner of John A. Stepp and Associates, in Mountain View, California. He has been active as an arborist, pest control adviser and consultant in the governmental and private sectors for more than 25 years. You can e-mail him at gloari@earthlink.net.
Getting the Most Out of Your Sprayer

By Dr. Lakshmi Sridharan

Trees can live for decades, even centuries, with proper care. They do need protection from time to time from insect attacks, as well as bacterial, fungal or viral infections.

Protection often requires an effective application of various chemicals (pesticides, fungicides, growth regulators, or dormant sprays) at the appropriate time, using proper sprayers that are cost, time, and energy effective. Poor spray coverage, especially on larger trees, is the primary cause of reduced spray product performance.

Sprayers

Safe and efficient applications of chemical products are important when spraying. For this purpose you may use any number of different sprayers depending upon the size of trees, number of trees, pruning practices, ground conditions, acreage, and weather conditions.

Manually operated sprayers are labor intensive, since smaller tanks require repeated fillings. In addition, these sprayers may not give complete coverage of trees. Large-volume air blast, tower, tunnel and mist sprayers work best for orchards, arboreta, public gardens etc. with large acreage. Most tree companies use hydraulic, manually operated sprayers. Advantages include versatility and reduced drift.

The conventional air blast sprayer sends droplets in an air blast from a central fan upwards into the canopy. Tower sprayers and tunnel sprayers are better at targeting the spray into the canopy, reducing drift and increasing efficient coverage. Agricultural Engineers at Michigan State University developed the tower sprayer that uses an air curtain and a rotary atomizer. The tower sprayer has been shown to produce excellent results at disease and insect control. Horizontal penetration into the canopy is preferential to vertical penetration from an air blast sprayer.

Tunnel sprayers, developed many years ago in Europe and the United States, have tremendous advantages in parks, cemeteries, or managed landscapes using espalier designs and dwarf trees. The use of a spray collection device at the base of the tunnel recirculates spray as such it is good for subsequent savings in pesticide and a reduction in drift.

Drift problems increase when a space occurs within a row of trees. You can easily fit an air blast sprayer with ultrasonic or laser canopy sensors. The sensors detect the shape of a tree and adjust the spray pattern accordingly. Use of a sensor has several advantages:

- reduced drift
- reduced ground deposition of spray material
- reduced material use

Mist sprayers, unlike the air blast sprayers, emit a fine mist of spray material that can reach tall trees up to 100 feet and spray through foliage to hit hard-to-reach areas. They are cost effective and reduce fungicide application rates by 30 percent to 35 percent while retaining effectiveness.

Handling a sprayer

Once you select the right sprayer for a specific job, read the manufacturer’s instructions for operation – and follow them. When handling a sprayer pay attention to manufacturer’s instructions, safety features, sprayer components, and spray material. Keep the sprayer in good operating order by adhering to the following checklist:

1. The pump

Correct operating pressure is critical for effective coverage. Therefore, check a centrifugal pump for the correct operating pressure. Check the packing for water or oil leaks in a piston pump. Be sure to assess the valves, seats and O rings on the valve seats for damage or excessive wear. Examine the diaphragm(s) very carefully when the sprayer has a diaphragm pump. Replace all worn parts.
2. Hoses and connections
Check for leaks in all hoses and connections, especially the suction hose. An air leak in the suction line seriously interferes with the operation of the pump and the pressure gauge.

3. Strainers
Check all strainers throughout the delivery system, including the suction strainer. In the early season, scale from the tank and lines may break free. When a strainer contains any sort of deposit, clean the tank and lines thoroughly. Replace all cracked or poorly fitting strainers.

4. Regulators with stem packing
Adjust the stem packing properly. Tight as well as loose packing will interfere with the proper operation of the stem. Tight packing will interfere with the movement of the stem; this may result in pressure fluctuations and dangerously high pressure may build up. Loose packing will result in leakage. The regulator has to be set for the right pressure for an effective delivery of spray materials. If you are unsure of the pressure for which the regulator is set, slacken off the pressure adjustment before starting the pump. Gradually adjust to the required pressure. Make the adjustment each time you replace stem, valve or seat.

5. Pressure gauge
If you are not sure about the accuracy, replace the gauge. Remove the nozzle body to check the pressure at the nozzle manifold and then insert a good pressure gauge.

6. Nozzle
Nozzle wear occurs most rapidly at high nozzle pressures. The tips and cores on the sprayer should be manufactured from hard, wear-resistant materials. Abrasion-resistant nozzle components cost more initially, but in the long term are quite cost effective.

7. Belts
Examine all belts for wear and proper tension for efficient transmission of power. Tighten or replace the belts if necessary.

8. Tank
Flush the tank at least three times with water before and after use. Mix the spray materials in the tank completely prior to spraying. Secure the paddles on the agitator shaft. lubricate the shaft bearing, and adjust the seals to prevent leakage. For hydraulic or jet agitation, make sure to operate the pump to specifications.

The pump capacity should be sufficient for the total nozzle output, flow to the agitator and some overflow if you are to maintain pressure.

9. Storage
Never leave a pressurized pump unattended. Make sure the pressure is completely released before you put the sprayer away.

10. Sprayer calibration
Calibrate the sprayer following manufacturer's specifications, especially when you use any air blast model. Use the right solution for the chore and mix only the calibrated amount; follow manufacturer's directions for mixing and proper disposal of leftover chemicals. Adjust the sprayer output according to variations in tree structure, spacing, time of the season, and the purpose of the spray application. You have to vary the application speed as the growing season progresses. A proper calibration will save money, time and energy. Spray materials are expensive. Take the time to maintain and adjust the sprayers for delivery speed, size of the mist, pump pressure, and quantity of spray material.

Simple but superior design, quality construction, performance enhancing options and accessories. John Bean Sprayers have always set the standard. Nothing's changed. Our legendary Bean pumps still deliver lasting value and performance. We still believe in tough, rugged construction. And we're still turning out an impressive lineup of sprayers for serious tree care professionals. In fact, Bean sprayers are more versatile than ever. We have skid models for utility vehicles or pickups. We have 1000 and 2000 gallon models for big trucks. We even have an optional DOT package for highway use. And best of all, Bean sprayers are built to give you years of trouble-free service. Like we say, Nothing's changed.

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Safety

Exposure to a large amount of any pesticide or fungicide can cause illness. Skin irritation, breathing problems, and sore eyes often result from improper handling of spray materials. Take appropriate safety precautions to avoid personal injury, environmental hazards and tree injury. Wear a sleeve shirt, gloves, long pants, long-sleeved shirt, helmet and safety glasses. Do not spray when it is windy or even slightly breezy to avoid spray material drift onto you or a non-target plant. Avoid the hottest part of the day to reduce plant damage, since rapid evaporation of spray material may burn the foliage. Don’t spray if rain is in the immediate forecast. Test the sprayer using plain water before beginning any job. Make sure that all sprayer components are intact and in top operating condition.

