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No doubt this will be one of the least popular editorials I've ever written, because it's all about breaking something that has become a new, but very ingrained, habit in our industry in the last few years. Don't deny it. I've seen you, and I've ridden with you in the field. Let's find out what you think of these numbers and whether you're really all about risk management and safety in your daily business assessment.

Does anybody have $500,000 to $30 million laying around that they'd like to give away to somebody this year... as opposed to getting that new boat or hunting cabin you've been eyeing for a long time... or maybe recouping some of that lost retirement money... or buying some new trucks... or how about rewarding your employees?

Well, that's what it has cost Salomon Smith Barney, the State of Hawaii, and may soon cost a Virginia law firm for a very common but simple activity that they failed to have a preventative policy about. Far worse than that, two people are dead and one has a permanent brain injury.

We get together on a regular basis and talk about how important safety is in this industry. We form new funds to assess hazard trees. We talk about proper equipment use. We talk about personal protective equipment. We talk about the use of appropriate signaling between employees. We put out cones to reduce traffic accidents when we're working by the side of the road. We hold safety briefings. Your trade association has a committee devoted to safety. Your trade association develops publications and programs to help you implement safety. Your trade association developed a Model Company Safety Program.

And yet, I have no doubt that if I polled our membership, there would be less than 5 percent of tree care companies that have a policy prohibiting this activity. (I'd be very pleased to find out how wrong I am.)

Do you want to reduce your risk of this liability by a factor of four, according to the New England Journal of Medicine? Would you like to NOT be responsible for someone's death or permanent, severe debilitation?

Here is the key. If you put this policy in place, you had best be prepared to enforce it, or you're going to wind up getting prosecuted for negligence. If you put this policy in place and enforce it, then you can distance yourself from your employees if they do not follow it. If there is a law in place already in your state, supposedly, you do not need a policy as well.

My questions are: Are you ready to manage your risk? Are you ready to reduce your liability? Are you personally ready to really send a message to your employees that safety is more important than speed in our high-risk industry?

If you are, then stop talking. Don't use your cellphone when you're driving. It's as simple as that.

The three companies above paid, or are in the middle of lawsuits, for that kind of money. If you are, then stop talking.

The F. Scott Jamieson
Metropolitan Forestry Services, Inc.
Santa Barbara, CA

Jeanne Houser
McFarland Landscape Service
Philadelphia, PA

Mark Shipp
Ogilby, Gilbert, Norris & Hill Insurance
Santa Barbara, CA

Tom Tolkacz
Swingle Tree Company
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Scott Jamieson
The Care of Trees
Wheeling, IL

Stacy Hughes
Terry Hughes Tree Service
Gretna, NE

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By Henry Davis

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By Dr. Daniel A. Herms

What’s New in Rope?
By Phillip Meeks

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Washington in Review
Small business relief: What constitutes a willful violation?

Branch Office
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You and your accountant: Managing your most important business relationship.

TCI's mission is to engage and enlighten readers with the latest industry news and information on regulations, standards, practices, safety, innovations, products and equipment. We strive to serve as the definitive resource for commercial, residential, municipal and utility arborists, as well as for others involved in the care and maintenance of trees. The official publication of the non-profit Tree Care Industry Association, we vow to sustain the same uncompromising standards of excellence as our members in the field, who adhere to the highest professional practices worldwide.
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For an effective safety program that works, you need to enforce safety on a daily basis and on a job-to-job basis. It is important that you implement a safety program and have it as an integral part of your company. Safety should be built into your organization. On that note, it is also imperative that you create a solid, working safety program – and don’t just gloss over it with the illusion of a safety program.

Perception vs. reality

The bottom line of an effective safety program is that it has to produce acceptable behaviors in the field. How many of you can say, “I always make safety No. 1 in importance during the monthly talks when I pull everyone together – and yet I have no safety program.” What if you have a client tugging on you to get there and you have a six- to eight-week backlog? Is your safety program the first thing that gets scratched? Do you cut it down to 10 minutes a week, or eliminate it altogether?

In some cases with smaller companies – recognizing that 85 percent of TCIA’s member companies gross $500,000 or less – we hear this statement quite often: “I am out on every single job supervising the safety of my crews; therefore I am very safety conscious.” That philosophy and practice, if it is carried out 100 percent, may result in acceptable behaviors 100 percent of the time. If the person responsible for that company’s livelihood is on every single job supervising safety, and if safety is an overriding priority with that person, then it will be imple-
mented on the crew level. If, however, you deviate from that scenario, then you will have problems.

If management becomes disassociated or removed from what is happening in the field due to growth in the company or by the splintering of that manager’s time into a variety of different responsibilities, problems will arise.

You need to have a complete, comprehensive safety program that includes on-the-job training, education, hiring procedures, and incentive programs that you use all the time. You can’t just have a part-time program—an illusion of a safety program—that you plug in every once in a while.

Safety as a profit center

The key term we consider when viewing safety as a profit center is “loss prevention.” Loss prevention and loss control mean avoiding claims, unidentified losses, and injuries.

Indirect losses can be loss of production, time, morale, and credibility of your organization. The results of losses might include higher insurance rates. Your direct losses are paid by the insurance company; the indirect losses—higher insurance rates—are the expenses you incur as a result, and are often four times what the direct losses are. It is most important that you consider safety a profit center and implement various aspects of a safety and loss control program.

Reducing accident incidence and severity keeps employees on the job and productive, and of course then makes your company money. Reducing incidence and severity is part of a loss control program and things that you should consider in your normal day work experiences.

For your loss control safety program to be effective, it has to encourage acceptable behavior from your employees, setting the standards from the top on down. Are you finding yourself saying, “I don’t have a written policy, but I do have a safety meeting once a week”? That is not enough. You have to work with your managers to establish a safety program that they will back 100 percent. The program has to be thorough. Safety meetings are one integral part of it, but safety meetings alone will not effectively control your losses. As mentioned later in this article, documentation is another key in making your safety program a profit center.

Insurance industry and OSHA

When the insurance industry looks at your company, it is extremely important that you have a safety program built in to your business. Quite often insurance companies will ask for a copy of your safety program and will want to go out into the field to see how effective it is. What they are really looking for are management’s attitude toward safety and how managers feel about safety and about loss prevention—and what they are doing to implement a safety program. That is the most important information because it is what controls losses and claims, and has a lot to do with experience modification.

As an industry, we are all part of the same pool. The actions of one affect the rates of all. It is your collective experience of an industry that determines your insurance rates. It is critical to analyze your data to get your workers’ compensation rates down.

Regarding OSHA compliance, all too often employers fail to assess all the hazards in the workplace. Besides the day-to-day safety ramifications this has, it also falls short of OSHA compliance.

In the past couple months, TCIA and OSHA have created a strong alliance that paves a path for greater safety and OSHA compliance in the industry. As part of this alliance, OSHA and TCIA will work together to develop and deliver training on topics such as struck-by prevention, fall prevention, awareness of electrical hazards during tree removal, and implementation of the ANSI Z-133 safety standard. Participants will jointly develop presentations for TCIA conferences, and OSHA will expand a pilot training seminar on com-
Contents of TCIA's Model Company Safety Program

OSHA compliance. There are some recordkeeping compliance issues and other issues that (depending upon the size of your company) may or may not apply.

In addition, a team of OSHA and NAA representatives will meet at least quarterly to develop an action plan, determine working procedures, and identify the roles and responsibilities of the participants.

Recently, OSHA has shied away from the idea of creating a standard for ergonomics and is instead trying to implement guidelines in various industries where there are high incident rates of ergonomic-related injuries. We are not on their "hit list," so to speak, but we do know that there are situations in our industry that we would consider ergonomics-related issues, the most prevalent being the back strains and such from lifting and twisting. There are a host of other things as well.

There are four main components of the MCSP:

1. General policy and procedure. This covers general aspects of safety within your business.

2. OSHA compliance. There are some recordkeeping compliance issues and other issues that (depending upon the size of your company) may or may not apply.

3. Vehicles and equipment. This section contains a list pertinent to your management giving its full backing, and it covers all aspects of what we call "total loss control." That can include workers compensation, liability, property damage and all aspects of what you do every day in all parts of a total program.
95 GMC TOPKICK: CAT 3116, 215 hp, 6 spd, 33,000 lb GVW, with 55 ft ALTEC LRB II bucket, rear mount under frame chpiper, 11 ft dump / chip box, thru-box, 52K miles. $41,500.

99 FORD F800: Cummins 5.9L, 215 hp, 6 spd, 33,000 lb GVW, 67 ft ALTEC AM800D bucket, 2 man end hung basket, joystick controls, 48" thru-box, 16 ft steel flatbed, 22K miles. $69,500.

99 INT 4800 4X4: DT466E, 210 hp, Allison 4 spd auto, 2 spd transfer, all wheel drive, 34,220 lb GVW, with 55 ft ALTEC AM805 bucket, 2 side-hung baskets, dual joystick controls, 28K miles. $74,500.

95 FORD LNT8000: 8.3L Cummins, 275 hp, 8 spd +/o, +/o, 56,700 lb GVW, 17 ton NATIONAL 900C crane, 134 ft hook ht, 20 ft wood flatbed. $64,500.

92 PETERBILT 375: CAT 3176, 325 hp, 8 spd, 58,000 lb GVW, 25 ton MANITEX 2592 crane, 148 ft hook height, load moment indicator, 20 ft wood flatbed, 61K miles. $74,500.

98 FORD F800: 5.9L Cummins, 215 hp, 6 spd, 33,000 lb GVW, with 55K miles. $62,500.

215 hp, 6 spd, 33,000 lb GVW, with 36K miles. $39,500. 25K miles. $44,500. Talad $49,500.

215 hp, 6 spd, 33,000 lb GVW, 65 ft hook ht, 16 ft steel flatbed, $29,500.

98 FORD F800: Cummins 5.9L, 210 hp, 5 spd + 2 spd rear, 33,000 lb GVW, with 8 ton NATIONAL 446 crane, 56 ft hook ht, 18 ft steel flatbed, 20K miles. $28,500.

88 FORD F800: 7.8L diesel, 210 hp, 5 spd + 2 spd rear, 33,000 lb GVW, with 8 ton NATIONAL 1915 CRANE, 150 ft total hook ht, radio remote, pin-on steel platform, 20 ft wood flatbed, 19K miles. $124,500.

80 FORD FT9000: Cummins, 275 hp, 8 spd +/o, +/o, 58,000 lb GVW, with PIONEER 2000 crane, 124 ft total hook ht. $79,500.

89 FORD SUPERDUTY: 7.5L gas engine, 4 spd w/od, 14,500 lb GVW, with 10 ft split dump/chip box, 24" thru-box, 102" power angle plow. $8,900.

89 FORD LNT8000: 8.3L Cummins, 275 hp, 8 spd +/o, 54,400 lb GVW, with 11 ton NATIONAL 800C crane, 114½ ft hook ht, pin-on basket, 16ft flat. $89,500.

97 FORD LT8000: 8.3L Cummins, 275 hp, 8 spd +/o, +/o, 56,000 lb GVW, with PIONEER 2000 crane, 124 ft total hook ht. $79,500.

95 FORD LNT8000: 8.3L Cummins, 275 hp, 8 spd +/o, +/o, 58,000 lb GVW, with 10 ft split dump/chip box, 24" thru-box, 102" power angle plow. $8,900.

98 FORD F800: Cummins 8.3L, 210 hp, 6 spd + 2 spd rear, 33,000 lb GVW, with 5 ton MANITEX 1870 CRANE. $64,200 knuckleboom, 1911" max side reach, 18 ft steel flatbed. $29,500.

99 FORD F800: Cummins 8.3L, 210 hp, 6 spd + 2 spd rear, 33,000 lb GVW, with 5 ton MANITEX 1870 CRANE. $64,200 knuckleboom, 1911" max side reach, 18 ft steel flatbed. $29,500.

98 GMC T7500: 3116 CAT, 6 spd, 6½ ton HIAB knuckleboom, 26 ft side reach, 19 ft steel flat. $39,500.

99 GMC C7500: 3126 CAT. 260 hp, 8 spd, +/o, +/o, 56,000 lb GVW, with 16 ton PALFINGER PK14080 KNUCKLEBOOM, 21½" max side reach, 22 ft steel flatbed. $39,500.

90 INT 4900: DT466, 185 hp, 6 spd, 33,000 lb GVW with 3 ton IMT 4825 knuckleboom, 25½" max side reach, 11ft steel flat/utility bed. $22,500.

93 INT 4600: 7.3L diesel, 155 hp, 5 spd, 21,500 lb GVW, with 3½ ton HIAB 550-3 KNUCKLEBOOM, 23½ max side reach, remote ctrl, 11ft steel flat. $21,500.

94 GMC TOPKICK: CAT 3116, 275 hp, Allison 6 spd auto, 47,220 lb GVW, with 45 ft LIFT-ALL LM65-2S bucket, 2 single buckets, joystick, 18 ft steel flatbed. $49,500.

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vehicles and equipment. As an industry, we think about the hazards associated with tree work, but we have a huge problem getting to and from the job, borne out in our auto liability insurance costs. This checklist ensures that we have very safe vehicles, attachments – and drivers.

4) Training. For your program to be effective, you have to start out with a clear management commitment. Once you have that commitment, you need to have a clear policy that sets out your goals for your employees. Then you have to communicate that policy through your training.

Soon, an updated version of the MCSP will include several new components, including a guideline on ergonomics best practices that will be applicable in a number of different situations. Another new component, called management self-assessment, guides you through a process to grade your company in terms of a safety program. We are also developing an Internet chat room that will be dedicated to the users of this program and/or members of the Tree Care Industry Association. In this chat room, you can network as if you were in a meeting with other tree care professionals.

The safety program starts with a checklist of all of the elements a safety program has to address in order to be successful. This checklist is available on our Web site at www.treecareindustry.org/default.asp?main=content/safety/ modelsafetyprogram.htm. You can use it as a benchmarking tool in your own company to try to figure out where your strengths and weaknesses are.

Next, the MCSP includes an employer’s guidance module, which explains what the items on the checklist really mean.

Since company policy needs to be communicated clearly to employees – especially during times of high turnover and during the busy season – you must have all safety-related information in writing. There are some routines in the comprehensive safety program implementation that require some sort of form, checklist or supporting document.

The MCSP boiler-plate company policy section allows companies to adapt safety-related information for their own needs and to put it in writing. The MCSP provides all policy information and forms on CD, in English and Spanish.

Documentation is important for two reasons. First and foremost, documentation is important when you have a dispute over a particular issue with an employee. If you have a paper trail, you can show the employee the documentation and eliminate any guessing. It allows you to clearly measure progress and to more easily resolve disputes. Secondly, documentation is vital when OSHA investigates your company. You will not be able to prove that you have an effective safety program and that you are doing your diligence as a manager or owner without documentation. OSHA will not just take your word for it.

As stated earlier, the bottom line of an effective safety program is that it has to produce acceptable behaviors in the field. That is the name of the game. If
you have employees following certain standards of acceptable behavior — what we consider safe behavior by virtue of their awareness of those safety issues and how to avoid hazards on the work site — you will have an acceptable and profitable outcome. It is when you have unacceptable behaviors — whether due to lack of knowledge, willful disregard, a bad attitude or a host of other competing priorities — that you will have unacceptable outcomes.

Yes, you can implement a safety program!

One common misconception about implementing a comprehensive safety program is, “We don’t have the depth at our company.” Tree care company owners and managers may say they have an orientation program and are committed to safety, but can’t commit to the ongoing safety training. The truth of the matter is, if you have five minutes a day to contribute toward safety, you can make it part of your everyday practice. Just take the time to write up the documentation and put it in a folder. That’s it.

The three key elements that you are after in your business are visibility, credibility and profitability. In an equation, visibility plus credibility equals profitability. This pertains directly to safety. You can find the time to implement a system into your business because with the credibility and visibility created by a comprehensive safety program, you will become profitable.

Summary

We have a number of different tree care companies that have implemented truly good safety programs and have used the Model Company Safety Program as their guide. After implementing the program, they evaluated what they have and where they could make improvements, and then they set up ways to make their program even stronger. By doing so, they controlled their losses and increased profitability.

Your goal should be to make your company’s comprehensive, daily safety program a living, breathing thing. Just like your safety program has a constant need to try to correct its own imperfections and improve, change and adapt to your employees, your safety program must change and adapt to your needs as you better understand them and as they change over time.