Consult the pesticide label for specific recommendations. Do not smoke or eat when handling pesticides. Apply chemicals at the recommended rate and time and only on the recommended plants. Avoid contamination of water sources due to runoff from trees or wash water from cleaning equipment.

Store chemicals in their original labeled containers. Place the containers in an approved locked storage building or room. Empty pesticide containers pose a serious problem. Before disposing containers, rinse and drain into the tank three times. Check the label for specific disposal instructions. Surplus pesticide mixes are a serious problem, also. Mix only what you need. Prevent contamination of food and water sources by disposing in an approved manner.

Proper handling, maintenance and storage of sprayers will protect the environment and save tree companies thousands of dollars, in addition to providing protection against insects and microbial diseases, prolonging tree life.
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Don Araki — Agri-Con Tree Service
San Jose, California

## CHIPPER KNIVES SALE

### Vermeer

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part No.</th>
<th>Knife Description &amp; Size</th>
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<tbody>
<tr>
<td>BC1000</td>
<td>KCH20109</td>
<td>Double Edge 9&quot; x 4-1/2&quot; x 5/8&quot;</td>
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<tr>
<td>BC1220-BC1250</td>
<td>KCH20002</td>
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<td>KCH20110</td>
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<td>BC1800-BC2000</td>
<td>KCH20103</td>
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### Morbark

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<td>10, 13, 17, 2050</td>
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<td>Model 90XP, 280XP</td>
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### Asplundh

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<td>16&quot; Drum</td>
<td>KCH30002</td>
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### Mitts & Merrill

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<td>Drum Style</td>
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<td>Double Edge 4-1/4&quot; x 2-3/8&quot; x 1/2&quot;</td>
<td>$11.50</td>
</tr>
</tbody>
</table>

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The Next Generation at Student Career Days

The Tree Care Skills competition at TCI EXPO 2002 in Milwaukee, Wisc., was a great success! Collegiate and vocational competitors had a great time, regardless whether they were competing, rooting for classmates, or just trying to learn something new. The cooperative weather gave the students a sunny and seasonably warm November day.

Companies looking to hire the best students need to understand what values these students hold and what values they look for in a potential employer. What better way to learn these values than letting the students speak for themselves? None! So we interviewed the competition winners and are presenting their frank answers for you:

Bio: Aaron Lehnert
Year in school: Senior
Age: 24
Hometown: Cedarburg, WI
Hobbies: Motorcycling; bicycling; traveling; hunting.

Q. How did you learn that arboriculture was a career option?
A. I transferred to the College of Natural Resources (at UWSP) from another school. I had friends in forestry, and one of them really got me interested in the tree care aspect of forestry. From there, I fell in love with it.

Q. What’s your favorite part or job task about working in or with trees?
A. I enjoy tree climbing right now. Just climbing high up in trees is the most fun.

Q. What type of job do you hope to land after graduation?
A. I haven’t decided where I’m going to go or what I’m going to do. I’d like to start out in commercial arboriculture, but I’m not exactly sure where.

Q. Where do you see yourself in 5 years?
A. I’d like to get into municipal forestry. Maybe start with a small town or city and hopefully work my way up. I hope to still be doing some climbing in five years. City forester would be ideal, since I am also a forestry recreation major.

Q. What’s a company that you would like to work for when you get out of college look like?
A. It’s a progressive company that always tries new techniques. It is very focused on safety and proper tree care, probably a smaller company. I’d like to stay around Wisconsin for a while.

The competition for 2002 was held at Zeidler Park, in the heart of downtown Milwaukee.


The Tree Care Skills Competition Results

Overall Results Collegiate
1. Aaron Lehnert - University of Wisconsin - Stevens Point (UWSP)
2. Aaron Schauer - UWSP
3. Jason Writz - UWSP

Overall Results Vocational
1. Mark Libanio - Northland Job Corps
2. Joell Sellas - Pine Knot Job Corps (PKJC)
3. Matthew Edmisten - PKJC (Tie) Joanny Ramirez - PKJC

Written
1. Jason Writz - UWSP
2. Jeff Lehde - Texas A & M
3. Peter Rynders - Milwaukee Area Technical College (MATC)

Work Climb
1. Zach Macarthur - University of Massachusetts - Amherst (UMASS)
2. Aaron Lehnert - UWSP
3. Jason Writz - UWSP

Throwline
1. Aaron Schauer - UWSP
2. Jeff Lehde - Texas A & M
3. Aaron Lehnert - UWSP

Safety
1. Matt Kingsbury - MATC
2. Jason Writz - UWSP
3. Aaron Schauer - UWSP
Q. How did you prepare for the work climb competition/test/competition?
A. I climbed a couple times at school before the competition. I looked over some Shigo books before the competition. I studied tree identification more than anything. I went over names and some of the ones I didn’t know.

Q. Was the competition easier or harder than what you expected?
A. It wasn’t harder or easier. It was exactly about what I expected since I had been there last year in Ohio.

Q. After you were done with your work climb/test/competition, were you surprised by the results?
A. I was really surprised at the overall. I knew I did well in the tree climb, but the throwline surprised me also. Throwline is not my best event.

Q. What is your favorite part of TCI EXPO and Career Days?
A. The trade show was good, but I really liked the job fair. That was the best part, especially for someone looking for a job. I got to know all the employers out there. It really helped. It was neat to have people remember you. Everyone was very friendly and cordial.

Comments?
To be a member of organizations like NAA and SSA really helped me transfer from being a student to being a professional. This year is like icing on the cake, it proved to me that with all the work I put into it – I am definitely getting a lot out of it.

Bio: Zachary MacArthur
Year in school: Second
Age: 21
Hometown: Lakeville, CT
Hobbies: Volunteer firefighter; Pee-wee hockey volunteer.

Q. How did you learn that arboriculture was a career option?
A. Senior year in high school we had a natural resources class with a climbing lab. I also had a family member in the business and then after high school worked with an NAA-member tree care company in Sharon, Conn. I had real good experience there and decided to go to Stockbridge School (at UMass-Amherst).

Q. Did you have any defining moments when you knew this was a career in which you were interested?
A. Jason Bresson, the VP of the tree care company, told me about all the good options that Stockbridge School and arboriculture gave him. That really made me interested in going to school and doing tree work. Once I got to Stockbridge, Dennis Ryan and Tom Houston really kept me zeroed in and helped me to be a better arborist.

Q. What’s your favorite part or job task about working in or with trees?
A. I like pruning the best.

Q. What type of job do you hope to land after graduation?
A. I might go back to Connecticut to work for a company, but I’m also interested in moving out West or at least a different part of the country.

Q. Where do you see yourself in 5 years?
A. I could see myself maybe doing some kind of sales work. I’m interested in being good in all aspects of tree care.

Q. What’s a company that you would like to work for when you get out of college look like?
A. Small, close-knit group of workers who believe it’s important to be really good in safety and really good at what they do. (A company with) people who like what they do, and are not just out there to make the dollar.

Q. How did you prepare for the work climb competition/test/competition?
A. We had a competition at school first. I also practiced with Ed Carpenter (another UMass student) once a week. We set up stations and practiced ourselves.

Q. Was the competition easier or harder than what you expected?
A. The competition was what I expected and just about what we practiced for. It did work out pretty well.

Q. After you were done with your work climb/test/competition, were you surprised by the results?
A. It was a little bit of a surprise. I thought I did well, but some of the other kids looked good so I wasn’t sure how I compared. You never know how the judges are grading. It turned out to be a very good and
Q. What is your favorite part of TCI EXPO and Career Days?
A. Networking with guys that run companies and really getting to talk with them and see how their companies are run. I also really like the Excellence in Arboriculture awards to see what other companies in the industry are doing to uphold standards and see where the industry is going.

Comments?
I enjoyed meeting everyone from all over the country. It is nice to know that everyone is doing a great job trying to build up the industry. That's really reassuring for students here at UMass.

Bio: Aaron Schauer
Year in school: Senior
Age: 23
Hometown: Green Bay, WI
Hobbies: Camping; hiking; biking; recreational tree climbing.

Q. How did you learn that arboriculture was a career option?
A. In high school sophomore year a person from the Department of Natural Resources (Wisconsin) named Kurt Wilson spoke to our class about urban forestry. I was interested in forestry, but had some problems with allergies, so urban forestry looked good. Once I got involved in the urban forestry program, then we learned about arboriculture and climbing trees.

Q. What's your favorite part or job task about working in or with trees?
A. Climbing is definitely the best. I don't like killing trees if I don't have to, but I really like technical removals, too. Last summer I worked with Norm Hall, who is very innovative, and he taught me a lot about safe removals and how to deal with真席 situations. I also took a weekend class with Les Werner at UWSP and took some more at MidState Tech with Don Roppolo. We covered pruning, climbing, and basic and advanced rigging for removal courses.

Q. What type of job do you hope to land after graduation?
A. That's coming up quick - about five months. I thought about going somewhere out of the country and climbing. I look to enjoy traveling and see how things are done in different areas. I like to watch different styles of climbing and the way people do work and learn from that. I worked in Arizona a year ago and learned some different ways things are done there compared to the Midwest. I also learned a lot about how different cultures and different trees affect how you work and climb.

Q. Where do you see yourself in 5 years?
A. I'm thinking of grad school, but not really sure what I'm interested in yet. Obviously something related to forestry.

Q. What's a company that you would like to work for when you get out of college look like?
A. An ideal company to work for is one where the people are all certified arborists or if not, they have a desire to continue learning or at least are open minded to new techniques. They would have to be concerned about safety.

Q. How did you prepare for the work climb competition/test/competition?
A. I do not train for competition, but I concentrated on eating a decent meal and getting a lot of rest. I also compete in weight lifting on a national level, so I did a lot of mental prep - visualizing, etc. I was disappointed in a couple points in the competition and also in my performance on the tree biology test. I think the physiology is very important, so I was a little disappointed there. I'm big on understanding why you are doing something so you can apply that to different situations.

Q. Was the competition easier or harder than you expected?
A. I thought this one was a little easier than last year. The plumb-bob was much easier this year. Last year I did a redirect to not set it off, this year I didn't have to.

Q. After you were done with your work climb/test/competition, were you surprised by the results?
A. I felt that I did alright but my style could have been better. I also thought my start wasn't as good as it could have been.

Q. What is your favorite part of TCI EXPO and Career Days?
A. I always like going and listening to the different speakers. John Ball's safety talk was really good. I also like going to talking to everybody. It was fun networking and telling stories with people from different areas of the world.

Comments?
Thank you guys for putting it on. It is always a lot of fun and a pleasure. I really want to thank the people who gave the prizes. It really helps students a lot. That's one of the great things about this industry; they really try to help people coming up from below.

Bio: Matt Kingsbury
Year in school: Graduating in May
Age: 21
Hometown: Milwaukee, WI
Hobbies: golf, movies

Q. How did you learn that arboriculture was a career option?
A. I wasn't sure when I got out of high school. I've been working at a golf course for 6 years. MATC had horticulture and the arboriculture track was interesting.

Q. Did you have any defining moments when you knew this was a career you where interested in?
A. I took Mike Wendt's practical tree climbing course. It was a great course, I learned so much and it got me interested in it as a career.

Q. What's your favorite part or job task about working in or with trees?
A. Climbing and pruning are the most fun. I like flying around in the tree and I like the challenge with certain trees, too. I'm always up for a big challenge!

Q. What type of job do you hope to land after graduation?
A. I'm thinking about staying with the golf course for now to get more experience with climbing techniques and tree removal. I'm now assistant arborist at the golf course, so I do all the climbing and pruning. Eventually I'm looking at a municipal arborist type of position or working for a commercial company. I'm specifically interested in working for a big tree care company right now.

Q. Where do you see yourself in 5 years?
A. Working with one of the big tree care companies, be stable, married, etc.

Q. How did you prepare for the work climb competition/test/competition?
A. I climbed at work and reviewed things from classes, but my decision to participate was a little bit last minute. For the safety exam, I did it from memory from classes I took and from experience at work.

Q. Was the competition easier or harder than you expected?
A. The climbing wasn't as hard as I thought it would be, but I didn't do as well as I thought I should. The safety wasn't as bad as I expected. I worked hard to look at each item, identify it, and then make a quick decision about it. We got 30 seconds (for each item), and it goes by pretty fast.

Q. After you were done with your work climb/test/competition, were you surprised by the results?
A. I thought I knew everything in the safety exam when I went up to it right away. Some things I had to think about a little more to figure out what was wrong, but I thought I did really well.

Q. What is your favorite part of TCI EXPO and Career Days?
A. It was great because it was close to home. The trade show floor was great, I bought a rope and the prices were really good. It's hard to pick one thing out. I was down there almost every day going to the trade show, the job fair, and the competition. That was my first climbing competition, I met a lot of new people from all over the place. Next week, we (MATC students) are going to Mississippi for ALCA Student Career Days, so I'll be climbing down there as well.