This article was adapted from a presentation at TCI EXPO 2002. To order an audio tape of the entire session, go to www.soundrecordings.org. Peter Gerstenberger is vice president of business management, safety and education with the Tree Care Industry Association. George Klinger is a loss control specialist with TreePro (National Insurance Programs). Melissa LeVangie is a consultant with Trees New England in Massachusetts.
OSH Act Amendment to Ease Load on Small Business

A bill that would amend the Occupational Safety and Health Act to ease certain burdens on employers— including the award of attorneys' fees and costs to small employers that prevail in court— was introduced in the House April 3 by Workforce Protections Subcommittee Chairman Charles Norwood (R-Ga.).

The Occupational Safety and Health Fairness Act (H.R. 1583) would give employers new tools to defend themselves against OSHA citations they believe are not justified, according to the Representative.

Those tools include increasing the number of members of the Occupational Safety and Health Review Commission, the entity that oversees contested citations, from three to five to ensure that cases are reviewed in a timely fashion.

It would also give the OSHRC additional flexibility to make exceptions to the 15-day deadline for employers to file responses to OSHA citations when a small business inadvertently misses the deadline.

H.R. 1583 would provide attorneys' fees and costs to employers with not more than 100 employees and a net worth of not more than $1.5 million at the time of the adjudication that prevail in court.

Clarifying willful violation

According to Norwood, the bill would clarify what constitutes an OSHA willful violation. The agency currently defines a willful violation as one committed with an intentional disregard of, or plain indifference to, the requirements of OSH Act regulations.

The bill would amend the OSH Act to define a violation as willful only if the employer:

- knew that the alleged condition violated a standard or regulation, and knowingly disregarded it; or
- knew that employees were, or that it was reasonably predictable that employees would be, exposed to a hazard causing or likely to cause death or serious physical injury and recklessly disregarded the exposure of employees to that hazard.

In addition, the legislation would ensure that penalty assessments would have to take into account:

- the size and financial condition of the business;
- the gravity of the violation;
- the good faith efforts of the employer;
- the degree of responsibility for the violation of the employer, the employees, and other people.

In a press release, Norwood said, "This measure will help ensure that OSHA enforcement efforts are undertaken in an evenhanded manner that promotes fairness for small business owners who are making good faith efforts to comply with all health and safety laws."

Peter Gerstenberger is vice president of business management, safety & education for the Tree Care Industry Association.
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You and Your Accountant

By Mary McVicker

The issues involving national corporate accounting scandals may appear to be light years away from small business, but when you ratchet down the scenarios and remove numerous zeros from the numbers of dollars and people, the setting moves closer to home - and to a tree care business like yours.

One aspect that continues to be discussed and debated concerns the connection between a business and its accountant. For large corporations, the focus may be on conflict of interest, but underlying this is the accountant/business relationship itself.

Choosing an accountant

What kind of accounting firm do you need? Accounting help is available in a variety of settings, ranging from the "small business" division of one of the behemoth international firms to a sole practitioner who works from home.

Many small businesses overbuy when it comes to getting accounting help.

For most small businesses an accountant working on his or her own or having a few assistants can readily meet their needs.

What do you need? Most businesses will need help with:
2. Year-end processing of the books.
3. Taxes, which can involve myriad details and forms.
4. Payroll reports and the financial aspects of payroll and personnel issues, including benefits, reporting requirements, and documentation.

Questions of conflict of interest are rarer for small business. Questions having to do with the working relationship with their accountant are widespread. Typically these focus on the nitty-gritty of how the relationship works - what's effective, what isn't, what works, what's problematic.

How do you utilize your accountant? How would you characterize the relationship? Helpful? Strictly business? What types of help does your accountant give you - or not give you?

The extent to which a small business utilizes its accountant varies widely. Involvement runs the spectrum from the accountant being almost a member of management, to one who simply processes and presents the financial material.

Patricia, who has a small store, utilizes her outside accountant primarily for the year-end work and taxes. But "I'm hands-on with the numbers," she says. "I want to know where my business is. I do my own bookkeeping, pay the bills, and write the checks. The accountant makes sure of details." She tries to keep up with changes in labor laws and taxes that might affect her business. On occasion she'll ask her accountant for advice.

Accountant as advisor

One of the most nagging questions in the Andersen events involves the role of accountant as advisor. Clients expect help from their accountants. But how much help is your accountant willing to give? How much is appropriate?

You expect to call on "your" professional for answers or advice; that's part of why you have a professional. But how often? And when is it a free call, and what incurs charges? There aren't clear guidelines on this - and the question of reasonable access troubles accountants as well. Most professionals want to be...
responsive to a client’s needs, but no one likes to be exploited.

One business owner I interviewed for this article told me, “Our accountant doesn’t help us run the business. The accountant helps us present the business correctly to the government and other entities, and keeps the legalities of it in order. It would be nice to know how I’m doing — and how others in this business community are doing as well. Are they having similar problems? For instance, are they doing something that might be appropriate for my business?”

Is he describing a helpful accountant or an unpaid management consultant? Are there privacy issues involved in the hope that the accountant will pass along information, however general, about other businesses?

**Accounting and the entrepreneur**

On the other side of the table, accountants vary with regard to how much they want to be involved in their client’s business beyond doing the requisite accounting. Many question the appropriateness of too much involvement in a client’s business. Certainly accountants that audit a business need some distance to help provide the requisite independence. When auditing is not a factor, questions still may arise regarding distance. There’s a practical element as well. Accountants have heavy workloads and stressful schedules. (Think: deadlines.)

Most accountants view their work as providing a service, and they’re genuinely interested in helping their clients. Many accountants have been burned by situations in which “helping” a client means virtually being on call.

In addition to the obvious consideration of how involved the accountant is with the business, questions arise regarding how involved the business owner is with the accounting.

“My clients run the gamut in how involved they want to be with the numbers,” says Linda Mularski, a CPA in La Grange Park, Ill., whose practice is composed solely of small businesses. “They run the range from ‘Can’t be bothered to look at the figures’ to those who want the financials on their desk the 10th of every month. And size has nothing to do with it.”

The classic startup pattern involves an entrepreneur who knows the product side of the business well but is less familiar with the financial aspects. Startup entrepreneurs are often surprised — or appalled — at the extent to which they need to be involved with the numbers. Many entrepreneurs have learned the hard way the necessity of knowing how to work with the numbers.

Accounting, like any field, has a learning curve that can be daunting. There’s nothing particularly instinctive or obvious about accounting. The reports and statements you get from your accountant can be confusing and unenlightening.

One of the best investments you can make is a basic course in bookkeeping, or in an accounting course targeted for entrepreneurs. [Note: colleges and universities typically offer such courses in their noncredit programs.] This investment can pay off in several ways, including your becoming more knowledgeable about your own business. It can also result in your working relationship with your accountant becoming more effective when you move beyond the basic “What is this? What does this mean?” questions about the balance sheet and income statement.

**The accountant and the client**

Problems occur on both sides with respect to the data at hand. Accountants have to work with what they get from the business. This sometimes includes incomplete or poor data, often due to inadequate recordkeeping. At best this means that the accountant’s work takes longer and costs more. At worst it can result in misleading figures on the financial statements.

Clients often expect their accountant to do some of the bookkeeping for the business. (Bookkeeping is largely concerned with recording financial information; accounting deals with processing that information.) Some accountants don’t mind, while others don’t want to spend their time on bookkeeping services. Most agree that it’s an uneconomical practice for clients to pay accounting fees for bookkeeping services.

The key to an arrangement that’s productive on both sides is to determine, with some precision, just what that arrangement involves. Obviously this is easier to do at the outset, but there’s no reason that sort of discussion can’t take place with respect to an ongoing arrangement. One approach might be, “As you know, the business has changed since we began, and it seems to me our finances have gotten more complex.” [Note: This may not really be the case, but it’s a useful lead-in.] “I try to keep up with things, but frankly there are times I need help with a decision or understanding some of the financial considerations of our situation. What would be reasonable?”

If you want feedback on how you’re doing, suggestions, answers, or occasional consulting, you need to discuss this. Determine what constitutes fair access to the accountant’s expertise, and when a fee for time might be appropriate.

Be clear on what the lines are. This isn’t about being friends. The accountant isn’t a member of your “team” or part of your business or an adjunct employee. He or she is an important resource for skills that your business needs.

**Conclusion**

Professional relationships are no different from personal relationships: they all take thought and work. Arriving at a relationship with your accountant that’s beneficial to both sides requires becoming knowledgeable about the basics of how books are kept and what accountants do, and judgment on what questions and inquiries are worth the accountant’s time. The payoff can be immense.
often, pruning is merely the artificial adjustment in the growth of a shade tree to more properly represent the ideal structure of a natural tree. I use the word "natural" here to represent nature’s habit of growth when a tree is growing in a somewhat competitive forest environment and not an artificial environment described for and by the pleasure of mankind.

The pruning of a mature tree of unique value that has structural defects or has been neglected is a challenge often faced by arborists. However, proper pruning of a shade tree should start in the nursery. Pruning to correct defects in structure is probably the most expensive and challenging pruning procedure carried out in arboriculture. All pruning should only be carried out by an experienced and highly trained arborist with an aesthetic eye and a clear understanding of shade tree physiology.

A step-by-step example of pruning for structure

**Diagram I**

Be aware of the structural problems of the tree to be saved:
Reference the items marked A through F below on the sketched tree.

1. (A) Recognize the degree of rot through broken stumps or rotting leaders left after storm damage, which injures the main trunk (note A). This damage has caused cavities, including a basil cavity, and thus further rot has developed in the center of the tree. This tree requires crown reduction to alleviate excessive leverage and stress on the weak main trunk and leaders of the tree.

2. (B) After the main leaders were broken off approximately 25 years ago (note A), the nourishment generated from the root system went into the development of succulent, high thin growth that is unnatural and unlimited here (note B). This is due to the lack of abutting trees that would normally compete and restrict the tree's growth, which in most cases would over-shade the tree and cause the death of the tree through natural forest competition. However, here is a tree that we wish to save due to its unique location, historical value, or because it may be the only significant tree in the vicinity.

3. By inspecting the amount of decay in cavity areas (note A), one can carefully determine the strength of the remaining trunk and thus the importance of stimulating growth of additional sapwood to strengthen the remaining cylindrical sapwood structure that is supporting the tree and, of course, to determine the amount of pruning required.

4. (C, D) Notice the root system is responsible for the growth of the tree more in the direction of the water, with a more vital root system on that side. See the area marked (note C) as ledge, where this side of the tree is thinner and less vigorous. This dictates that the initial cuts to reduce the crown of the tree will start on the left-hand side over the water and not on the right-hand side over the ledge. The area marked (note D)
Basic questions to consider before starting

1. Will the tree be safe after pruning?
2. Will environmental, insect and disease problems, as well as other predatory conditions, be adjusted to preserve the tree for a valued period of time after pruning?
3. Will the appearance of the tree be pleasing to the owners?

Additional steps before pruning commences

1. Structural weaknesses, such as V crotches and interior rot, should be observed carefully to help guide the degree and severity of pruning to be done.

2. Stand back from the tree and view it from all sides. Stand under the tree and view its inner framework. This will allow you to plan the necessary pruning procedures. Presuming that this tree is a large mature deciduous tree, choose approximately four to ten major cuts that will be made to preserve and establish a central leader and reduce the width of the tree in an attractive manner.

3. Study the interior of the tree to see small interior growth that can be preserved and stimulated when nourishment is concentrated toward this growth after the above pruning procedures have been carried out. Study the interior growth in order to develop pruning procedures that will result in an attractive, natural, and pleasing pattern of growth.

4. Explain anticipated additional expense for cabling, bracing, and other treatments to the client.

5. Long-term costs and other procedures that may need to be done in the future, such as a second pruning (probably eight to ten years after the first pruning), should be estimated.

6. Establish a complete understanding with the client, preferably in writing, about how the tree will look at completion of pruning by writing pruning specifications that conform to ANSI A300 Pruning Standards.

Pruning procedures

Enter the tree and start pruning from the top down. As you climb the tree, remove large dead branches. Do not remove small dead branches at this time. A live leader with dead branches on it may be removed later in the pruning, so clearing it out now is not necessary. Remember to perform all tree maintenance operations according to ANSI A300 standards.
1. At this time, concentrate on the four to ten major cuts in the tree. Start cutting on the heaviest side first.

2. When clearing out large dead branches, watch the condition of the cuts to determine the degree of rot and other parasitic problems that may be an internal problem, and recognize where further severe pruning may be necessary for safety.

3. Recognizing the importance of the disciplines previously outlined, have a foreman on the ground advise you on how the tree looks.

4. Return to pruning by making secondary cuts (note diagram below).

5. Tip back spindly ends, preferably with a bucket truck, and clear out small dead branches. This tipping back procedure helps establish nature’s shape and a central leader. It is also done to eliminate auxin in terminal buds and thus reduce the nourishment that will be drawn out toward this growth at the ends of the remaining branches.

6. Remove all hangers as you move down through the tree.

7. Determine whether you have accomplished three primary goals - safety, long-term survival, and pleasing appearance.

Diagram II

After the initial cuts are made, one can readily see that there is an irregular pattern of growth throughout the crown of the tree that needs to be adjusted.

Note points on the tree at right that are marked “A”. These are the first primary cuts that were made. Areas marked “B” are important limbs that need to be restricted and terminal growth removed so as to remove the hormone auxin from the top branch. Auxin will stimulate upward terminal growth, so that the excessive amounts of stored foods that would have gone into those leaders that have been removed will now travel into remaining interior limbs. Should these limbs be allowed to “take off” and develop high rangy growth outside the normal leaf pattern of the tree, then ice, snow or wind can break them off causing further injury to the tree. Thus, they need to be restricted as shown by the pruning in the areas marked “B”.

Dead branches, stumps and other growth should not be removed from the tree, and whenever practical should be the last procedure undertaken should any of the following conditions exist:

1. Upon the start of pruning, one finds that the tree has a disease that was not recognized earlier.

2. The tree is more structurally weak than was originally appreciated.

3. The tree has a vascular disease that was not discovered earlier, or there are limbs or leaders that need more restriction than earlier anticipated. In this case, if one were to clean the dead branches out of these limbs that are eventually removed, it would be a waste of time. Thus, cleaning should be the last procedure considered, except where there are limbs that may be dangerous for people pruning within the tree.

Notice the areas marked “C”. These important low limbs have been pruned very little, except where it is necessary to allow light to fall upon these lower limbs to stimulate new foliage. This eliminates the concern of “shading out” limbs that are normally lost in a vigorous developing shade tree. Saving these low limbs will allow them to manufacture food at a lower level and reduce the center of gravity.

Notice the area marked “D”. This limb near the open cavity has not been cut off entirely, which allows small live shoots on the limb to reinvigorate with foliage. This will sustain this limb and prevent the need to make a cut close to the trunk that would further weaken the cylindrical support the leader gives to the main trunk.

Notice the areas marked “E”. Cables may need to be installed in these two locations after the pruning is carried out to help support the weak crotches, marked “F”.

Illustrated by: Don Snyder
8. You may need to go back and install cables. Be sure this work is included in your original estimate.

After all debris is removed, the client should be pleased. The average person probably would not even know the tree was pruned. Five years later, the tree should have more internal growth, old wounds should be covered with wound wood, and the tree should be safer and should look healthy.

When proper structural pruning is carried out, the main structure and trunk will not have to be disposed of, plus stump grinding will not be necessary. During structural pruning, most of the wood removed from a large tree can be chipped. Structural pruning does not require the expense of having heavy logs removed.

Henry Davis has worked in the field of arboriculture for over 50 years. He was president of Lowden, Inc. from 1957 to 1979. He helped write legislation and establish the first pesticide boards in the United States. He has studied structural pruning throughout Europe and the United States over the past 50 years. He teaches structural pruning at the University of Massachusetts at Amherst. He is presently a landscape consultant working in the Boston area and Long Island, N.Y.

Diagram III

Note above the two examples of the tree before pruning and completely pruned. What has been accomplished?

1. The high rangy growth and flat crown have been reduced and angled so that sunlight will pass down through the tree and onto the lower limbs. This helps with photosynthesis in the interior and lower parts of the tree where new growth is important to lower the center of gravity and develop healing and wound wood growth over old wounds.