Bio: Jason Writz
Year in school: Senior
Age: 26
Hometown: Athens, WI
Hobbies: Hiking, mountain biking, camping, sport compact cars

Q. How did you learn that arboriculture was a career option?
A: From a friend at UWSP who had chosen that major.

Q. Did you have any defining moments when you knew this was a career you where interested in?
A: After I attended the SSA conference.

Q: What's your favorite part or job task about working in or with trees?
A: Knowing that I can have a direct positive impact on the environment by what I am doing.

Q. What type of job do you hope to land after graduation?
A: I have accepted a position with a major company in Mesa, Ariz., as a climber and PHC tech.

Q. Where do you see yourself in 5 years?
A: I would like to be working as a consulting arborist or a sales position with a tree care company.

Q. How did you prepare for the work climb competition/test/competition?
A: I had a summer position that required a lot of climbing and I also took classes at Mid State Technical College in Wisconsin Rapids.

Q: Was the competition easier or harder than what you expected?
A: It was about what I expected. I had competed in the competition last year.

Q. After you were done with your work climb/test/competition, were you surprised by the results?
A: I felt pretty confident about how well I did especially after I completed the written exam.

Q. What is your favorite part of TCI EXPO and Career Days?
A: I always enjoy the demonstrations in the tree as well as the mentor climb that took place.

Judging and technical expertise was provided by Bartlett Tree Experts, Davey Tree Experts, SavATree, and Swingle Tree (Christmas decorations courtesy City of Milwaukee).
Log Loaders Call for Many Decisions

By Ken Kelley

The speed and versatility of log loaders was a blessing when the “The Ice Storm of the Century” struck North Carolina last December. The storm cut down electric and phone lines, leaving many thousands of people and businesses without heat, light and communication. Fortunately, the state had a well-developed emergency support system, and log loaders, both new and already in service, plunged into the mass of slippery logs and limbs on the ground, on the roads and even on some rooftops.

The arborist who welcomes difficult decisions might enjoy pondering which log-loading truck to use in his business. Before purchasing a new truck, careful consideration and planning will help with the decision. Axle capacity, transmission type, and loader style will be very important components of any new purchase. For instance, only the strongest of available trucks can work with the heavy-duty type grapples. Grapple trucks are fitted with “grapples” that amount to giant metal hands, usually powered by hydraulics, with sufficient strength to pick up huge tree trunks. These vehicles often require rear-suspensions with capacity ratings to 23,000 pounds or more in order to support heavy grapple loads.

You may want to buy a brand that has a dealership close by and a factory sales branch that is reputable and has demonstrated success in the business. It pays to work with an outlet that provides the support of skilled truck mechanics and has a solid parts department capable of quick response.

Payload dictates some common sense options. You wouldn’t want to put a 25,000-pound load on an axle with a capacity rating of only 20,000 pounds, and you wouldn’t run a 25,000-pound load over a bridge with a capacity of 20,000 pounds. Overloading can void a truck’s factory warranty and make claims for damage invalid.

Selecting components for a log-loading truck often results in compromise. While diesel engines may be more durable, they are usually more expensive than comparable gas models. Gas engines may cost less, but may not be as robust as the diesels. Manual transmissions may cost less but require more skillful operators, while automatics cost more but can be used effectively by a driver with somewhat less skill.

Regarding loading and unloading features, there are many options. A grappling device for loading and unloading can be mounted directly on the truck. The device can be positioned behind a main truck body but ahead of a trailer, allowing easy loading and unloading of both vehicles. Keep in mind that this method reduces the safe payload limit of the tractor-trailer combination. Loading
The Jarraff all terrain tree trimmer provides power, performance and productivity. The Jarraff requires virtually no set-up time. And since workers never leave the ground, the Jarraff adds safety to every job. Save time, money and manpower with Jarraff.

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Pruning the Wisteria Vine

By Cass Turnbull

“Wisteria is Latin for work.” I wish I knew who said that, but how true it is. Under those beautiful color photos of arbors splendidly vine-laced and hung with glorious lavender blooms, there ought to be a warning label; This Vine Can Be Dangerous: It wants to cover...everything!

Ciscoe Morris, a local horticultural expert on the radio, tells a story about the time he was house hunting. He saw a home advertised for sale in the paper — three bedroom, two bath, on Queen Anne Hill. The price was unbelievably low. Upon arriving at the site he realized why: two ancient wisteria vines had overcome the home, actually lifting it off its foundation. Their stems were as big as tree trunks. I doubt it was an exaggeration. I've seen wisteria tear off balcony banisters, smother entire trees, and everyone knows what they'll do to your roof and gutters. I didn't know all this when I planted mine against the railing of the covered porch 11 years ago. But I'm not sorry, either. Despite the work, there is nothing quite as wonderful as a wisteria, the high excitement of their spring buds plumping up and then expanding. It's so...erotic. Later, when the vines are in full bloom, I watch people point and sigh as they pass my house. It makes my entryway look pretty and smell so sweet. In the winter the long fuzzy pods dangle down just above my head, as if asking to be petted, and I must obliged.

Early training

I read a lot of pruning books. They crack me up. I especially like the one that insists you make your wisteria vine single trunked. To do that, I think you'd have to guard it with a flashlight. Although I have seen single-trunked wisterias, the more common is a main trunk composed of twisted and coiled stems that look like an unruly rope. Wisterias just grow like that. I don't know why they don't girdle themselves, but they seem to do just fine.

If you want to force side branching at a particular point (in my case I wanted the first set of scaffolds to train along the rail), you head-back (lop) the main stem at that point. Two of the new shoots that will regrow from the cut end are then tied into position to become the scaffolds. Or, as with mine, one became a scaffold, the other I shortened to about 6 inches to create a “flowering short lateral.” The third shoot is...
allowed (or trained by tying) to continue up to become the main trunk. Any other shoots I cut off completely.

Major scaffold branches on a wall or lattice should be spaced at least 1 1/2 feet apart to allow room for the blooms to dangle down without running into each other. All other shoots (runners, whips) are either cut off completely (and there are lots and lots of these) or shortened to about 6 or 7 inches (four or five buds) if one wants them for flower production. This is best done in the summer, with a follow-up pruning in winter. Further shortening in winter means that you cut back the chosen shoot to three or four buds. This is similar to fruit tree training, the goal of which is to force vegetative shoots to become spur (flower) producing. As with fruit trees, flowering is more prolific on horizontal branches. Actually, you will find that some of the shortened shoots set up flower buds, some die back, and some seem so determined to be vegetative they send out only long runners instead of forming a persistent flowering spur system.

Arbor or trellis

In other situations, a wisteria vine is allowed to run to the top of the arbor or trellis and spread out as it desires. Later it can be trained somewhat like a grape vine, annually cutting off 90 percent of the new shoots back to a few major scaffolds to keep it from getting too piled-up upon itself. A preferable system is to prune it painstakingly like an espaliered fruit tree, with persistent spur-like systems, so that it takes on a beautiful winter branch pattern. Whenever necessary, whack back any laterals that try to run off the sides of the trellis or threaten to climb into neighboring plants or structures.

I think wisteria look best trained to an overhead trellis with the blooms dangling down from above. Such an arbor or trellis needs to be very strong and sturdy. Use 2 x 4's set on edge, at the very least. Posts should be load bearing, not flimsy lattice you see in some catalogues or at garden stores. The smartest trellis I've seen is a system of metal pipes, sunk in concrete, disguised with some wood trellising. If the trellis is attached to a house, I strongly recommend planting the vine on the farthest post and let it fill in by growing toward the house. You will be glad you gave yourself that buffer in later years, as you find yourself tugging and tearing runners out of your gutters and shingles.

Summer runners

With all wisterias, scores of runners (called whips) will reach out into empty air every summer, hoping to grab onto a helpless victim nearby. Cut them off before they strangle a sleeping dog or trip the gardener. This can mean pruning every month if it is in your way, say on your front porch. In any case, be certain to prune them off before winter when they harden off and stiffen, becoming woody and more difficult to remove. Cut some runners off to the trunk. Most I cut back just to get them out of the way (to about 5 or 6 inches). I do more detailed thinning and pruning in winter when all the leaves have dropped off and I can see what's going on. In summer, my freshly pruned wisteria vine looks sort of like a feather boa.
Under-pruning

The most common mistake is not pruning the wisterias enough. More than 90 percent of new growth (long, relatively leafless, skinny budded, runners) should be cut off annually. A single runner can grow 12 feet in one year. After the framework is established, shorten many of the runners to six buds. Remove the vast majority completely, every year!

Renovation

If a wisteria gets away from you, or a client calls you to a house that already has an enormous tangle, grabbing and strangling everything in sight, show no mercy. Lop, cut and chain saw whatever is necessary to get it back down. I suggest you cut several feet below where you want the regrown vine to be, since you will experience an upsurge of new shoots the following spring. As with all heading cuts, the new growth occurs directly beneath the cut and heads up from there. You will need some room to let it re-grow over the next few years. New growth will be vegetative (not flowering) and rampant for a few years. I wouldn’t be surprised if some major stems die back partially or totally if you make cuts 1 inch or more. Yet, I doubt that you will kill the plant. As some stems die back, cut off the dead bits. Others will supply the replacement shoots to be tamed in upcoming years.

Over-pruning

I didn’t think it could be done, but I have witnessed three novice pruners over-prune the wisteria. Given a mature flowering vine, the pruner is tempted to remove too many of the flowering short laterals (I call them hands, because they are roughly the shape and size of human hands.) Very old vines have flowering short-laterals that are as long as arms. These, too, should be left alone. These “hands” have the fat flower buds that are reminiscent of fruit tree spur systems. These fat-budded hands should be spaced about every foot or so. They originate from the main trunk or scaffolds. If they are pruned off or shortened too much, the vine will appear sparse and have too few blooms. The following year, such
over-pruning will result in a wilder-than-normal resurgence of flowerless runners. The general idea is to shorten or remove all the long, wild runners, and leave all the "hands" to flower like crazy.

Non-blooming wisterias

It is natural for these vines to take between three and seven years to start blooming. I have read that frequent, proper pruning may help them begin blooming sooner, or at least more abundantly. On the other hand, some people have old vines that have never bloomed. I am told that these are seed-grown plants or "mules." I have often heard root pruning recommended to force an older vine to bloom. Basically, this means that you use your shovel to cut the roots in a dotted circle a foot or two from the vine. Some gardeners also recommend using fertilizer with lower nitrogen, formulated to encourage blooms. However, I have been faced with such a vine and had no luck with either technique. In that case, as with all non-performers, removal is the best option, and no one will blame you.

Summary

Prune wisteria a lot, removing up to 90 percent of the new foliage every summer. Cut off all those skinny runners (whips), and/or shorten some to about four to six inches from the scaffold branches, framework or trunk. This will encourage them to turn into blooming branch systems. Leave the older, previously shortened side branches that have set up spur systems with their fat, flower buds. Summer pruning is done just to keep the wisteria from taking over the world. More precise pruning is done in the winter when all the leaves are off and you can see the trunk, branches, spur systems and runners.

Cass Turnbull is a lecturer, author and founder of Plant Amnesty in Seattle, Wash.
Aerial Lift Standards

I read with genuine interest the article in your January 2003 issue titled "Is the Next Generation of Lifts From Europe?" by Lenny Polonski. He is not the only one involved with vehicle mounted aerials who has taken keen notice of many of the attributes of aerials that are made and used in Europe. Several of our U.S. manufacturers have sold vehicle mounted aerials in that part of the world for some time. At least one U.S. manufacturer and more than one in our history are or have been owned by European interests. Time Manufacturing, as an example, enjoys a significant share of vehicle mounted aerial business in much of the European marketplace.

The article provides the reader with the wrong impression about European Standards and characterizing ANSI A92.2 as "vague" in contrast to them being a misstatement. I would like to inform your readers that two parts of the article are erroneous.

"European equipment standards were unified under a single system, called CE mark, a number of years ago... These standards are higher than our... A92.2 standard."

Let me review, the CE Mark indicates that the marked product may be placed in the European market without national restrictions. It isn't intended to be a safety mark that necessarily reflects any sort of testing. Then what does the CE Mark mean? With the CE Mark, a manufacturer confirms that his product(s) meets the essential requirements of a European Directive. There is further a "declaration of conformity" that would tell one to what particular directive is being referred.

Further, the Europeans only recently agreed to a European Normative (standard), EN 280, under the Machinery Directive covering aerial man lifts. Your readers might be interested to know that this standard in draft form (PREN-280) existed for about 20 years before final agreement. It is a most interesting document that, for your readers' information, does not require any safety factor (as A92.2 does), does not require individual machine stability testing (as A92.2 does), and well as a number of requirements that this writer believes would far better fit the term "vague" as for them not to be able to understand. I am also confident that a conscientious European engineer is perfectly capable of producing devices to meet our standards. So we will likely see products from there that will meet our standards. Some of the characteristics described in the article make me wonder whether they meet them yet.