2. The amount of live wood (and thus foliage) taken principally out of the crown of the tree will reduce stress on the weak main trunk. While it appears to be minimal in the demonstration, it has been proven that by removing a small amount of terminal growth from a mature tree, a great deal of leverage and weight can be removed. This can save a tree. There is a tendency, though, to over-prune a weak tree. However, if one examines such trees after severe storms, one recognizes that more subtle pruning to correct the structure is often all that was needed to save them. Of course, the appearance of the tree is of primary importance, and even though one-third of the tree has been artfully removed, and of course the unattractive dead branches and stubs removed as a final function of pruning, the tree should appear unpruned to the average person. This is especially true if the pruning is done during the dormant season, so that by July of the next year most homeowners would not recognize the pruning was even done. This is the sign of carefully planned and well-executed pruning on a valued shade tree.
Industry Almanac

Events & Seminars

May 14, 2003
Landscape IPM Workshop
Oklahoma City, OK
Contact: Mike Schnelle, (405)-744-7361 or mas@okstate.edu

May 19-21 2003
MD DNR Forest Service
Licensed Tree Expert Training
Patuxent Wildlife Refuge, MD
Contact: Marian Honeczy, (410) 260-8511 or mhoneczy@dnr.state.md.us

June 6-7, 2003
All About Trees Annual Conference
Arizona Community Tree Council, Inc.
Prescott Resort & Casino
Prescott, AZ
Contact: (480) 899-9831, (602) 909-9190

June 21-24, 2003
ISA Florida Chapter Annual Meeting
Wyndham Resort
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

July 23-25, 2003
Turfgrass Producers International Summer Convention and Field Days
Dayton, OH
Contact: www.TurfGrassSod.org or TPI, 1855-A Hicks Road, Rolling Meadows, IL 60008

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

August 9-13, 2003
American Phytopathological Society Annual Meeting - 2003
Charlotte, NC
Contact: Kathy Aro, (615) 454-7250, karo@scisoc.org or www.apsnet.org

August 20-22, 2003
CalScape Expo 2003
Hyatt Regency,
Irvine, CA
Contact: California Interior Plantscape Association, (707) 462-2276; www.cipaweb.org

September 17-20, 2003
2003 National Urban Forest Conference
American Forests
Adams Mark Hotel, San Antonio, TX
Contact: Donna Tschiffely, (703) 904-6932; donna@amfor.org; www.americanforests.org

September 24-25, 2003
Plant Materials Conference
Oklahoma State University,
Stillwater, OK
Contact: Mike Schnelle, (405) 744-7361 or mas@okstate.edu

October 5-8, 2003
Annual Conference and Trade Show
Society of Municipal Arborists
Points Sheraton Monica, CA
Contact: urbanforestry@prodigy.net

October 24-26, 2003
N.J. Shade Tree Federation
78th Annual Meeting
Clarion Hotel & Convention Center
Pleasantville, N.J.
Contact: Bill Porter, (732) 246-3210

November 7-8, 2003
Green Industry Expo
St. Louis Convention Center
St. Louis, MO
Contact: 1-888-303-3685, fax (770) 579-3835, www.gieonIine.com

November 13-15, 2003
Tree Care Industry Expo 2003
Tree Care Industry Association
Baltimore Convention Center
Baltimore, MD
Contact: Carol Crossland, 1-800-733-2622, Ext. 106; crossland@natlarb.com or www.treecareindustry.org

February 8-12, 2004
Winter Management Conference 2004
Tree Care Industry Association
St. Kitts, U.S. Virgin Islands
Contact: Carol Crossland, 1-800-733-2622; crossland@treecareindustry.org

Send information on your event to:
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**Condor CTA-104-I**

TIME Manufacturing Co. introduces the new CONDOR CTA-104, an insulated, articulated/telescopic aerial work platform. It has a combined platform and jib capacity of 2,200 pounds. This compact, articulated aerial lift has 103 feet, 6 inches of working height. The relatively inexpensive and fuel efficient 60,000 GVWR chassis also allows for lower acquisition and operating costs. The standard fiberglass platform on the CTA-104-I is 48 in. x 24 in. x 42 in., and is equipped with a 180-degree platform rotation independent of turret rotation. Standard platform capacity is 800 pounds. The lower boom is two-section telescopic, consisting of an inner and outer column and can articulate 0 degrees from horizontal to 87 degrees past vertical. The upper boom includes a sealed telescoping insulated inner boom with articulation ranging up to 167 degrees relative to the lower boom. All lift functions are microprocessor controlled for smooth dependable operation and safety. The unit is rated for 500 KV category A and C ANSI A92.2-2001. The short jacking capability allows for the lift to operate over one side of the truck without requiring the operator to fully extend the out/down outriggers on the opposite side. Rotation on the CTA-104-I is 360-degree continuous and unrestricted in either direction and consists of planetary gearbox acting on a shear-ball rotation bearing. Non-lube bearings are used at all pivot points. For more information contact TIME Manufacturing Co. at (254) 399-2100 or visit them online at www.versalift.com.

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**Generation II**

The J J Mauget Company adds the Generation II delivery system, which pushes new levels for micro-injection technology. The Generation II delivery system offers up to a full 20 mL capacity, less tools required for application, and a non "O" ring which makes for a truly leak proof, hermetically sealed capsule. It's a simple two piece system engineered to provide safe performance for many years. The first product offered in the Generation II system will be Imicide, with Imidacloprid, a Bayer product, which is Mauget's most popular insecticide. It has been used exclusively by the USDA as a preventive treatment to control the dreaded Asian long-horned beetle in New York and Chicago for the past 3 years and many other sucking, chewing and boring insects in ornamental trees throughout the U.S. Mauget will gradually move their other products into the Generation II delivery system. For more information, contact the J.J. Mauget Company, 20034535 Peck Road, Arcadia, CA. 91006-5847, (626) 444-1057, or email to: nate@mauget.com.

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**Rotochopper CP 118**

Rotochopper's new CP 118 adds value by grinding wood chips into colored mulch in one pass. The CP 118 reprocesses whole tree chips, logged material, and oversized material, converting what represented a disposal cost into a saleable product. "Sending less material to the landfill is always a great idea but making money on it at the same time is even better," said Monte Hight, sales and marketing manager. Unprocessed wood is less desirable as mulch because color and texture are not right. Raw chips tend to blow away, but after processing through the CP 118 the chips stay put. The CP 118 can be pulled behind a pickup truck. Mounted on a tandem-axe trailer with electric brakes and DOT lighting, it is powered by a CAT 86 hp diesel engine. Expect 20 to 40 cubic yards of chips per hour. For a free informational video or an on site demonstration, call 608-452-3651, or visit the Rotochopper Web site at www.rotochopper.com. For more information Contact: Rotochopper, Inc., 217 West Street, St. Martin, MN 56376, (320) 548-3586, Fax: (320) 548-3372.

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Wood/Chuck Body Division

Wood/Chuck Chipper Corporation enters the market with its new Body Division. A “unibody” structure eliminates weight, wasted space and the debris trapping frame structure of traditional packages. The Wood/Chuck Body has smooth underpinnings that lower the center of gravity. The material is Corten, a steel composition developed by US Steel. It is corrosion resistant throughout, unlike “Galvanneal,” which relies on a thin surface coating only, so Corten can be sandblasted during original manufacture and years later during remounting. Body walls and welds are corrosion-resistant Corten: 40 percent stronger than A-36 steel used in other bodies. Powder Coat technology, offers salt spray resistance, adhesion and durability exceeding traditional wet paint finish. For more information, contact Wood/Chuck Chipper Corporation at 800-269-5188 or www.woodchuckchipper.com.

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BUZZZLINE

Yale Cordage engineers have created a full-sized true ½-inch line that maximizes abrasion resistance, is durable yet flexible, is highly visible and has a high tensile strength. Yale introduces their newest product for the arborist: Buzzzline, a bright orange 12-strand, 100 percent polyester line intended to maximize abrasion resistance, while providing an average tensile strength of 7,400 pounds spliced. The braid is tight enough to prevent snagging but supple for handling and throwing. Its all-polyester construction absorbs energy. Buzzzline 12-strand is available in ½ inch and is available with an eye splice. Yale Cordage invites you to come see what the Buzzz is all about by contacting them at (207) 282-3396 or info@yalecordage.com. See www.yalecordage.com for a full product line.

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Stihl chosen as Cabela’s Official Handheld Outdoor Power Equipment Partner

Cabela’s recently announced an agreement naming Stihl Inc., as its Official Handheld Outdoor Power Equipment Partner. This cross-promotional agreement aligns the world’s foremost outfitter of hunting, fishing and outdoor gear with Stihl, manufacturer of the number one selling brand of chain saw.

As Cabela’s official partner, Stihl will receive prominent positioning throughout Cabela’s many marketing and promotional opportunities, including Cabela’s Outfitter Journal magazine and television show, their hosted events and special in-store displays.

“At Stihl, we are committed to being involved in the activities of our customers both at work and at play,” said Roger Phelps, sales promotions specialist for Stihl Inc. “Cabela’s believes in the same thing. Cabela’s is already the exclusive provider of Stihl branded clothing and gifts, so expanding the relationship to include events and promotions was the next obvious step.”

ACRT Completes Transition to Employee Ownership

ACRT, Inc., an international arboricultural resource company headquartered in Cuyahoga Falls, Ohio, completed a transition to 100 percent employee ownership in early April.

According to President Michael Weidner, an employee stock ownership plan (ESOP) was formed in 1998 to purchase company stock on behalf of the company’s more than 250 employees. The final stock acquisition took place on April 7.

Employees have owned a minority interest in the company since its founding in 1985, but the majority interest was owned by founders Richard and Sue Abbott. The Abbotts have retired so they can travel and spend more time with children, grandchildren and great grandchildren. They will continue to serve as consultants and roving ambassadors for ACRT.

“Richard and Sue Abbott have played a significant role in the growth of the arboricultural profession, especially in such specialized areas as utility and municipal arboriculture,” Weidner explained, “The Abbotts have always been people of vision, and it has always been their vision to pass ownership to the people who made ACRT a success, the employees.”

Cummins Records 12,000 Orders

Cummins Inc. announced in early March it has recorded orders for more than 12,000 of its engines compliant to the stringent EPA emissions regulations that went into effect in October. With more than 4,200 engines already in service, Cummins has more emissions-compliant engines in service than any manufacturer.

“These engines are proving their performance and reliability, and customers are pleased with what they see,” said Cummins Executive Director - Marketing, Tom Kieffer. “With more than 37 million miles already – and orders increasing – customers’ experience and confidence are growing exponentially every day.”

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Clearwing borers are the larvae of moths (order: Lepidoptera, which also includes butterflies) in the family Sesiidae, or clearwing moths. They are known as clearwing moths because they lack (to various degrees) the wing scales that are characteristic of most other moths. Many resemble wasps and hornets, which no doubt helps protect them from natural enemies. Even their relaxed flight pattern, with hind legs hanging freely, closely mimics wasps and hornets. Many species fly during the day, which is unusual for moths, but contributes to their defense through deception, as wasps and hornets are also active during the day.

Clearwing borers are perhaps the most destructive group of wood-boring insects affecting ornamental trees and shrubs. Key pests include lilac/ash borer (Podosesia syringae), banded ash clearwing borer (Podosesia aureocincta), dogwood borer (Synanthedon scitula), rhododendron borer (Synanthedon rhododendri), peachtree borer (Synanthedon exitiosa), and lesser peachtree borer (Synanthedon pictipes), all of which are native to North America. Many clearwing borers consume phloem tissue just under the bark of the trunk and primary branches, which disrupts the flow of carbohydrates from the canopy to the roots, resulting in decline and potentially death. Some species also bore into the sapwood of trees, which can disrupt the transpiration stream and cause structural weakening. Although clearwing borers rarely cause serious harm to their native host plants in the wild, they can devastate ornamental plants and shade trees.

The life histories of the clearwing borers discussed here share many similarities. They all overwinter in the larval stage, with adults emerging in spring and/or summer to reproduce. Mating and egg laying occur soon after emergence. Female moths deposit eggs singly or in small groups in irregular areas of the bark, including cracks, crevices, ridges, previous emergence holes, canker infections, and wounds.
Signs and symptoms of clearwing borers

The signs and symptoms of clearwings resemble those of other borers, including thinning of the canopy, gradual dieback and decline, and eventual tree death. Infestations often result in trunk cracks and defects resulting from tissue death and callus growth around points of infestation. Adventitious shoots sometimes sprout from the trunks of infested trees.

However, there are important characteristics that are useful in distinguishing clearwings from other groups of borers. Accurate identification is important for several reasons. There are differences in approaches to managing different groups of borers, and their susceptibility to particular insecticides also varies. Furthermore, accurate diagnoses can be very important for identifying new infestations of exotic species. Arborists are often in a position to detect an exotic species when called as "first responders" to inspect declining trees. For example, it is important for arborists to determine whether borers infesting ash (Fraxinus spp.) are native clearwings, which are quite common, or represent a new infestation of the invasive emerald ash borer (Agrilus planipennis). The potential impact of emerald ash borer on urban and natural forests of North America rivals that of Dutch elm disease and chestnut blight. The sooner any new infestation is detected, the easier it will be to contain and eradicate.

The presence of flatheaded borers often cannot be detected until adults produce distinctive exit holes as they emerge, or trees begin to decline. However, larvae of clearwing borers often produce telltale signs as they feed under the bark. Clearwing borers expel their frass (mixture of sawdust and excrement) from the tree, which can accumulate in large quantities in bark crevices, branch crotches and on the ground, providing a good sign of an infestation. Conversely, flatheaded borers pack their frass tightly within their galleries as they feed. Larval feeding can result in wet spots on the bark as sap seeps from entrance holes, especially during the spring. Gum deposits impregnated with frass also form on the bark of resin-producing species such as cherries (Prunus spp.). The emergence holes of clearwing borers tend to be round, as opposed to the D-shaped holes produced by many species of flatheaded borers, including emerald ash borer. Upon emerging, clearwing borers leave behind a pupal case, which can sometimes be found protruding from emergence holes. Flatheaded borers, on the other hand, do not produce a pupal case. As with other species of borers, woodpeckers can be important natural enemies, and evidence of woodpecker activity can indicate a borer infestation.

Lilac / ash borer

As its name implies, the lilac / ash borer can be an important pest of lilac
(Syringa spp.) and ash (Fraxinus spp.) throughout the eastern United States and Rocky Mountain region. There is one generation per year. In Ohio, the adult flight period begins late April or early May, peaks in late May and early June, and is complete by mid-July. Studies have shown that a single, well-timed insecticide application made as adults begin emerging (when crabapples are in full bloom) can provide excellent control.

Drought stress increases the susceptibility of ash to clearwing borers, and trees planted in harsh environments can be severely damaged. This insect may be a primary invader of lilac, infesting even apparently vigorous plants, sometimes causing extensive losses in nurseries. Infestations of established lilacs in the landscape can be managed easily by pruning out the oldest stems, thereby rejuvenating the shrub.

**Banded ash clearwing borer**

The appearance, biology, and impact of banded ash clearwing borer are very similar to that of the lilac/ash borer, with the key difference being that banded ash clearwing borer infests only ash, and adults are active later in the season. Indeed, at one time they were considered to be the same species, with the flight period of banded ash clearwing borer thought to represent a second generation of the ash/lilac borer. However, there is just one generation per year, with adult emergence beginning in Ohio in late July or early August. The flight period is short, lasting only 3-4 weeks. Larvae begin feeding in late summer and fall prior to overwintering. However, most damage occurs the following spring and summer as larvae mature. Large quantities of frass can accumulate at the base of infested trees during this period of active feeding.

Stressed trees have been shown to be most susceptible to attack. Larvae feed primarily in the sapwood, which is not as physiologically damaging as phloem girdling, although extensive feeding can cause structural weakening, and eventually will result in dieback. If treated soon enough, even severely infested trees can recover if protected with insecticides until stress is alleviated. Our research has shown that excellent control can be achieved with one insecticide application timed just as adults begin emerging.

**Rhododendron borer**

As one might expect, rhododendron borer is a pest of Rhododendron spp. and occasionally mountain-laurel (Kalmia latifolia). There is one generation per year, with adults active...
from mid-May through July depending on location. In Ohio, emergence peaks in mid-June. The flight period is relatively short, lasting only 4-6 weeks, and plants can be protected effectively with one insecticide application.

Larvae feed on the phloem, which girdles main branches and stems, and to some degree the xylem. Wilting and dieback caused by rhododendron borer can resemble that caused by the fungal pathogen *Phytophthora cinnamomi*. However, if rhododendron borer is the culprit, there will be clear evidence present, including galleries, frass, and emergence holes. Stressed plants are most susceptible, and damage seems to be more common on plants exposed to full sun. Wild plants are generally not severely impacted.

**Dogwood borer**

Dogwood borer is a serious pest of flowering dogwood (*Cornus florida*). It has also been reported to colonize a diverse array of unrelated species, which is highly unusual for a borer. Other reported hosts include apple, hickory, pecan, and stem galls of oak. The life cycle of dogwood borer is not completely understood. Pheromone trap data show that adults are present throughout much of the growing season. Some authors suggest that there may be two generations per year, while others have concluded that there is just one prolonged generation annually. In Kentucky, two distinct flight periods occur annually, with one peaking in early June and the other in mid-August. However, it remains unclear as to whether these peaks represent two successive generations, two different broods that each require a year or more to complete development, or two different subspecies.

Unfortunately, commercially available pheromone lures are not very effective for monitoring dogwood borer, which contributes to the confusion surrounding the flight period of this insect, as well as to difficulties in accurate timing of insecticide applications. However, in one study in Kentucky, one insecticide application in early June adequately protected dogwood trees from attack.

Larvae feed primarily in the phloem, which can girdle the trunk and main branches leading to decline and eventual death. Larvae do not enter the sapwood. Stress is thought to predispose flowering dogwood to attack by dogwood borer. In one study, dogwood borer infestations were highly associated with the presence of mechanical trunk wounds (e.g. injury...
from string trimmers and lawn mowers) and exposure to full sun. Dogwood is a native understory tree, and studies have shown that it is poorly adapted to droughty sites. Wild trees in the forest understory are rarely attacked.

**Peachtree borer**

Peachtree borer can be a severe pest of fruit and ornamental trees belonging to the genus *Prunus*, including cherry, peach, almond and plum. It is widely distributed throughout the United States. One prolonged generation occurs each year, with adults active from mid-

May through October, depending on location. In Ohio, the adult flight period extends from early June until the end of August. The long flight period suggests that at least two insecticide applications may be needed to protect susceptible plants.

Most infestations occur on the lower portion of the trunk within six inches of the ground, or even below ground level. Infestations can be devastating as larvae feed on the phloem, which can girdle the tree at ground level. *Prunus* spp. exude copious amounts of resin when the trunk is injured, and gum deposits mixed with

Research has shown that trunk injuries and exposure to full sun predispose dogwood to infestation by dogwood borer. This flowering dogwood tree planted at the edge of a golf course fairway suffers from both, and not surprisingly is severely infested with borers.

Commercially-available pheromone lures and traps provide an effective way of monitoring some clearwing borers to achieve the pin-point accuracy in timing insecticide applications needed for effective control.

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FLATHEAD BORERS AND
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LESSER PEACH TREE BORER, DOGWOOD TWIG BORER,
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frass is a good indication of borer infestation. Exotic fruit and ornamental trees are much more susceptible than native cherry, which are rarely attacked extensively in the wild.

**Lesser peachtree borer**

Lesser peachtree borer utilizes the same host plants as peachtree borer, which it closely resembles, although lesser peachtree borer is smaller. In contrast to peachtree borer, lesser peachtree borer colonizes the upper regions of the trunk and scaffold branches. Two generations per year have been reported, but in Ohio and Kentucky there is one sustained flight period that extends throughout the growing season (from early May through mid- September in Ohio). Hence, multiple insecticide applications may be necessary to provide adequate control, especially in nurseries. Infestations frequently occur at sites of mechanical injury, canker infections, or frost injury. Larvae feed on phloem tissue, and do not bore into the sapwood.

**Roundheaded borers**

Roundheaded borers are larvae of beetles (order: Coleoptera) belonging to the family known as longhorned beetles (Cerambycidae). Longhorned...
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beetles derive their common name from the very long antennae of adults. Many have striking coloration, which makes them favorites of collectors. The larvae are referred to as roundheaded borers because they appear round in cross section, in contrast to the flattened profile of flatheaded borers. The larvae of many species are large and plump, and easily collected from decaying logs, making them prized fish bait by many anglers.

Roundheaded borers are quite common, with more than 1,200 species in the United States. However, with a few notable exceptions, the vast majority are not serious pests of trees in urban forests and ornamental landscapes. Most species colonize only very decrepit or dead trees. In many cases, their presence in a declining tree suggests that little hope remains. They commonly infest freshly cut trees, and sometimes become a nuisance when they emerge from firewood brought into homes.

However, a few species of roundheaded borers have emerged recently as key pests of living trees in urban and natural forests, three of which will be discussed here. Perhaps the most notorious is the Asian longhorned beetle (Anoplophora glabripennis), which was accidentally introduced into Chicago and New York City where eradication efforts continue. An outbreak of the linden borer (Saperda vestita), which is a native species, is occurring in southeastern Wisconsin, where it is infesting large numbers of native and planted linden trees (Tilia spp.). In the forests of the Ozark and Ouachita Mountains, the red oak borer (Enaphalodes rufulus), another native species, currently is infesting trees in numbers never before observed.

After initially feeding on the phloem, many roundheaded borers enter the sapwood and heartwood, often creating large galleries oriented vertically with the grain of the wood. While excavation of the sapwood does interfere with movement of water in the trunk and branches, trees can tolerate a substantial amount of this type of damage before dieback occurs. As a result, infested trees can recover if a borer management program is initiated soon enough. Extensive tunneling within the trunk and branches can cause substantial structural weakening and subsequent breakage, especially during wind and ice storms. For this reason, trees heavily infested with roundheaded borers should be evaluated for their potential as hazard trees.

Asian longhorned beetle
Asian longhorned beetle was first
detected in Brooklyn in 1996, and Chicago in 1998, where it was most likely introduced from China via infested wood such as pallets or crating material. The potential for additional accidental introductions remains high, and any suspected new infestations should be reported immediately.

Since its discovery, tens of thousands of trees have been removed or treated with the systemic insecticide imidacloprid in an ongoing attempt to eradicate this pest. Larvae colonize many species of deciduous tree species, with maples favored in the United States. Other key hosts include elms, willows, poplars, and horsechestnut. Consequently, the impact on North American forests could be devastating if it is not contained and eradicated.

Adults emerge from large round holes (3/8 inch in diameter or larger) in late spring or early summer. Adults are large (an inch or more in length) and jet black with mottled white spots, and have long antennae (up to 2½ times the length of their body) with a distinctive pattern of alternating white and black bands. Females deposit eggs in oval pits that they excavate in the bark of young and mature trees alike. Adults often stay on the tree from which they emerge. Consequently, the same tree is often attacked repeatedly, which over several years can result in decline and death. Upon hatching, larvae enter the tree, where they bore deep into the wood. As they feed, they expel frass (combination of excrement and sawdust) from their entrance holes, which often accumulates in large quantities in branch crotches and on the ground below.

**Red oak borer**

Red oak borer is native throughout the forests of the eastern and central United States, where it colonizes most species of oak (*Quercus* spp.). Currently, an unprecedented outbreak is killing tens of thousands of oak trees (primarily red oak, *Q. rubra*) in the mountains of Arkansas, Oklahoma, and Missouri. The causes of the outbreak are complex and not well understood, but environmental stress is thought to play a role.

Larvae tunnel deep into the sapwood of host trees, which usually does not kill trees, but does cause trunk defects that substantially decreases the value of the wood as lumber. However, in the epidemic currently occurring in the south central United States, mature oaks are being overwhelmed by large numbers of insects (up to 1,500 larvae / tree), which are killing trees on a large scale.

Larvae take two years to complete development. Larvae first feed in the...
phloem and sapwood, moving into the heartwood where they construct more extensive galleries as they approach maturity. Initially, the infestation can be difficult to detect, and wet spots on the bark caused by sap seeping from entrance holes may be the most obvious sign. Frass expelled from the tree becomes increasingly obvious as larvae develop, and can accumulate in large quantities at the base of the trunk. Woodpeckers are important natural enemies, and woodpecker damage on the trunk may be another early sign of infestation.

Large (one inch or more in length), brown adults emerge from oval exit holes from early to mid-summer, and lay eggs on bark surfaces and crevices. The two-year life cycle is synchronized such that almost all adults emerge during odd-numbered years in the central United States. In the southern United States, some beetles emerge every year, but most emerge in odd-numbered years. A spectacular emergence event is anticipated this summer in the Ozark Mountains, where Dr. Fred Stephen (Department of Entomology, University of Arkansas) and his colleagues are researching the red oak borer epidemic. For more information, visit their website at www.uark.edu/~fstephen/new/ROB/ROB.htm.

**Linden borer**

Another unusual roundheaded borer outbreak is currently underway in southeastern Wisconsin, where Dr. R. Chris Williamson (Department of Entomology, University of Wisconsin) has observed several hundred to thousands of linden trees infested by linden borer. Host plants include native basswood (*Tilia americana*) and littleleaf linden (*T. cordata*), a European species. Linden borer is a native insect that occurs throughout the range of basswood. However, this insect has rarely been reported as a pest, which makes this outbreak all the more mysterious, although a similar outbreak was reported in Boston and Philadelphia in the mid-1800s.

The life cycle of linden borer is poorly understood, although sketchy reports suggest that larvae take three years to complete development, with adults present May through September. Larvae bore deep into wood, with attacks concentrated in the lower portion of the trunk, often at ground level. According to Williamson, damage is subtle at first, but the canopy thins as the infestation progresses. Severe infestations result in dieback and death. Structural weakening caused by larval galleries can cause trees to snap at the ground in high winds. Tina Johnson, a graduate student at the University of Wisconsin working with Dr. Williamson, is conducting research in the metropolitan Milwaukee area to clarify the biology and ecology of linden borer, as well as develop management strategies, which until now have not been investigated.

**Management of clearwing and roundheaded borers**

As with flatheaded borers, sound management programs for clearwing and roundheaded borers emphasize fundamental tenets of plant health care. Trees that are planted in sites to which they are not adapted will be stressed, making them prime candidates for borer attack. This is clearly the case with the clearwing species that infest ash and flowering dogwood, and is very likely true of the roundheaded borers, as well.

Insecticide applications may be necessary to protect stressed plants from borer attack. Chemical control of clearwing and roundheaded borers has traditionally emphasized protective bark sprays, the objective of which is to prevent newly hatched larvae from entering the tree. Dursban has been the industry standard for borer control, but can no longer be used in landscapes.
and urban forests, although it is still labeled for use in nurseries. In university trials, synthetic pyrethroids including permethrin (Astro) and bifenthrin (Talstar) have provided excellent control of clearwing borers. Preventive bark sprays must be timed precisely to be effective. Protective residues must be present on the bark before eggs hatch to prevent infestation, and therefore must be timed to coincide with adult emergence and oviposition. Thorough coverage of bark surfaces is also essential.

Pheromone traps provide a very effective tool for monitoring the adult activity of several important clearwing species, including lilac / ash, banded ash clearwing, peachtree, and lesser peachtree borers. Pheromone traps should be monitored at least once weekly, with preventive insecticide applications applied as soon as the first males are captured. Since the commercial lures are quite effective for these species, traps don't have to be placed in the immediate vicinity of susceptible plants, but can be placed in any convenient location. Unfortunately, the commercially available lures are not very attractive to dogwood and rhododendron borers, and may not provide reliable information about their flight activity.

Soil treatments and trunk injections of the systemic insecticide imidacloprid (Merit, Pointer, Imicide) offers an alternative to protective bark sprays for managing roundheaded borers, and has been used extensively in the Asian longhorned beetle eradication program. Treatments must be timed to allow the 4-6 weeks needed for uptake and distribution of the insecticide. However, imidacloprid is not labeled for use against clearwing borers because of its general lack of activity against Lepidoptera larvae (caterpillar stage of butterflies and moths).

In closing

Borers can be devastating pests of trees and shrubs in ornamental landscapes and urban forests. However, since many preferentially colonize stressed trees, they can be managed effectively with a good plant health care program that begins with landscape designs that specify plants adapted to the site. Stressed trees can be protected with insecticides until they regain their vigor, but knowledge of the life cycle of the borer is required to time preventive bark sprays accurately. This requires accurate identification of the species infesting the tree. Soil treatments and trunk injections of imidacloprid provide another option as a preventive treatment for flatheaded and roundheaded borers, but are not labeled for use against clearwing borers because they are generally not effective against Lepidoptera. Timing is not as critical as long as adequate time is allowed for uptake. Effective management of borers can be a challenge, but not an insurmountable one.

Dr. Daniel A. Herms is a professor in the Department of Entomology at The Ohio State University in Wooster, Ohio.
A Striking Danger in the Trees

By Rick Howland

Lightning. It’s dramatic and mysterious and above all it’s dangerous, especially to people in or near trees.

With more than 80 people killed each year in the United States (more than by tornadoes or hurricanes) and with Lightning Safety Awareness Week coming in June, Tree Care Industry magazine takes a look at this awe-inspiring natural phenomenon. Even the experts acknowledge that lightning is random and chaotic, and made more dangerous because it can’t be predicted.

For an arborist, the mere flash in the sky and distant rumble of thunder is a threat to life and limb – both yours and that of the trees you’re caring for. According to the National Weather Service, lightning can strike as far away as 10 miles from the storm source, even under a clear blue sky.

Scientists believe that lightning may have played a role in the evolution of life. In the beginning of human history, lightning was a magical fire in the sky which occasionally made fire on the ground. Virtually every ancient culture feared and revered lightning, ascribing it to a godly power. Scientists as far back as Socrates and as unlikely as Genghis Kahn were of the more advised opinion that lightning was a worldly, yet potent phenomenon.

And that’s pretty much still the story today.

In trying to explain lightning in very simple terms, even the National Weather Service and the National Oceanic and Atmospheric Administration confirm that it is a big spark of static electricity from the sky – albeit on a very large scale.

It was none other than Benjamin Franklin who, with his kite and key experiments, proved that lightning was, in fact, electricity. For all of its history, from Franklin’s time until now, much of what scientists know about lightning has been discovered only in the past few years.

The are 25 million lightning strikes recorded in the United States every year. And that’s just the ones that reach the ground. Most often associated with thunderstorms, lightning can be produced by snowstorms or hurricanes – even by an intense forest fire on a clear day. Scientists are now just beginning to explore the effects that sunspots and the earth’s own electromagnetic field have on lightning.

Lightning is caused by the buildup of static electricity in the air as molecules and materials in the sky move back and forth. Positively charged molecules rise and negative ones fall to the bottom of the cloud. Thunderstorms are the most typical source of lightning, as ice particles rise and sink and collide in a storm cell, causing electrical charges at altitudes of up to ten miles. As a storm moves over the ground, it gathers positively charged particles that travel along with it. These particles tend to gather and rise up taller objects like buildings, antennas and trees. Generally, it’s the negatively charged particles in the sky (at the bottom of a cloud) that reach out to the positively charged particles nearby and in a flash – lightning!

Sometimes positive particles at very high altitudes reach over the cloud, out and down to a negatively charged area miles and miles away. And sometimes the charge begins on the ground and reaches for the negative particles. More unpredictability.

This friction action is similar to the to and fro motion one can duplicate at home, resulting in a spark from static electricity. When it comes to lightning, however, the buildup of electrical energy is huge and the resultant “spark” can fire 100 million volts at 10,000 amps or more at temperatures in the 30,000 degree range. This is enough to do major damage, all within half a second.

About half of the flashes we see occur within a cloud (intra-cloud) where the static electricity originally builds up. Flashes
also can occur from cloud to cloud or cloud to air, but these are less frequent than intra-cloud or cloud-to-ground lightning, the most feared and therefore the most studied form. The less common ground-to-cloud strike happens when an electrical charge begins on the ground, or with a ground-based object, and zooms up to a cloud or even to another object (as Franklin proved with follow-up kite experiments in the mid-18th century.)

Most damaging and violent lightning strikes originate from cloud-bottom, with negatively charged particles moving to the ground or to tall, ground-based objects like trees or human beings. Fewer strikes come from positively charged cloud particles and ground-to-cloud charges are extremely rare.