The United States government, under the OSHA standards, requires that machines of the type described in your article meet the design and construction requirements of A92.2. The European manufacturers, I am sure, have copies of the applicable standards and they are not so vague as for them not to be able to understand. I also believe that the necessary factors, individual machine stability testing, and a number of other safety requirements might make for a difference in appearance in products than those that have no such requirements.

The ANSI standards for vehicle mounted elevating and rotating aerial devices and those of the Canadians were harmonized a few years ago. The writer seems to indicate that he believes the European standards and perhaps even the aerials lifts are better than domestic ones. My Council associates and I do not agree.

The industry - manufacturers, sellers, maintainers, owners, users, the government, and other interested parties - participate in consensus standards making in our country. It is these standards, like ANSI A92.2, that spell out the minimum requirements for compliance in the manufacture of machines. It should come as no surprise that the requirements for safety factors, individual machine stability testing, and a number of other safety requirements might make for a difference in appearance in products than those that have no such requirements.

Gary A. McAlexander
Chairman, A92.2 Subcommittee
(Vehicle Mounted Elevating and Rotating Aerial Devices)
ANSI/SIA A92 Standards

More on Aerial Lifts...

I read the article entitled "Is the Next Generation of Lifts from Europe?" I thought your readers might be interested to know that a number of the North American manufacturers have marketed products that meet the ANSI standards for aerial devices quite successfully in the European market. In fact, I would go so far as to say that the European consumers have taken quite well to many of the products of U.S. and Canadian manufacturers.

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Moving Specimen Trees

By Doug Saunders

When officials from the world-famous San Diego Zoo embarked upon a plan to add two new habitat exhibits to their extensive park, they were faced with a dilemma of gigantic proportions.

An 80-foot tall Ficus watkinsiana, the largest known specimen of its kind, had taken over one of the last areas for expansion. This tree not only obtained Champion status and been listed in the national registry, but also provides critical food and habitat for several species of birds and animals found at the zoo.

Over a two-year period, the zoo’s design team developed a plan for the new “Heart of the Zoo” exhibit that would use this spectacular tree as the centerpiece of the design. But the rub was that the tree had to be moved more than 250 feet in order to make the design work.

So how do you move an 80-foot tree, rotate it, lower it over 18 feet, and still guarantee its enduring health for years to come? The key is to find someone with the experience, understanding, and equipment to accomplish such a daunting and delicate task.

For Tom Cox of Environmental Design, based near Houston, Texas, the challenge provided one more opportunity to put his firm’s creative abilities to the test. Over the past 12 years, Cox has been in the forefront of the technological and scientific advances that have made it possible to move and save enormous trees from the consequences of destruction in order to allow progress.

“The ficus tree at the San Diego Zoo offered some interesting challenges,” Cox explains. “First, the extensive root system of this species meant that the root ball that we would have to move measured 42 feet long, 32 feet wide, and over 3 feet deep. The total weight of the tree and root ball was nearly 500,000 pounds. Secondly, the tree had to be rotated 15 degrees to fit to the architectural demands for the new center and then lowered into a 20-foot deep hole on top of that.”

Cox worked closely with Dan Simpson, the San Diego Zoo’s head arborist for the past 32 years. The zoo and adjacent Balboa...
Park contains hundreds of varieties of trees and many trees have been transplanted to help create the unique bioclimatic environments that make this natural exhibit so unique. But Simpson had never tackled a move of this magnitude. His first step was to survey the tree and create three-dimensional CAD drawings of it to determine its new orientation. From these surveys, a final target and method to move the tree could be developed. Six months before the move was scheduled, the tree was prepared for the big event.

The preparation for this type of project is where modern advances have helped encourage strong survivability rates. Eric Hess of National Shade, a subsidiary of Davey Tree Co. and a Texas-based company with extensive experience in this niche market, relates that a thorough examination of a tree’s condition is imperative to guaranteeing success. “We are involved in several hundred large tree transplantings annually. You have to approach this type of move the same way that a surgeon approaches an organ transplant patient,” Hess says. “First we study the health of the tree. In 20 percent of the projects it is necessary to address the tree’s condition [and] to bring it into a stronger state of health. This is accomplished through specific fertilizations, hydration, and improvements to the root cap. The specific programs needed are determined through the detailed analysis of the plant and soil chemistry.”

“In some instances, time constraints may compromise this phase, so allowing adequate lead time for any major tree move is an important consideration in planning,” he continues.

For Simpson’s ficus, the first step in preparation was to prune the tree’s canopy in order to alleviate stress. The pruned foliage is an important food source for elephants, gorillas and rhinos, and is another reason why this stately tree needed to be saved.

A drainage system was constructed in order to carry moisture near the new root zone and to allow excess water to be pumped out until the final project grading is completed.
Simpson’s careful study of the tree then led to the implementation of low-nitrogen soil injections for a two-month period to help increase the tree’s carbohydrate levels.

After securing the health of the affected tree, the next step in preparation was to determine the root zone and then cut the total root ball to size. (With most trees, this step is usually done four months before the tree is moved, but with the rapidly growing root system of the huge ficus, this step had to be taken just two months in advance.) This initial excavation cuts the roots and puts the tree into a state of shock. For the next few weeks the tree was monitored and hydrated to promote callusing of the disturbed roots.

“After digging around the tree and severing the root system, new feeder roots will begin to grow,” according to Cox. “There is a delicate balancing act needed to keep the critical mycorrhizal association intact in the root structure so that new root growth is expansive.”

Four weeks before the move, the root ball was completely excavated so that it could be wrapped in burlap and construction wire to prepare it for the move. The next big step loomed: developing a method to take the patient to its new environment.

These larger trees can vary in size from 40 feet to 100 feet tall and weigh anywhere from 150,000 pounds to well over 750 tons. Large cranes, special hydraulic gantry systems and hydraulic air hammers, all become the tools of choice to complete these projects.

Cox hired a crane company for the San Diego Zoo project, Mammoet Crane Co. of Norway, the same firm that raised the Kursk submarine for the Russian government two years ago. With the root ball cleared of dirt, a bed of 8-inch steel drill casings was driven under the root ball with hydraulic hammers, and then another two steel girders were trenched under the pipes. These girders formed the four points from which the tree could be raised and lowered through the use of massive hydraulic jacks.

“The real engineering feat with this move was having to drop the tree down into a hole. We built a rail system that ran over a temporary trestle to get the tree into position, and then the hydraulic jacks could be extended down to the ground for support,” Cox says.