Typically, the annual average ground strike is two to five hits per square kilometer over the United States, with Florida claiming the dubious distinction of recording 15 to 20 strikes over the same square kilometer of landmass.

Retired Professor Charles B. Moore of the New Mexico Institute of Mining and Technology is one of the world's foremost experts in lightning. He served as a liaison from the National Fire Protection Association to the ANSI A300 committee that wrote the lightning protection standard for the tree care industry.

"Trees, being tall objects, are preferential targets for lightning strikes," he says. "Even though someone isn't actually touching a tree when it's struck, right at the tree trunk there's a huge flow of electricity during the strike that travels along the surface of the earth. People under trees, even though they're not in contact, get killed due to this so-called step voltage that drops out of the tree and flows out on the surface of the earth."

He reminds us that the total energy of a lightning bolt can be equivalent to two tons of TNT, as it travels far from the strike point.

It's not the direct hit that always does the most damage. "The biggest problem is around the strike point and the current flow on the surface of the earth," Moore says. "Many of those injured could be saved if a trained person applied CPR."

Moore explains that in such a strike, the heart stops. It can be started again if the victim did not sustain a direct strike. For this reason (and others), Moore strongly suggests that all arborist crews have someone who is trained and certified in CPR.

Another phenomenon under recent study is the "bolt out of the blue." According to Moore, "We're finding that this is more common than appreciated. It's a discharge from a thunderstorm moving up and out from the top side, striking unexpectedly five miles or more away from storm."

Lightning, Moore reiterates, is one of the top two causes of meteorological deaths to humans each year, killing one or a few at a time. In addition to being very unpredictable, strikes are more dangerous and therefore lethal because they can come from a very "appreciable distance" from the storm.

Some of the casualties, Moore admits, can also be attributed to a casual attitude about this potentially deadly phenomenon. The odds of being struck by lightning in the United States are reported to be about one in 700,000. So who gets hurt and what exactly happens to them?
Statistics show that about one-third of all lightning injuries occur during work hours. Another third happen during recreational or sporting events, while the remaining third occur in a variety of ways, including injuries to people in buildings struck by lightning.

Statistics show that about 20 percent of people struck by lightning die. The others may suffer serious and long-term side effects.

Forensically, lightning slams the central nervous system, significantly affecting the brain. Survivors often face problems with fatigue and quick exhaustion, short-term memory, concentration, irritability and personality changes. Medical experts say people who are struck often appear to be 'slow' because they can no longer quickly process large amounts of information. They may seem forgetful because they've lost brain processing power or "space," making shifts of concentration from one thing to another more difficult. Survivors also complain of headaches, ringing in the ears, dizziness, nausea and symptoms associated with a concussion. Sleep may be disrupted and in some cases seizures may occur. Chronic pain is also common.

While there are treatments, prevention is the best "cure." Experts warn that if you can hear thunder, you're in danger, as lightning can strike 10 miles from where the rain falls.

General safety rules from the National Weather Service are:

- Don't wait for the rain. Stop what you're doing and seek shelter in a completely enclosed structure. Alternatively, seek a hard-topped, vehicle.
- Seek the lowest point - below the tree line in higher elevations.
- Watch for fast darkening of the skies and increasing winds. They may be signs of an approaching or developing thunderstorm.
- Listen for thunder, and head for shelter when you hear it.
- If your hair stands up, you're electrostatically charged and a strike point candidate. Seek shelter.
- If stuck outside and there is no shelter, crouch in the open at least twice the distance from a tree as it is tall.
- Avoid crowds, metal and water.
- If someone is struck, call for emergency response at once and begin CPR if you are trained. People struck carry no latent electrical charge. Check for burns and broken bones.

When discussing lightning, arborists generally focus on installing lightning protection systems in trees. Trees that get the lightning protection treatment typically are valuable, "prominent" specimens found at golf courses, historical sites, city parks and zoos or on large estates - anywhere people place a high value on trees that are likely targets of lightning. Jan Yoder, sales and marketing manager for Independent Protection Company, recommends that tree care professionals looking to protect specimen trees from lightning reference the new ANSI A300 standard on lightning protection, which was adopted in the fall of 2002.

Installing lightning protection systems can protect trees from lightning strikes. Understanding the science of lightning, its dangers, and how to work safely can protect arborists in the field. Lightning is dangerous. Learn why, and how to avoid it.
YOU can make a difference and have fun at the same time!

For the past 28 years, the Tree Research & Education Endowment Fund has been supporting research on trees and tree care. Two ways that you can make a difference—that is, support further tree research—is to participate in the upcoming Annual Golf Outing and/or Gala Auction. There's nothing wrong with having a good time while helping further arboricultural practices and tree research. Hope to see you there.

9th Annual Golf Outing

Heading into its ninth year, and Asplundh's 75th Anniversary, the Annual Golf Outing has generated over $180,000 for the TREE Fund. During that time, over $1 million in tree care research grants have been funded.

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For information on how to participate in, donate to, or sponsor either of these events, contact John Geissal, Director of Development, TREE Fund, PO Box 3188, Champaign, IL 61826 Phone: (217) 239-7070, Fax: (217) 355-9516, E-mail: treefund@treefund.org
What's New in the Rope Industry?

By Phillip Meeks

Rope is just rope ... if you’re installing a tire swing ... hanging a clothesline ... or galloping around the West in search of an outlaw. As an arborist, on the other hand, you know that all ropes are not created equal. Only participants in the sport of rock climbing might understand the nuances among rope products as much as arborists.

Over the last couple of years, highly specialized products have come onto the scene, products that could ultimately mean safer, more inexpensive and lighter operations. Today, rope manufacturers are recognizing the specific needs and wants of arborists, and ropes are being greatly improved.

New stuff on the street

Several rope companies recently released products that take heat and abrasion resistance to the next level. This is being accomplished by manufacturers’ outside-the-box thinking, explains Howard Wright, Jr., climbing market manager for New England Ropes. For instance, New England Ropes is field-testing a high-temperature rope for friction hitches that has the high-temp material on the outside. The reason, he says, that this material has traditionally been inside the rope is simply because the design trickled down from marine halyards, where low stretch was important. Improvements didn’t happen until folks began asking “why.”

Doris Pierce, product manager for Samson Rope Technologies, agrees that some of the strongest voices she has heard in the arborist field are demanding this very high heat and abrasion resistance, and in Samson’s ArborMaster product line, such properties are highlighted. The ArborMaster line, a series of 16-strand climbing lines that need no milking prior to use, was introduced at the beginning of this year.

Jamie Goddard of Yale Cordage explains that his company’s focus is in three areas of development, including abrasion resistance: “Currently, our efforts are aimed in increasing a line’s visibility in a tree, better lubricants on fiber to increase the flex fatigue life of the rope and line coatings such as Maxijacket, which greatly reduce abrasion damage.”

Yale’s newest blend, Polydyne, is said to combine the desirable characteristics of nylon and polyester in a single structure. This gives it better abrasion resistance and controlled elongation, Goddard says.

Still another new product designed with heat and abrasion in mind is a 5/16-inch Prusik line introduced in March 2003 by Pelican Rope Works.

Rod Woods, executive vice president at Pelican, notes that “this cord is virtually fireproof and stronger than steel, assuring greater longevity and an added safety factor.”

Beyond ropes with a longer lifespan and greater durability, the demands for lighter, stronger products that reduce climber fatigue has remained steady. Pierce relates that Samson is responding by turning to fibers and blends of fibers that were cost-prohibitive in the past. The use of carbon fibers and fiberglass fibers, for example, is becoming more feasible.

Yale is using new fibers like PBO, Vectra, Spectra and Dyneema, which, according to Goddard, have high strength-to-weight ratios and behave simi-
lar to wire rope in terms of stretch. Other innovations revolve around spliceability. "We have focused on our VariLay splicing technique that allows us to splice what has previously been non-spliceable 12-strand rope," says Goddard. "In a nutshell, the VariLay process allows us to pre-program a braid to produce a spliceable area in an otherwise very tight braid. An infinitely adjustable computerized transmission is the key. This technology was not available just a couple of years ago."

New England Ropes introduced two new climbing ropes in 2002: Safety Pro (a 12-strand) and The Fly. Concerning the former, Wright notes that "this was designed specifically to meet the needs of the traditional, budget-conscious climber. Basically, it's an unspliceable rope, but it does have a core in it. ... It was tailor-made to give those guys everything they wanted and remove those additional features they didn't need."

"I always felt that, if you were on a budget, you shouldn't have to pay that additional cost to have a rope you didn't like to climb on," insists Wright. "You shouldn't be penalized for it. Just because you're not paying top dollar shouldn't mean that you have a rope that's not going to perform for you."

The other new New England Rope release, The Fly, is what Wright describes as "the first true arborist 11 millimeter." This 24-strand product is intended to make a wider range of hardware options available to arborists.

Gaps that need closing

Until recently, Wright claims that there haven't been any major developments in arborist climbing ropes since 1978, when the 16-strands were introduced. This fact, he says, was leaving two types of professionals hanging, so to speak.

"We noticed that the 16-strand ropes were doing a great job of covering the bulk of the people, but the populations at either end really weren't being serviced," he explains. Those opposite-ends-of-the-spectrum folks he refers to are either ones to whom cost is an important issue (new or budget climbers, large tree care companies and traditional climbers relying..."
largely on knots), or what he calls the cutting-edge guys.

A lot of hardware was available to climbers looking to expand their horizons, but with the standard being locked into that half inch they were limited in the hardware they could use. “Or if there were 11 millimeter ropes,” Wright says, “they were unspliceable.”

The Safety Pro and The Fly from New England Ropes were brought into the marketplace specifically to fill these neglected niches. To close the gaps in the marketplace, rope manufacturers have had to focus their designs more precisely on the needs of the end user. The days of a-few-sizes-fit-all are over. One potential challenge that will arise out of this, though, is that practitioners will need to work harder to stay abreast of current product features. They’ll need to ensure that their companies are buying the ropes with the features they need and not paying extra for unnecessary bells and whistles. Take the case of blended materials, for instance.

“Blended fiber ropes will give more tensile strength in any given diameter, and these hold great promise for future arborist applications,” explains Goddard. “The arborist will need a complete education, as these types of ropes won’t accept shock loads gracefully. In controlled work, however, they offer great bang for the buck.”

Why now?

Present-day rope manufacturers have reached a point where they can push their own ideas through, improvising their own technologies and techniques, rather than just using what’s easily available. “As rope manufacturers, one of the things that was really motivating me [to innovate] was that I felt that a lot of what we were doing was offering hand-me-down technology,” says Wright. “For the arborist market, it was as if we were giving them big brother’s old clothes.”

What’s fueling these late-breaking developments in the rope industry? Why are the changes taking place now as opposed to, say, ten years ago? The most direct answer is that the arborist market today is more informed than it has ever been.

“The industry is becoming more demanding as the knowledge base grows and conditions change,” claims Pierce. “Arborists now have to complete jobs faster, and they’ve got to make their equipment last longer. That is contributing to these changes in the industry.”

“Arborists now visit our trade show displays and ask very specific questions about fibers and constructions,” agrees Goddard, “so the timing for innovation could not be better.”

A maturing market, too, is playing a role as different end users become more defined. “As things are starting to meld together, people are starting to use different techniques,” explains Wright. “As they’re using different techniques, and as the market matures, and as the industry matures, the end users are looking for more specific things out of the products.”

To maximize returns on rope and rope products, arborists must shop wisely, seeking out those ropes that will perform best for a company’s unique situation. Consider the hardware you’ll be using, whether or not you’ll need to splice, the skill level of your tree climbers, the kinds of tasks you’ll be performing on a daily basis, and other such factors.

The rope industry is quickly evolving, and has been spurred by the voices of professionals like you. As you’ve asked questions at trade shows and shared your wishes with arborist supply dealers, someone, somewhere, was taking notes.
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TREE CARE INDUSTRY - MAY 2003
Articulating loaders are gaining in popularity within the tree care industry. Their high horsepower, heavy lifting capacity, and reasonable price—when that price is spread out over a few years—have quickly allowed them to gain market share.

The initial temptation is to compare articulating loaders to skid steers, and inevitably this article will as well, but articulating loaders are in their own category and the representatives of these machines want to stress that point.

Articulating loaders turn by oscillating left or right at a pivot point in the middle of the machine. They do not turn with the front wheels. This allows articulating loaders to cut tight corners while preventing damage to most ground surfaces.

“Our machines oscillate 40 degrees, 20 degrees in each direction,” relates Clark Youngquist, sales manager for NMC-WOLLARD, the manufacturer of Swinger Loaders, in Eau Claire, Wis. “You can encircle a tree with them.”

The Case 121 D has an 80-degree oscillating turn.

The main advantages

Maneuverability with low impact is caused when it comes to articulating loaders. When tires roll across turf they can tear the lawn when turning due to tire skidding—or simply from the turning motion itself. Since articulating loaders turn with the frame and not the tires, they will not tear the turf as readily. In fact, according to Youngquist, a lawn has to be really wet and soft before any tearing might occur. Chances are if a lawn were that wet, you would avoid driving on it anyway.

The other two main advantages that articulating loaders bring to tree services are high horsepower and a transmission that allows for exact settings of hydraulic flow. The hydraulic flow is important because different attachments require different amounts of hydraulic pressure. For instance, a grapple takes more pressure than a bucket. The articulating loader allows the user to set the pressure based on the attachment used. “When you have higher flow hydraulics with the horsepower to back it up, you can maximize the efficiency of your attachments,” notes Youngquist.

Having a machine with high horsepower speaks for itself. The Swinger 2000 comes with a 65 hp engine, the Swinger 3000 comes with an 80 hp engine, and the Versadyne 3K comes with a Cummins 85 hp engine. By comparison, most skid steers come with an engine in the mid-40’s for horsepower. The reason for the bigger engine goes back to the fact that loaders are in a different family from skid steers. The articulating loader market typically starts at 60 hp; so in order to be competitive in that family of machines, the articulating loaders used by arborists need to have a similar engine size. The Case 121D has a slightly smaller engine, 57 hp, but also has an inching pedal feature. According to Case, the “inching pedal will reduce travel speed with the engine at full power, providing increased hydraulic power to the loader.”
Ease of use, high ground clearance, smooth ride, and quieter operation are other reasons for considering an articulating loader.

Ease of use is vital because an untrained person can learn to drive the machine proficiently in one morning. The Swinger utilizes conventional technology (for instance, a steering wheel instead of a joystick), allowing for the quick learning curve while keeping the price down. There are less “bells and whistles” on a Swinger than many articulating loaders, but often these features are unnecessary for most applications, so a simple machine is fine. If a tree service wants a more technologically advanced machine, try the Versadyne 3K.

Articulating machines give a smooth ride that is easier on the ears and allow for greater sight lines. Skid steers, by their very nature, have a bumpy ride, which adds to operator fatigue. Loaders, with their longer wheelbase and continuously spinning tires, are smoother. You also ride up much higher, which allows for better sightlines and gets your ears further away from the engine. In addition, your body is not locked into a tight compartment like skid steers, which are inherently noisy and have reduced sightlines.

“The visibility is great because you basically sit on a platform,” confirms Ron Scholz, an operator of a Swinger loader in Chesterton, Ind. “It’s just quieter and smoother. Skid steers are bumpy, and someone needs to drive it a week or more to be good at it.”

Scholz also points out another advantage—machinery maintenance. Skid steers have a more compact de-
A higher machine will have more difficulty getting into tight places with low branches, and a higher machine can flip more easily on a side hill. It’s a tradeoff, but as long as the operator understands the limitations, it is not difficult to run the loader in a safe, efficient manner.

Another factor tree services must consider is weight. The Swinger 2000 weighs 7,500 pounds and the 3000 weighs 10,700 pounds. This is more than most skid steers and would flatten the springs on a half-ton pick-up. The trailer also needs to be heavy-duty enough to handle the extra weight. This might seem obvious, but it’s not unusual for a tree care company to own a good mid-size truck and medium-weight trailer. If that same company sells the skid steer and buys a heavier machine, they will need to upgrade both truck and trailer. Most dealers are aware of this, and will try to “turn-key” your set-up by getting a trailer appropriate to the loader and financing the whole deal.

The good news is you won’t have to sell your attachments. Several years ago the patents on the universal hookup for Bobcat attachments expired. Now, everyone makes the same hookup for the frame and hoses. What attaches to a Bobcat, will fit on a Swinger, Case, Kubota, etc.

The final advantage of articulating loaders is their ground speed. A skid steer goes down the road at approximately 7 mph, but loaders can travel at 12 mph.

So what does one of these machines cost? Obviously they cost more than a skid steer. They are heavier, have more lifting capacity, have bigger engines, can travel faster, and have a longer lifespan. They have to cost more, but when you factor in the reduced cost for repairing lawns, the fact that they can lift more – getting jobs done faster, with less wear and tear on your body – the articulating loaders become reasonable.

Swingers list at about $36,000, but typically retail is in the low 30’s. A Bobcat 773 right now costs about $26,000. That’s about a $7,000 difference for a machine that won’t tear the grass, is faster, smoother and easier to drive.

There are many reasons why quality tree care companies are buying articulating loaders. However, don’t go throwing away all your skid steers. These machines are in a different family. Skid steers still cannot be beat for turning radius. Their lower initial cost makes the hurdle to buying one easier. If turf damage is not a problem, nothing beats them for zipping in and out of a job site as you quickly load logs into a truck or brush into a chipper. They still maneuver better in a tight location than any other machine.

Articulating loaders are great tools for tree care companies that can handle a little more initial investment. Jobs will get done quicker and safer; and the crew will be happier driving a comfortable machine.

Michael Roche is the owner of Stowe Tree & Landscape in Stowe,VT.
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Recycling Urban Tree Waste

I'm just an arborist, like many of you and this story is about what happens when somebody studies and becomes educated and trained as a scientist, and then becomes an arborist. How did I come to become an arborist? That is an entirely different story. It's my life’s passion, and I have been a tree care professional now for 10 years. This mushroom story started five years ago.

WITH GOURMET MUSHROOMS

By Jim Clark

“What?” you say. “Using fungus to return wood to soil, and being able to reap the harvest along the way?”

It almost sounds like planting a fungal “seed,” kicking back and letting Mother Nature do all the rest. Well fellow arborists, that’s pretty much how it works. If you avoid setting lofty goals of vast wealth and mushroom empires, you could really have a lot of fun doing this yourselves. It’s very easy.

I had this recurring, daily tree care issue, as all arborists do, in that I needed to dispose of my wood waste. Fortunately, the landfill was just far enough away that it was very inconvenient to go there. I had to get creative. I wanted to recycle all of the wood material, but I didn’t know how. Then I thought to myself, “I’m a scientist. It’s my job to figure this out.”

I knew the relationship between fungus and wood; basically that fungus eats dead wood and is the reason why we don’t have billions of years of trees all stacked up on one another. Fungus has a job, like all of us. Fungus converts wood (cellulose) back to soil.

So then I thought, woodchips – how long would it take to convert a pile of chips into a pile of soil? And so began my goal to see if I could set the world record. Since there was no existing world record for turning woodchips into dirt, I now own the record at five weeks.

I began to imagine other ways to turn fungus loose on dead tree parts, and cultivate edible mushrooms, on my way to making loamy dirt. I wanted to turn a giant log into a 1,000-pound “garden” that could put forth mushrooms for years. I envisioned stacks of fruiting logs, truckloads of spawn chips – mushroom carpets that could put out seasonal mushroom flushes and give the extended benefit of rich and plentiful organic garden soil.

That desire to recycle 100 percent of my tree waste took root, and grew into a full-blown life’s mission. For the past five years I have recycled every bit of every single tree job from my tree service, 100 percent. I have several dozen different ways in which I utilize my urban waste wood; this mushroom facet being just one of them. There are many, many means of recycling new life into trash wood. This is my mission, my career achievement for Mother Earth, and I’m very proud of it. Plus, I like to cook and eat super-fresh gourmet mushrooms.
In this article I only have so much room to share my secrets, so I’ll deliver just the highlights – the basics you need to know to get started introducing fungus to wood and to enjoy some fascinating and rewarding experiences. These methods are easy to understand, so let’s get started.

**Introducing spores to fresh wood**

This brings us to our first mushroom term; *inoculation* – when you deliberately introduce fungus to fresh wood, via spores or spawn; to inoculate the limb, log, stump or trunk section.

The next (and last) term is *mycelium* (pronounced my-see-lee-um). This is the white filament-like stuff that you’ve all seen feeding and growing on moist, woody surfaces. Mycelium is what happens when a spore germinates. Fungus spends most of its life in this stage, running across and through the wood, “digesting” it with powerful enzymes, softening the wood and breaking it down while growing and feeding itself. When the mycelium has increased itself to a substantial network and has colonized the wood on the inside, the “mycelial body” will put forth mushrooms on the surface of the wood, usually after rainfall and a temperature drop.

What are spores? I am asked this question quite often, so here’s the brief:

Spores are the “seed” of a mushroom, produced by the tens of thousands from the underside of a mushroom’s cap. They’re tiny, microscopic things and it takes only 24 hours to make your sporeprint from fresh mushroom caps (instructions coming soon). You have to find and buy fresh, quality mushrooms to do this. That’s usually the hard part. Oyster mushrooms and shiitake are found in many supermarkets. Using spores is an unconventional way to grow mushrooms on logs, but it does work well. It’s pretty direct and inexpensive for the give-it-a-try guy.

**Making a “sporeprint” on a paper bag with fresh mushrooms**

1 & 2) Cut up the paper bag into bi-folded lengths and lay flat.
3) Remove mushroom stems with scissors.
4) Draw a circle onto the paper, a bit smaller around than the limb diameter you’ll be inoculating. (I trace a compact disk.) Place the caps, gills down, within those circles. Leave the mushroom caps on the paper at least one full day, but no more than two. You will see the spores on the folded bag lengths. They look like fine, white spray paint.

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You can now fold the paper with the spores facing toward each other for storage until it is time to inoculate your limb. Use paper clips to keep the folds closed. Store these where it is cool and dry. You can now cook those mushroom caps into your favorite stir-fry.

The handsaw technique

Here is a unique method I've never seen performed anywhere else. I'm pretty sure I invented it. I know for a fact it works, and it's easy. All you need is a handsaw and a pair of scissors. Use a fresh limb no bigger around than your leg, and about as long as you are tall. The limb needs to have been alive and healthy before it was cut off - fresh, in other words. Oyster mushrooms will grow on any kind of hardwood. Shiitake prefers oak.

Follow the procedure outlined in the photos. Secure your tree limb. In these photos I am using the Silky 240 mm root saw. Cut exactly half way through the log. Use the blade as a length guide for where to make the second, third and fourth cuts. I recommend at least four, but you can inoculate a hundred cuts if you have enough sporeprints and enthusiasm.

Turn your Silky saw upside down. Fold the sporeprint circle around the saw so that the spores now face outward. Push the folded paper and saw into the kerf. The spores will smear and come into direct contact with each fresh-cut surface of the wood. Carefully pull the saw out, leaving the folded spore paper inside the cut. Use scissors to trim off the excess paper, flush with the surface of the wood. Insert a few toothpicks onto the kerf to hold the paper in place and lay your log in a place where it will always be in the shade. You are done.

Wasn’t that easy? It will be at least several weeks, or more, for the mycelium to colonize the log. Check your spawned log occasionally after a long day of rain to see if it has fruited. In drought areas, water your log occasionally or even dig a trench in which to place the log while it incubates. Most mushrooms prefer a cool and moist environment, and contrary to popular belief, they don’t have to be kept in the dark, just the shade.

Using spawn to inoculate limbs less than 6 inches in diameter

I have about 15 ways to inoculate small limbs, but I’m going to share several of the easiest and most productive. You will have to obtain either sawdust spawn or plug spawn by mail order.

What is spawn? Spawn is made in a sterile laboratory where spores are germinated on nutrient agar in a Petri dish (or a mushroom culture room can be cloned.) From that tiny bit of mushroom tissue, or spore, mycelium develops. A prime section of that is then taken out, and put onto a fresh, sterile Petri dish (subcultured), and allowed to continue its growth alone, pure and isolated from all other members of the microscopic world. This is now known as a “pure culture” and is later introduced onto sterilized sawdust and mixed in. The white mycelium starts to grow through the sawdust, digesting and growing atop the sawdust particles in the container. When the sawdust is permeated with white, it is fully “colonized” and is then called spawn.

“A note about portabellas, criminis, and white button mushrooms: Don’t even consider trying to grow these. These supermarket mushrooms are easily available, and pretty cheap, too. Also, they grow on compost, not on hardwoods.”
The lab scientist can use this sawdust spawn, introduce it to more sterilized wood, or expand it. Materials that can be used for expansion include common woodworking dowels, jointer biscuits or “Kit Bags” of sterilized sawdust mixed with woodchips. These give you different options as to how you can introduce that white mycelium to the fresh-cut wood.

**Using sawdust spawn to inoculate small limbs**

This is the classic _wedge_ method. It is easy and straightforward. As shown in the pictures, use your saw to cut _V_-wedges out of the limb. Pack sawdust spawn evenly onto the fresh-cut surfaces. Press the wedge section back in place to compact the spawn, secure it with two screws or nails (I recommend pre-drilling two pilot holes for this), and once secured, cover over the exposed wood / spawn surface with melted wax. You can melt paraffin or cheese wax in a coffee can and paint it on with a brush, or use a turkey baster to squirt it on.

**Using sawdust spawn to inoculate a split log**

If you can split a log in half lengthwise (the longer, the better), just do the same as above. Spread the sawdust spawn across the fresh split surface of the wood. Assemble the two pieces back and secure them together with screws or nails. Put it in full shade where it will not be disturbed.

**Using plug spawn for limbs and logs**

This is the most conventional way to introduce the fungus to fresh wood and it’s quite straightforward, simple and low-tech. You can purchase your shiitake plug spawn from one of the references listed at the end of this article. Then, all you need is a drill, a 5/16-inch drill bit, a hammer and some melted wax.
Drill holes into the limb about 1-1/4 inches deep and space them 6 inches apart. Use a depth collar on your drill bit, or wrap it at 1-1/4 inches with tape. Drive the 1-inch dowels into the holes using a hammer. Pound them just below the surface of the bark. Once finished, put a small amount of melted wax (cheese wax works best) over each one to seal in moisture. Place the limb to incubate in full shade and forget about it for at least a month. Look for mushrooms in the spring and fall, generally after it rains.

Growing mushrooms on stumps using plug spawn

Shiitake plug spawns are available from one of the references listed at the end of this article. Pull together a drill, a 5/16-inch diameter drill bit, a hammer and some melted wax. Drill 1-1/4 inches deep holes all over the sides of the stump, evenly spaced, but not on the top surface. Pound the spawn plugs into the holes and seal over all of them with a little daub of melted wax. Spread melted wax over the top surface of the stump to prevent drying out. Keep shaded.

It doesn’t have to be a stump. Here we use a fat section of an oak trunk. Dig a shallow (6 inches deep), flat-bottomed hole in the shade. Place a layer of cardboard in the hole. Sprinkle the excess sawdust spawn from your plug spawn bag on the top of the cardboard. Place your trunk section on top of the cardboard and bury the lower perimeter of the wood. Drill 100 evenly spaced 1-1/4-inch deep holes and whack your 100 1-inch long dowels into them. Seal every one with melted wax. Seal the top surface of the “stump” with melted wax. Be patient and let Mother Nature do her thing. If I had a back woodlot, this is how I would grow gourmet mushrooms.
A crude method to grow oyster mushrooms on a stump

This is really effective and involves only a shovel and an axe. You'll need to buy some fresh oyster mushrooms from the supermarket. The idea is to use these fresh mushrooms on the fresh stump of a live tree that has recently been taken down (just about any species of hardwood will work, but maple works best). Dig the dirt away from the base, 6 inches deep. Using an axe, chop the stump all around the soil line. Take about a dozen fresh oyster mushrooms, remove the stems, and lay them gills-down in the chop cuts. Try to get the gills to touch the freshly exposed surface of the wood. Let sit for two hours, leave the caps there, and then cover back over with dirt. This always works with oyster mushrooms, and they should fruit off of the base at the stump-soil line. You could expect years of fruiting from this.

Compared to the science of commercial myciculture, these are kind of shoot-from-the-hip methods (mildly crude, but world-class techniques, nonetheless).

A Note on morels: Black morels (Morchella angusticeps) and yellow morels (Morchella esculenta) can be grown indoors and out. I guarantee it is not as easy as you would like, but the fact remains that after hundreds of years of efforts from all over the globe, it can be done.

Indoor cultivation of yellows can be visited at www.mushroompeople.com. Outdoor cultivation of the black morel can be seen at www.treeguy.info.

I hope this article gave you some ideas and described how easy it really is to establish personal gourmet mushroom gardens.

Stay tuned for Part Two:
- Growing mushrooms off spawn blocks.
- Using the wood splitter to produce firewood gardens.
- Using a band saw mill to inoculate, "spalt" and fruit big Grade-B saw logs.
- Using the chain saw to inoculate logs.
- Spawning logs using the Frisbee technique.
- Mushroom mulch gardens.
- Using your stump grinder to make a mushroom garden.

Sources for more information, or for buying spawn and mycology tools:
- www.treeguy.info (Where these stories can be viewed in greater detail and with a lot more pictures.)
- www.mushroompeople.com (All the mushroom information than you could possibly imagine, videos, books and supplies. They have all the necessary spawn and spawning supplies. They are the masters of aiding you in learning more, hot linking you from their site to the entire mushroom world.)

Growing Gourmet and Medicinal Mushrooms, by Paul Stamets, October 2000, Ten Speed Press (Amazing book; this is the definitive text for cultivating gourmet, edible mushrooms.)

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Standards of Best Practice for Arboricultural Crane Operations

By Paul Elcoat

There has been much written and discussed concerning the integration of cranes into arboricultural operations recently. Many people have realized that the use of cranes can significantly contribute to safe and efficient work practices during takedowns or work performed on dangerous trees.

As you read this article, you may reflect upon your own work practices and experience and undoubtedly you will have an opinion about how well you, your crew, or your company works with cranes. Perhaps you think that you and your practice are perfectly safe and that yes, OK, things have not gone quite as planned once or twice but generally you are pretty good. These were my thoughts during the early summer of 2002. We were contracted to remove a 100 foot (30m) tall London plane from Russell Square, a historical open space in the centre of London. As usual during such a high-profile task, I was to run the job with the assistance of a colleague, Alistair Farquharson, and two three-person crews, each equipped with chip truck and chipper. We would use a 55 ton crane to lift pieces to each crew alternatively. This system would reduce delay and allow us to complete the whole tree and clean up in our seven hour traffic closure window.

We tend to hire cranes in the UK, and it is always desirable to use the same crane company—and indeed the same one or two operators—so that they almost become part of the crew as working relationships develop. During the Russell Square project, though, because of staff holiday arrangements, we had no choice but to use an operator we had never met before. With our usual operators, the communication...
method is well understood and the operators have a feel for the tendencies of tree sections as opposed to stacks of building materials. Clearly, the new operator represented a potential hazard, but conversation with him prior to the work reassured me that he was competent. We made a start and things got going. I asked the operator his opinion on a particular branch section. Yes, he reported, it was quite a large section but it would be well within the capabilities of his crane. The climber made the cuts and I gave the hand signal to the driver to lift slowly. The crane engine took up the pressure and immediately the overload warning buzzer sounded loudly from the cab. Luckily the factor of safety built into the crane was adequate, and with some very careful maneuvering, the driver was able to jib up and lay the piece safely on the ground.

At the sound of the buzzer, my confidence in my own expertise vanished. We got away with it by pure luck. Had the piece been any bigger, would the operator still have agreed to lift it? Would the crane have coped or would the worst have happened – an overturned crane in the centre of London and possibly a dead climber?

The event took the shine from an otherwise polished job and during discussion later in the day, Alistair and I decided to stop our use of cranes until we were absolutely sure that we were able to completely prove our own competence to run such work.

I made several enquiries to various agencies both in the UK and in the U.S. While there is much that can be read on the use of cranes during construction, there was little available to guide arborists in our work. Following conversations with the Health and Safety Executive (HSE), the National Proficiency Tests Council (NPTC), and several other organisations, we decided to put together a team in order to develop guidance for arborists on how to integrate the use of cranes into arboricultural operations.