The final procedure—which, in many ways, is the most crucial step in guaranteeing a high survivability rate—was the preparation of the final resting zone. The soil had to bear nutrients that would continually stimulate new root growth. For the zoo project, a complete drainage system was constructed in order to carry moisture near the new root zone and to allow excess water to be pumped out until the final project grading was completed in another year.

“Moving the tree along the tracks to the new location was like taking a hot tub full of water with a Christmas tree with ornaments floating on top, and trying to carry it with four men. But the tree dropped into place with only a few snags,” Simpson notes.

With the grand ficus tree in place, the construction of the new flamingo lagoon and orangutan habitat was able to continue on schedule. As the landscape was shaped, walkways were created to allow visitors to walk through the impressive root system and become engulfed by the newly created environment. For Simpson, seeing this great tree positioned to continue its life is the greatest satisfaction that any arborist can have. The effort to move these massive specimens is increasing as more become aware of the technological advances that allow them to continue inspiring us all.

“This is a conservation effort and a tree preservation effort,” Simpson stresses. “These arborial elders can’t be replaced in our lifetime. It is important that we learn to save them as best that we can.”
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Bylaws Pass ... New Era Begins

The National Arborist Association has become the Tree Care Industry Association (TCIA) by vote of the membership. See page 2 for more details.

All of the other bylaws proposals also passed. Therefore, the following changes have been made:

- The Nominating Committee will now be chaired by the senior director serving with an at-large non-board member and the vice chair of the board.
- Elections of at-large directors will now be conducted by mail vote so more members have an opportunity to vote for their leaders. Since voting will be done by mail and not at the Annual Meeting, there will be no more advance notification of candidates for election.
- Associate Members will have their own associate director nominations process.
- The Nominating Committee can expand the pool of senior director candidates, or reduce the number of names proposed to the board, when there is a shortage of eligible, qualified candidates.
- Ten percent of those eligible to vote approve bylaws amendments.
- The definition of mail has been expanded to include distribution methods other than postal mail.

A copy of approved amendments was provided to each eligible voting member. Please see the attachment on page 5 of the March Reporter at www.natlarb.com. Thank you to everyone who took time to read an extensive list of bylaws changes and were part of directing the future of your association.

We recognize that a change as large as altering the name is an enormous decision and must be phased in gently regarding changing letterhead, ads, etc. NAA itself will have to go through this, and we plan to do so in a way that is sensitive to our membership. We will be working with a marketing firm to assist us with how to make an effective change so that the marketplace becomes familiar with who we are.

We do not recommend that you trash all of your existing marketing pieces and get new ones with TCIA on them yet. This will be a gradual shift for us and for you. Please feel comfortable continuing to use NAA for a while. We promise to keep you informed of how we’re making progress.

This is an enormous step forward in branding NAA as your trade association the “voice of the tree care industry!” Congratulations on your vision!

Cynthia Mills, CAE
President

Last call for nominations to board of directors

Nominations are now being accepted for the 2004-2005 TCIA’s Board of Directors. Members wishing to nominate candidates should fill out the “Candidate for NAA Board of Directors Nominator Form.” This form was mailed to all members in January and may also be downloaded at www.TreeCareIndustry.org.

The deadline for submissions is April 15. Those submitting nominations must also contact the candidate to ensure the candidate is willing to serve.
Accident reporting in your company
By Tim Walsh

Recently on one of the discussion groups that I frequent, this topic came up. Apparently an employee had what he considered to be a minor hand injury, so he didn’t report it. About a week or so later, the affected finger had swollen to twice its normal size and was unusable. A supervisor finally noticed and when asked, the employee said it was OK because it didn’t really hurt. In fact, it was numb. The employee was taken in to the doctor and the problem was cleared up.

What is your company policy for reporting injuries? Do you encourage your employees to report every injury, or only the major ones? What do you consider to be a major injury anyway? Granted, there are many extremely minor scrapes and bruises that are common with tree work, and you don’t want your crews rushing to the emergency room every time they get a bruise. However, do your crews know when they should report an injury or seek medical attention? What does your written safety policy say? Is it followed and enforced?

Everyone in your company should know what is expected in terms of accident reporting. They should also be comfortable in following your policy. If employees are reprimanded for reporting an injury, they are unlikely to do so in the future. Make sure that your safety policy is clear on this issue and that you encourage all to follow it.

Make sure that if you have any sort of safety incentive program, it isn’t working as a disincentive to report accidents. Unless your program somehow acknowledges the need to report all accidents, employees can lose sight of the fact that the real goal is to reduce accidents, and not to earn a reward.

There is a general truth in accident prevention: frequency breeds severity. Put another way, the more frequent your small accidents are, the more likely it is that you will suffer a more catastrophic accident. Another truth is that the difference between a near miss and a tragedy is often not much more than a second, or an inch. The best strategy is to have a program that treats all accidents and even near misses with equal importance.

If you don’t believe us, read what a past Excellence in Arboriculture Award winner writes ...

We were aware of the annual awards given by the NAA, but hadn’t given much thought or put the effort into submitting an entry. But based on the severity of a devastating ice storm in the Kansas City metro area, the extent of work we had performed for this particular commercial customer, and the curiosity of how our efforts would compare with other tree care companies, we decided to put together an entry. Winning an award was a great outcome, but the process involved in getting the submission ready and the ways we’ve been able to use the award have proved equally rewarding.

The application really helped identify key components in having a successful outcome for any size project: what are the goals of the project, characteristics of the trees involved, defined pruning standards/expectations, how will the work affect the site and species, and impact of the finished project on the people at the site. Now, by being mindful of these issues and applying them in routine, day-to-day work, we produce even better results for the customer and increase the likelihood of repeat business for us in the long run.

Also, the crews who performed the work take even greater pride in their jobs after seeing that their efforts really do make a difference. This knowledge has helped keep them motivated to perform at even higher levels and has given them extra incentive to pursue excellence in their work.

Finally, the ultimate benefactor was the customer of the project, Corporate Woods, a highly visible office complex in the metropolitan area. Their ownership group and property management team were thrilled—not only with the results of our work, but also with the recognition by a national organization.

We would encourage all TCIA members to take advantage of this annual opportunity and hopefully reap the same benefits as we have as winners of this prestigious award.

Ron Keith, President
Shawnee Mission Tree Service

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Tree care spending continues to rise

A new national Gallup Survey shows that the demand for professional tree care services continues to grow. In 2002, 8% of the U.S. population hired a professional tree service, up from 7% in 2001, 6% in 2000, and 5% in 1999. Even more impressive are the sales that these increases represent. In 2002, consumers spent $8.6 billion, up from $7.1 billion in 2001, $5.9 billion in 2000, and $4.9 billion in 1999.