A working group was put together comprised of industry practitioners,
safety experts, and qualification development experts from both the UK and the U.S. We would work through the use of cranes from initial hire right through to the end of the job. Although both countries had differing legislation and guidance, good advice could be drawn together and that guidance would be applicable to all arborists whether British or American.

We decided to hold a three-day standard setting event in Danvers, Mass., just outside Boston. A close friend of ours, Chris Cloutman, owner of Dodge Tree Service, Inc., specializes in the use of cranes and work platforms for takedown operations. He agreed to set up a demonstration that the working party could observe and use as a benchmark for the development of the guidelines. Salcey Arborcare and Dodge Tree Service have had a reciprocal training partnership for several years, and Chris had often commented about the lack of guidance and training for arborists.

I produced an agenda of items for discussion, which included points of bad practice as well as good practice, as I felt that careful consideration of both issues would be a valuable.

The UK delegates arrived in Boston on Friday, June 28, 2002, ready for the demonstration which Chris had arranged to start the next day at 9 a.m.

The demonstration was made even better by the beautiful sunshine and tropical temperature. As the old saying goes, “the sun shines on the righteous.” Chris operated the crane and Charlie Williams was the climber. Bob Gillespie and Tom Rezza organized the systems on the ground.

The Dodge crew dismantled a large oak using a combination of crane and climber, and crane and platform. They stressed that the work had been conducted as they would normally do it; they had not just put on a show of best practice for the demonstration. We needed to see reality if we were to set standards of best practice that would be credible for the industry.

The atmosphere during the takedown was very exciting and a lot of networking went on. We took the opportunity to pick the brains of Richard Fazzio and Al Loftin from OSHA, who have had many years of experience in crane safety and accident investigation, and took a keen interest in the explanations of work systems. The mood was definitely about people and agencies coming together with a common desire to improve the safety of our industry.

After the tree was reduced to a stump and we had all eaten a splendid lunch back at the Dodge yard, we reconvened in the conference room of the Sheraton Ferncroft Hotel to get down to business.
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I have been very happy with Zenith blades, they are reasonably priced, with excellent quality and prompt delivery. I have used other blades, but none as good as Zenith.

Mike Hrycak — Green Mansion Tree
Syosset, New York

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Gary Erwin — Erwin Tree Care
Hobart, Indiana

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<table>
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<th>Vermeer</th>
<th>Model Number</th>
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<td>$11.50</td>
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and discuss the minute details of crane integration. Utilizing the experience of everyone concerned, we hoped to come up with some best practice guidance that could be applied in the field to help make arboricultural work with cranes more predictable, better controlled, safer, and more efficient.

For the remainder of Saturday afternoon and then all day on Sunday, we shared stories, argued, discussed and argued some more until we had exhausted the subject of using cranes. Some of the major points discussed were:

Who needs guidance?
- Minimum qualifications for all operators.
- Existing qualifications relevant or not?

The crane
- Specifying the crane.
- Tendency to under crane a job.
- Free running (freefall) gears on crane.
- Powered load lowering.
- Fail safe systems.
- Proof of inspection of equipment.
- Type of hook.
- Visibility.
- Prevention of access to the danger zone.
- Using two cranes.
- Repositioning where necessary.

Risk assessment
- Specific work instructions/method statement.
- Crew briefing.
- Communication on site.
- Division of responsibility.
- Emergency planning.
- Meteorological conditions.
- Proximity hazards.

Placing the crane
- Crane stability - underground services.
- Outriggers positioned so as not to cause damage.
- Crane stability - underground services.
- Outriggers positioned so as not to cause damage.

Worker transport
- Alternative methods and justification of selected method by risk assessment.
- Worker transport - advantages, disadvantages and concerns.
- Self rescue.
- Attachment to hook.
- Type of harness.
- CE marking of carrier equipment (for Europe).
- Fall arrest or work positioning.
- Working from the hook.
- Rope administration.
- Risk of unsafe motion.
- Using two cranes.

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- Lift planning and organization.
- Loading — static, swinging and dynamic.
- Sling (etc) configuration.

- Effect of pre-loading on terminal equipment.
- Lifting/lowering speeds.
- Working beneath the load.

Obviously, there are some very controversial points listed above. For full details of the results of the discussion, you can check out our Web site at www.salcey.co.uk, where I will put the guidance and some of our own risk assessment and method planning information. Please feel free to use it.

An interesting point to note is that when hiring or using a crane in any situation, you should employ what is known as a Crane Supervisor or sometimes referred to as the Appointed Person. The Crane Supervisor is responsible for the site and work procedure, and acts as the controller of the entire operation. British Standard 7121 states that:

"The Crane Supervisor should direct and supervise the lifting operations, ensuring that these are carried out in accordance with the method statement. The Crane Supervisor should be competent and suitably trained and should have sufficient experience to carry out all relevant duties. The Crane Supervisor should have sufficient authority to stop the lifting operation if the supervisor considers it dangerous to proceed."

The Crane Supervisor forms the crucial link between all other members of the lifting team and, as stated above, should be qualified and experienced in the use of cranes. Clearly the Supervisor should also be a qualified and experienced arborist.

Had I been a qualified Crane Supervisor during our London takedown, the dangerous situation would not have occurred. Knowing what I know now as a qualified Crane Supervisor, I can report with confidence that the warning buzzer would not have sounded that day. I can also honestly say that looking back, what I thought to be safe practice and site organization, was really an accident waiting to happen.

By far the most argued issue was the use of the crane to transport a climber by attaching the climbing system to the ball of the crane. Let me clearly state that the HSE, OSHA representatives we worked with, and everyone else on the working group recognize that this practice is potentially very dangerous. In fact, under most circumstances, OSHA would issue citations for this practice.

Only by careful risk assessment and detailed method planning can practices such as hoisting a climber or suspending a climber by the crane be acceptable. The Crane Supervisor must have the confidence in his or her own decisions to be absolutely certain that the chosen method was the safest op-
tion and that full consideration had been given to all of the alternatives.

At this point let me introduce the working group:

Alistair Farquharson – Owner/Partner of Salcey Arborcare, Northampton, UK.
Paul Elcoat – Vice President of the ISA UKI Chapter and Head of Arboriculture for Salcey Arborcare, Northampton, UK
Chris Cloutman (MCA) – Owner of Dodge Tree Service, Inc, Wenham, Massachusetts, USA.
Nick Beardmore – TCIA UK Representative and Owner of Oakwood Tree Services, Surrey, UK.
Mike Dewhurst – Owner of Eastwood Tree Services, Ipswich, UK.
Joe Jarvis – NPTC Representative.
Al Loftin – Compliance Assistance Specialist for OSHA.
Richard Fazzio, CSP – OSHA Area Director for the Methuen Office
Craig Johnson – President of the ISA UKI Chapter and Owner of Trees Unlimited, Leeds, UK.
Peter Gerstenberger – TCIA Vice President of Business Management, Safety & Education

As well as a big thank you to each of the above, I would also like to thank the following people for their support of the project so far:
Cynthia Mills – TCIA President.
Steve Hewitt – Senior Technical Officer for the National Proficiency Tests Council.
Adrian Hodkinson – UK Health and Safety Executive – Inspector of Arboriculture.
Eddie Marshall – UK Health and Safety Executive – Forestry Section Manager.
Jim Dewer – Forestry Commission Safety Officer.
Doug Edwards – OSHA.

To conclude this article please let me give two important pieces of advice:

1. If you intend to use a crane to assist your operations, qualify yourself or one of your staff as a Crane Supervisor. In the UK it is a legal obligation. Whether you are qualified or not, should something go wrong, you as the crew leader on site that day will be held responsible. Do yourself a favour, reduce the margin for error and get qualified.

2. Prior to your work, conduct a thorough written risk assessment, plan the proposed method and produce a written method statement and then ensure that every member of the lifting team and every other person on site is briefed and understands exactly what you are about to do.

Paul Elcoat is the Safety, Environment and Quality Manager for Salcey Arborcare in Northampton, UK. He wishes to thank everyone who has helped and supported this project, especially Chris and Kandy Cloutman of Dodge Tree Service, Inc, Doug Edwards, Richard Fazzio and Al Loftin of OSHA, Adrian Hodkinson and Eddie Marshall of the HSE and of course Salcey Arborcare for having the patience (and budget) to let him pursue such quests. Elcoat can be contacted by e-mail at paulelcoat@yahoo.co.uk

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Fusarium in Palms Is Preventable

By Don Dale

Jerry Turney gets a little irritated by the infestation of fusarium wilt running amok in the Canary Island palms in California. It's a disease that is devastating some of the most beautiful specimens in the state. But Turney, who is the plant pathologist for the Los Angeles County Department of Agriculture, Weights and Measures, is even more upset by the fact that although the infectious organism is a fungus, the disease itself is largely human-caused. As such, the disease is in epidemic proportions despite being largely avoidable.

"The way these palms get infected is by people pruning them with chain saws," he notes. Infected chain saws transport the highly infectious *Fusarium* from plant to plant. The whole process is preventable.

Don Hodel agrees completely. The University of California Cooperative Extension environmental horticulturist in Los Angeles County compares the disease in palms to AIDS in humans. Much of fusarium wilt in palms is preventable.

"It's 100 percent safe with safe pruning practices," Hodel insists. He illustrated with a visit to Victoria Avenue west of Koreatown in Los Angeles. The street is lined with Canary Island Palms, and some are dying a slow death. He says it's because they were all pruned by one company, with chain saws.

Hodel reports that wherever he goes in the county, palms are dying from fusarium. The remedy has been around for 20 years, but it is difficult to get desired results because of the efficiency of chain saws. It takes a lot longer to prune palm fronds with a handsaw. He works with agencies, arborists and landscape companies, and says some are not doing a great job of making sure they and their contractors prune with handsaws and disinfect between jobs.

One of the ones who is doing a good job is Ken Pfalzgraf, Hodel says. Pfalzgraf is the Urban Forestry Supervisor for the City of Beverly Hills, where Canary Island palms have been dying by the dozens. He reports

Don Hodel, an environmental horticulturist for Los Angeles County.
that the disease has now gone beyond a species-specific problem.

"It’s a significant problem not only in Canary Island palms, but in edible date palms," Pfalzgraf says. He has written articles about this, and the facts stand for themselves.

Fusarium wilt in palms is caused by *Fusarium oxysporum*, a fungus that along with closely related species causes wilt in a wide range of horticultural and agricultural plants. This species was specific to the Canary Island palm, but it has spread its net wider.

"I think it’s been found in other palms now, including the Queen Palm and Washingtonia," Turney says. The fungus grows in the vascular system of the palm, restricting water flow.

"This disease has a very distinct symptomology," Turney notes. When a palm has live fronds on one side and dead ones on the other, it has fusarium wilt. There can also be live fronds on the top and dead ones on the bottom (or vice versa), or dead fronds in a ring in the middle of live ones.

This “lopsided” appearance to the plant is particularly distinctive to fusarium wilt. When infected fronds are cut in cross section, they reveal vascular tissue that is streaked brown. This vascular staining is also symptomatic of the disease. The fungus is actually living inside the trunk of the palm.

Turney says the disease can also occur in conjunction with pink rot, another disease of palms that results in a rotting of the buds of the plant. When combined with fusarium wilt, pink rot, which really establishes a beachhead in stressed palms, kills the plant all the more quickly. It normally takes three to five years, once infected, for a palm to die from fusarium alone. But it can take longer.

The disease is prevalent in Southern California’s warm climate, and has become epidemic in some upscale cities where palms are the signature plant. Beverly Hills, Santa Monica and other near-coastal cities have lost a lot of palms. Turney has seen it all over Los Angeles County.

*Fusarium oxysporum* is normally a soil-borne fungus, and it can infect a palm through infected soil. But the primary cause is in the pruning of fronds, which is common in order to get the decorative pineapple effect.

"The way they get infected is by people pruning them with chain saws," Turney states unequivocally. Chain saws are the most quick and efficient method of pruning fronds while workers are suspended 40 or 50 feet from the ground, but they are also almost impossible to clean effectively.

As such, chain saws harbor spores of the fungus from infected fronds and spread them efficiently into the cuts of others. The practice of cutting higher and higher into the green fronds, instead of just removing dead ones, has exacerbated the problem.

"This practice of pruning with just a puff of fronds at the top is bad for the palm," Turney says, but it also carries more risk of introducing the fungus into green fronds.

Uneducated pruning crews using chain saws have spread the disease all up and down the coast, and ironically, it is in the cities where tree aficionados take the best care of their palms that the most damage is done. The more ardently a palm is pruned, the more likely it is to be infected with fusarium wilt.

There are no fungicides registered for the fungus in palms in California. The solution, says Turney, is to use handsaws to prune fronds, and to use a chlorine bleach solution to clean the saw before moving on to the next. The end. It’s that simple.

Pfalzgraf agrees. The Beverly Hills pruning crews use handsaws on palms, brush off the saw blades, and sterilize them with a 50:50 bleach/water solution between jobs. Saws must remain in the chlorine for at least five minutes.

The city also has a policy of placing prunings or dead palms in a landfill to avoid spreading the fungus. They discourage the planting of another palm in the same location.

"We also don’t distribute palm fronds for ornamental purposes," he says, noting that this was a common practice in the past. He also insists that the disease is more common in other parts of the country than is well known. In the past he worked as a consultant for the Mirage Corporation in Las Vegas, and fusarium wilt is present, though not as widespread, among palms there.

Pfalzgraf cautions that it is important to find out precisely what causes a palm’s illness or death. Thus, the agency, property owner or arborist should send an infected part of the plant to a laboratory for testing. That gives a starting point for future action.

Although Pfalzgraf claims that strict pruning and disposal practices, as well as education of private tree care crews, has virtually put a stop to the spread of the disease in Beverly Hills, fusarium wilt can still infect through the soil. Even the sawdust blowing from an infected plant could theoretically bestow the disease on another.

Steve Elmore, senior account manager for tree care services for Valley Crest in Woodland Hills, says his pruning crews have been instructed in how to properly prune palm fronds. "When we prune, we do it by handsaw. Then we dip the saw in a bleach solution," he says. "We dip between the cut of each frond."

Infected palms are taken to the company yard and cut up there, in order to minimize risk of spreading the disease on the client’s property. Elmore takes care to minimize the pathogen’s spread by not raising dust from it.

"Be very thorough with the soil around the base," he adds. He removes the soil three feet around the trunk and makes sure he gets the roots out.

Turney recommends that when considering a plant to replace a diseased and removed palm, think about something other than a palm. Even a different palm genus could be infected by the soil or detritus from the previous occupant.

Another palm disease, thielaviopsis trunk rot, is caused by cutting too many green fronds when pruning. Turney has seen the heads of palms simply fall off from trunk rot, and he cautions it is another reason to be very careful when pruning palms.

"In general, palms are fairly disease-free," Turney points out, but that is negated by overzealous and careless pruning.
Trouble finding employees? TCIA can help!

Available to members only, TCIA has teamed up with one of the industry’s leading providers of foreign workers to save you money and contribute to the tree care profession.

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Under the agreement, Amigos will:
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* provide replacement workers, if necessary, in approximately 10 days or less.
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Save on your dues, too!
Under the agreement, Amigos Labor Solutions, Inc., will contribute 5 percent of total fees paid by confirmed TCIA members to be applied toward dues of members. The company will also contribute 5 percent to TCIA to be applied toward the development of safety and educational programs for the tree care industry.

For Example:
If you use Amigos to hire four employees for a total fee of $3,600 ($650 x 4), you will receive a credit from TCIA for a reduction in membership dues of $180; and TCIA receives an additional $180 royalty from the company for development of safety and educational programs.

Call them toll-free at 1-877-3-AMIGOS (326-4467) or go to their Web site at www.amigos-inc.com to learn more about the H2-B program.

Media Alert!

Flood injury is a common spring problem. Too much water can be as harmful to trees as not enough. If a soil is too wet, the air space is reduced. When air space is limited, the carbon dioxide-oxygen balance can be changed to the point where carbon dioxide concentrations become harmful and the amount of oxygen is insufficient for root survival.

In a press release faxed and e-mailed to thousands of newspapers nationwide, homeowners are advised to keep an eye out for potential water problems and consult a member of the Tree Care Industry Association to care for their trees.
Felix Memorial Scholarship applications due

The Tree Research & Education Endowment Fund, the TREE Fund, is sponsoring three student scholarships through the Robert Felix Memorial Fund. Each scholarship will be non-repeating and can be applied for annually. The scholarship recipients should be pursuing a career in commercial arboriculture. The scholarship amounts will be $4,000 each and will be awarded to undergraduate and technical college students. The scholarships will be announced at the Tree Care Industry Expo and awarded one-half in each semester of the school year.

For more information, go to www.treefund.org.

Return all criteria by May 1, 2003 to:

TREE Fund
PO BOX 3188
Champaign, IL 61826-3188
Phone: (217) 239-7070;
Fax: (217) 355-9516;
Web: www.treefund.org.

Recognition, not competition

The Excellence in Arboriculture program is not a competition. We repeat, the Excellence in Arboriculture program is not a competition.

Many companies, especially small and medium-sized firms, believe that if they repeat, the Excellence in Arboriculture program is not a competition.

Entries are not judged against all other entries, but against standards of quality tree care. Expert judges determine whether or not the entry exemplifies the best in tree care practices, not whether the project is the best submitted in that category.

This means that in some years more than one entry will be recognized in a given category. In other years, none will be so honored.

Every year, every TCIA member company has at least one project of which it is proud. Submit your entry today.

Every TCIA member, large or small, works on a project that could qualify in one category. Enter your work today! Entry deadline: June 30, 2003. Call 1-800-733-2622, or go to www.treecareindustry.org to download entry rules and forms.

Stacy Hughes – new TCIA board member

Like many TCIA members, Stacy Hughes, vice president of Terry Hughes Tree Service in Gretna, Neb., comes from an arboriculture family. His father, Terry, started the business in 1961, and the firm has been a member of the TCIA for more than a decade. And like many members, he didn’t think tree care would be part of his future.

Growing up, he worked summers and weekends for his father during high school. Now they work together to grow and expand the business, which today has 17 employees with a business mix that is 80 percent residential and 20 percent commercial.

When Stacy enrolled at the University of Nebraska - Omaha, he took a full load of classes in the morning and returned to work in the field in the afternoon. He decided to study business, but not with an eye toward tree care.

“Something I thought was that I would go into this business,” he says. “I didn’t know what I wanted to do, but I knew that I liked management and running a business.”

He soon found, however, that one part of the business environment he appreciated most was the level of independence and control he enjoyed in his own business.

“In the late 1980s,” he relates, “management majors were a dime a dozen. I really found that I enjoyed working outdoors and within a small business. With simple marketing, training and formalization of policies, which I learned at TCIA meetings, I saw a healthy, growing company.”

Once he was out of school and involved in the business exclusively, he expanded his horizons to include the larger tree care profession. He volunteered for the board of the Nebraska Arborists Association and is a past president. He has also been an active participant in a state green industry coalition regarding pesticides. He even brought his expertise to a debate on the Nebraska legislature, testifying against restrictive regulations that would severely limit applicators.

His involvement with the TCIA includes serving on the business management and membership committees. That involvement, coupled with attendance at TCIA EXPOs and Winter Management Conferences, prompted him to volunteer for the next step.

“I’ve always liked the people in this organization,” he says. “This association has really helped our business. I have learned so much about how to run a tree care company that I hope to be able to pass some of the knowledge I’ve gained on to other members.”

He’s also energized to be joining the board at this time in the association’s evolution. “When I look back to where this association was just five years ago and look ahead to where we’re going in the next five to ten years, I’m really excited about the potential changes.”

One thing he’s learned already as a member of the board: Members aren’t shy about contacting their representatives. “I’ve received e-mails already,” he says.

He encourages comments and suggestions. “I’ve made a lot of contacts through the association,” he notes. “Whenever I’ve had a problem, I’ve found that I’m not the only one with that problem. I now have a network of people in the association that I know I can call for answers on anything.”

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Form 300A certification/posting time

From Feb. 1 to April 30, employers with 10 or more employees must post OSHA Form 300A, their log of occupational illnesses and injuries for the preceding year. For the employer subject to the requirement, posting is nothing new. What has changed is that for the first time ever, company executives must certify that their log is correct by signing off on the recordkeeping.

Records must be kept by employers for five years, and in the event the business is sold, the records must be transferred to the new owner. Recordkeeping requirements were changed in 2001, and the OSHA 300 forms went into effect in 2002, replacing the 200 forms. OSHA officials said there has been no outcry about the new procedures, although the agency has received inquiries mainly for clarification about who is able to certify company logs.

To enforce recordkeeping requirements, OSHA randomly conducts about 250 recordkeeping audits each year. To put that in perspective, in 2001 OSHA estimated that the requirements affected about 1.3 million work sites in the service and retail sectors. Federal agencies as well as certain low hazard industries are not required to keep logs.

Asplundh celebrates 75 years

Asplundh Tree Expert Co., the international utility contractor based near Philadelphia, Penn., is observing its 75th anniversary this year.

On August 28, 1928 the company was started by three brothers, Carl, Griffith and Lester. They were sons of immigrants—a Swedish father and Swiss mother. All the brothers had worked for a landscaping and tree surgery business owned by their older brother, Oswald, to earn money for their college educations. Griffith majored in forestry, Lester was an electrical engineering major and Carl majored in finance. Early on they decided to specialize in trimming trees around electric and telephone lines—a decision that would eventually lead to the corporation’s long-term growth and success.

Today, Asplundh’s operations have expanded geographically to provide vegetation management services to more than 900 utilities and government entities across the U.S. and Canada, and overseas in Australia and New Zealand. The scope of their operations has also expanded, offering many specialized services ranging from heavy construction to equipment leasing.

Asplundh’s experience in clearing trees and brush from around live power lines has been recognized by utility companies as an important asset since the late 1930s when a series of devastating storms ravaged the east coast of the United States.

The family-owned company, now managed by its third generation, has developed a number of industry-accepted innovations over the years. In response to the need for greater safety and better productivity, Asplundh developed the first practical and safe brush chippers in 1949 and the first fully insulated aerial lifts to get workers into the trees more efficiently and safely. Asplundh also initiated a joint research project to scientifically demonstrate the safe use of herbicides for vegetation control. This project, begun in the 1950s, remains active and continues to validate the proper use of herbicides.

With a workforce of 28,000 service professionals and a fleet of almost 34,000 pieces of specialized equipment and vehicles, Asplundh’s diversified operations have grown to include utility construction, right-of-way maintenance, vegetation management with herbicides, meter reading and installation, pole maintenance, street lighting and traffic signalization services, infrared inspection, underground utility locating, utility equipment rentals, and more. However, their core business remains true to the company’s full name: Asplundh Tree Expert Co. The pruning and removal of trees to help maintain reliable power continues as the vanguard of their operations.
Safety & Governmental Affairs committees update

The TCIA Safety and Governmental Affairs committees held a brief, informational meeting at the Winter Management Conference this past February in Puerto Rico. Below are some highlights of the meeting.

Partnering with regulators
TCIA’s formal Alliance with Federal OSHA has already been announced, and has begun to show benefit to the industry. After reading of the Alliance, OSHA compliance personnel in several states have contacted the association, seeking guidance in tree care-related cases.

More recently, the organization began cultivating a relationship with the Maryland Department of Natural Resources, the entity that oversees that state’s licensed tree expert regulation. The goals are to work with DNR to make the law even better, and to provide resources to benefit the members covered by the regulation.

Regulatory agenda
Over the summer, several significant OSHA as well as industry consensus standards are due to be revised. TCIA is seeking input on OSHA standards that, among other things, will regulate appropriate fall protection for the bucket truck operator and guide the use of mobile cranes. At the same time, TCIA is working with the ASME B30.5 Committee to get that standard to recognize how arborists use cranes.

Safety in the workplace
Spearheaded by the distribution and promotion of the Model Company Safety Program (MCSP), the association is making a concerted effort to raise the bar for safety in the industry. TCIA staff has taken the safety message on the road, with several regional presentations before it reported to the committees, and several after that meeting.

Committee members are watching developments in traffic control regulations with great interest. Rising traffic volume, coupled with more road construction, have led to a disturbing upward trend in overall roadside workplace accidents. Though not necessarily the cause, the tree care industry will nevertheless be affected by more stringent regulations affecting items such as traffic control plans, flagger certification, and reflective clothing use.

The next scheduled joint meeting for the two committees is Tuesday, April 22, in Alexandria, Va. Members interested in participating in either committee should contact Peter Gerstenberger, TCIA, at peter@treecareindustry.org.

Members of the NAA Safety Committee met in Puerto Rico to discuss the TCIA’s ongoing partnerships and regulatory agenda for 2003.

Calendar of Events

| November 13-15, 2003 | February 8 - 12, 2004 |
| TCI EXPO 2003 | Winter Management Conference 2004 |
| Baltimore Convention Center | Marriott Royal Beach Resort |
| Baltimore, Maryland | St. Kitts, U.S. Virgin Islands |

TCIA Members may access the complete edition of the Reporter at www.treecareindustry.org
**Odawa: Save Wiisagaak**

Calling black ash critical to American Indian culture, an Odawa leader urges tribes statewide to press U.S. lawmakers for federal money to battle the emerald ash borer, a small but destructive beetle. Black ash, or *wiisagaak*, is used by American Indians in eastern North America to make splint baskets. According to the *Detroit Free Press*, the imported wood-boring beetle has killed 5 million of Michigan’s ash trees and is also in Ohio and Ontario.

“The spirits of the forest need our help,” said Kishigo, president of the nonprofit Odawa Institute.

Researchers are experimenting with insecticides but say the beetle seems to be killing every ash in its path. The emerald ash borer was identified last summer in metro Detroit. Scientists say they believe the insect entered the area five to 10 years ago inside packing wood from Asia.

A state quarantine bans removing ash trees or logs from several Michigan counties. Quarantines also are in effect around Windsor and southwest of Toledo.

The Michigan Department of Agriculture has opened four yards where people may dispose of ash wood and logs free. The sites are in Macomb, Plymouth, Pontiac and Westland. For details, go to www.michigan.gov/MDA.

**Sap Suckers Threaten New England Hemlocks**

As far as Beth Daley of the *Boston Globe* is concerned, they look like the tips of tiny cotton swabs, clinging to the undersides of hemlock branches. All across Massachusetts, inside these are millions of woolly adelgids, a sap-sucking insect threatening New England’s signature evergreens.

The sandgrain-sized Asian woolly adelgid, usually killed by the cold, is thriving. Hemlocks, weakened by drought, are not expected to withstand the infestation.

Scientists consider this infestation one of the state’s worst. Some of the Massachusetts hemlocks are 400 years old and are in the only landscapes that have not been altered by farmers or loggers. In winter, they insulate streams from freezing, so brook trout and Atlantic salmon can swim. In summer, they offer cool shade and absorb vast amounts of nutrients that would otherwise flow into rivers.

The East Asian insect injects a long feeding tube into young twigs to suck out sap. It appeared in Virginia in 1950 and began its slow movement north, hitching rides on wind, birds, and even nursery trucks. Once a hemlock is stricken, its needles become discolored and change from deep green to gray green, then drop off prematurely. The tree dies from the sapping of nutrients, and from toxins injected by the bug.

There is one bright spot: ladybugs, which feed on the adelgid. Scientists in recent years have released tens of thousands of them in many communities and results look promising.

Jim Ingram, vice president of Bartlett Tree Experts, says large swaths of hemlocks can be treated with the injection.

Still, foresters say they ‘ll never fully get rid of the dreaded bug. Even the ladybugs can’t reproduce as fast as the adelgids can, and it’s impossible to treat a whole forest with any of the known techniques for killing the bug.

**Million Dollar Fungus**

The *Philadelphia Inquirer* reports that for decades, gypsy moths were the scourge of Pennsylvania.

“You would go outside and it would sound like it’s raining,” said Larry Rhoads, of the Department of Conservation and Natural Resources. In 1990, gypsy moths defoliated 4.3 million acres of Pennsylvania’s 17 million acres of forest. But suddenly, the moths and their droppings have all but disappeared. While the state spent millions of dollars to spray thousands of acres of forests - almost $4 million in 2001 - a natural fungus has done the trick. And the $3 million slated for the 2003 program? It has gone back to the state budget.

So tree lovers are celebrating *Entomophaga maimaiina*, “The Wilt.” The fungus, invisible to humans, is fatal to the gypsy moth caterpillar upon contact.

“We’ve no clear idea of how the fungus got into the United States, but it’s done a spectacular job of collapsing the moth population,” said E. Alan Cameron, professor emeritus of entomology at Pennsylvania State University. “After all that spraying, it’s Mother Nature that did the trick.”

**Catching Hand Grenades**

According to the *Seattle Times*, to introduce himself to the Forest Service’s leadership team, the new Agriculture Department undersecretary listed the top 10 quirks everyone should know about him.

No. 2 left some unnerved.

“Perhaps you have heard the old Sicilian phrase. ‘Revenge is a dish best served cold,’” Mark Rey said to a hotel ballroom of staffers and senior managers. “Unfortunately, no matter how hard I try to avoid it, this is part of my personal genome. I humbly request that you try to avoid encouraging that shortcoming.”

Rey has called himself, “irascible, cantankerous, and generally [an] unpleasant fellow.”

“He’s charming,” said Jim Furnish, a Clinton administration forestry official and now a consultant for organizations including the Wilderness Society. But “I think he files his teeth in the morning.”

Chris Wood, a former Clinton forestry adviser now with Trout Unlimited, says “Mark is a good person, in a very difficult and demanding job, who makes life harder than it needs to be by being too much of a smarty-pants.”

“Here, I’ve got to catch the hand grenades,” Rey laughs.
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<td>60. Swinger Loaders Div. NMC-Wollard Inc</td>
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<td>61. Timberwolf Manufacturing Corporation</td>
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<td>62. Tree Fund</td>
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<td>63. Tree Tech Microinjection</td>
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<td>64. UPM Corporation</td>
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<td>65. Western Tree Equipment &amp; Repairs</td>
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<td>66. Woodsman Chippers</td>
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<td>67. Zenith Cutter Co</td>
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**TREE CARE INDUSTRY**

**June 2003**

- Running cleaner equipment
- Pruning for tree health
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**MAGAZINE**

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TREE CARE INDUSTRY - MAY 2003
Too Stubborn to Listen

By Mark Shepperd

I’d like to tell you about a tree my brother-in-law, Leroy, and I took down a few years back. Every tree can’t be removed with a bucket, so some we have to climb. When the need arises, Leroy does occasional climbing for me.

The tree was a dead elm that was only 50-60-feet tall, but it had an abundance of limbs. Below it was a 5-foot steel fence. The tree was on the north property line and stretched over to the neighbor’s yard and driveway. There were also shrubs underneath, so we had to rope the limbs down to avoid hitting anything below the tree.

Leroy took off as he normally would, ascending first to tie off his line at the highest point and then shimmy down to start taking off limbs.

Everything was going well until we got to a large limb on the north side of the tree that stretched out pretty far. Below that limb was an old-fashioned gas pump that was still being used by the neighbor. We decided to put a bull rope on the beginning of the limb and a rope at the end of the limb to control it. The limb had to be swung over sideways about 10 feet or so before lowering.

I was the ground man and my nephew, who we were breaking in, was working with us. When I looked up, I noticed that Leroy had put the bull rope in the same crotch that had his climbing line in. I yelled up to him that he wasn’t supposed to do that, but he has the final say so. He’s the climber.

He went ahead and cut the limb, which dropped about a foot because of the slack and stretch in the bull rope. That shock on the crotch caused the limb to snap off where the both ropes were tied.

The falling limb jerked my brother-in-law violently to the ground. He was only about 20 feet up in the tree, but he came hurtling to the ground upside down. His neck hit a large limb on the way down, causing his body to deflect, so he didn’t break his neck. He did break his back, and severely bruised one side of his body, along with his kidney and lung.

My nephew barged in to the neighbor’s house and pleaded for them to call 911. Blessedly an ambulance was only a block away with a paramedic waiting around in the driveway listening to the radio transmissions. The paramedic ran right over when he heard the call come in.

We look at things a whole lot differently now. Climbers shouldn’t let their pride or their confidence in their expertise get in the way. Don’t be afraid to listen to a suggestion from others, and if you’re just not sure about how safe a practice is, maybe you better not try it.

Mark Shepperd is the owner of Northwest Territories Tree Service in Medaryville, Ind.
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