The Gallup Survey (now Harris) was sponsored by the National Arborist Association in conjunction with the Professional Lawn Care Association of America, Associated Landscape Contractors of America, American Nursery & Landscape Association, and International Society of Arboriculture.

It was conducted in cooperation with the National Gardening Association.

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New first aid/ CPR course launched

The American Heart Association recently announced Heartsaver First Aid, a new course to train workers to recognize and treat medical emergencies and injuries until emergency medical personnel arrive. The course includes modules in conventional CPR, use of automated external defibrillators (AEDs) and traditional first aid. There is an optional module to give further guidance in environmental emergencies such as chemical spills and insect stings, as well as modules in adult CPR and CPR using AEDs. For further information, contact the AHA at (877) 242-4277.

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Shoddy Tree Safety Inspections Cost State $2.5 Million

A Rialto, California woman has been awarded $2.5 million in a negligence lawsuit filed in the Riverside County Superior Court. In July 1998, Veronica Chairez was eating lunch at a picnic area at Lake Perris state park when a eucalyptus limb fell and struck her in the head. According to The Press-Enterprise, the lawsuit filed against the state of California alleged that park officials had been negligent in their care for the trees. Veronica Chairez has been paralyzed from the waist down since the accident.

One half to two-thirds of the trees were dropping limbs that summer around the time Chairez visited the park. Brian Chase, the Newport Beach lawyer who represented Chairez, maintained that the state had not checked the eucalyptus trees at Lake Perris for four years, two years longer than the inspection schedule mandated. No remedial action was taken when the limbs began to drop.

"The state has a very good tree safety program. It just was not being followed," he said.

California Wine Growers Glassy Eyed Over Sharpshooters

A deadly pest is ravaging the state's vineyards. Reuters reports that the glassy-winged sharpshooter, which is strong enough to feed on the tough stems that cannot be cut off without killing the grape vine, have damaged close to 6,000 acres of wine grape vineyards in California, costing growers millions of dollars in lost revenue.

Chardonnay lovers don't give up hope yet. The U.S. Department of Agriculture has asked for help from a team of Brazilian researchers who have mapped the DNA code of Xylella fastidiosa, the bacteria that causes Pierce's disease and is threatening the livelihood of California's $2.7 billion wine and grape industry.

Named for Newton B. Pierce, the American scientist who first identified it, Pierce's disease has been a problem for California wine growers since the 1880s. Spread by sap-feeding insects known as sharpshooters, the disease blocks the flow of nutrients and kills vines within two years. For nearly a century, growers managed to limit the damage caused by the disease by using insecticides and lopping off infected shoots. But in the early 1990s, a new, more aggressive pest called the glassy-winged sharpshooter made its way to California wine country from the South, probably in a nursery shipment, and started to spread the disease with astonishing speed.

The bug, which feeds and breeds on more than 130 plants, is also putting other key California crops at risk, including almonds, citrus, stone fruits and oleander. The threat is so big that federal, state and local governments have spent more than $65 million dollars since 1998 to fight the sharpshooter.

Desperate for a cure, the California wine industry and the USDA sought help in Brazil, a farming powerhouse that has made strides battling a similar disease that attacks citrus groves. Two years ago, a group of researchers in Sao Paulo state became the first to decipher the genome of a plant pathogen. They cracked the DNA of the strain of Xylella fastidiosa that causes a lethal disease in orange trees called Citrus Variegated Chlorosis, or CVC. The Xylella that attacks grapevines is very similar to the Xylella that attacks citrus trees, so everything being done in Brazil to combat CVC may help in the struggle against Pierce’s disease in California.

Checked Your Ropes Lately?

According to Reuters, a Romanian man from Bucharest plans to complain to consumer authorities about the poor quality of a rope he purchased. He used the rope in a failed attempt to hang himself.

"You can’t even die in this country," 45-year-old Victor Dodoi was quoted as saying in the daily newspaper Adevarul.

The newspaper said Dodoi's relatives found him hanging from a tree in his garden and hastened to cut the rope with a knife. He was transported by horse-drawn cart and then by ambulance to a hospital in the northern town of Botosani.

A doleful Dodoi said he planned on filing a complaint with the Consumer Protection Authority about the quality of the rope, which was too easily cut, as soon as he is released.
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Assumptions

By Steve Pregler

How many times have we made assumptions or decisions based upon what we thought made good common sense – only to find out later that we were wrong? Some of the assumptions we make are harmless, while others have more serious implications. A familiar example would be the past practice of fertilizing root-damaged trees, assuming that the nitrogen boost would put them on a direct path to recovery. Today we know that this practice may be doing more harm than good by stimulating new growth at the expense of a stronger defense and supplying energy to the decay-causing microorganisms in the rhizosphere.

Another example came as somewhat of a surprise and a disturbing discovery to me!

The other night I was sitting at my computer reading a health-related e-newsletter that I receive. This issue’s main topic concerned the water that we drink and how important it is for our cells to stay fully hydrated. The article also noted that drinking alkaline water would benefit our digestive health and blood chemistry. (A specific pH for the water was not given in this article.)

I have experienced some of the early signs of aging now that I am in my middle 40s. I need reading glasses to file a saw chain and notice the more persistent day-to-day aches and pains associated with our line of work. As a result, I have become more health conscious. My curiosity got the best of me the next day. I called around to a few national bottled water distributors to see how their water’s pH compared. While I was at it, I also called our local water treatment plant to see exactly what pH our local drinking water was. To my complete surprise and amazement, I found that our local drinking water had a pH of 9.3. I had assumed that our drinking water pH would be close to 7, or neutral. A level of 9.3 is more than 100 times more alkaline than what I would have thought it to be. Just then my amazement turned to concern! How bad are we hurting our pine, red maple, birch and white pine when we recommend watering heavily during extended periods of summer drought? Are we altering the effectiveness of some of the pH sensitive pesticides we mix with water?

As a part-time consulting arborist, I now have several questions that need answering and some research to do before I can give my clients the best possible advice.

In Dubuque, Iowa, our drinking water comes from deep aquifers and has a pH of 7.6. It is a requirement of the Iowa DNR that the water output have a pH of 9.3 before being issued an operating permit. There are several reasons for the higher pH requirement. One of the more important is that there is less deterioration of the cast iron water pipes in the water distribution system. This can save the city thousands of dollars in repair and replacement costs. The process of reducing the water’s heavy metal content also becomes easier and less expensive.

Do you know your water’s pH level? The next time I am called to diagnose an interveinal chlorosis problem, I will have more insight into a possible cause of the problem.

Steve Pregler is city forester in Dubuque, Iowa.
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