Overcoming Rigging Challenges

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All Moments Lead to Now

It saddens me that it often takes a crisis or devastation to bring us to some of our most crowning moments as human beings. We are full of such potential every moment. The endless creativity, depths of our ability to love, and our capacity to truly transform society — it’s all there with us each day. As we go into our strategic planning process for the tree care industry for 2003-05, it’s one of the things that I find so exciting about working with our volunteers. The only thing that can keep us from becoming what we dream of is ourselves. To allow the industry to pull on all the moments that have lead to this one, where we are dreaming a new dream together, gives us the power of all that we have been and all that we can become right now. What puzzles me is why on earth this is so hard.

I talked with some people who remember World War II vividly and was expressing my hopes of great transformation for our youth; that perhaps the vile terrorist attack on Sept. 11 that inserted itself into our lives would be a point that our developing leaders of today would find pivotal in how they lead their lives. What I learned from my elders was that these moments pass. That even as I have found myself heartened by the enormity of the generosity that is flowing in our country and around the world, that this, too, will be transient.

It seems too awful to think that we don’t ever really get it. That evils as enormous as what we have experienced really do pass, and it doesn’t stay with us, promoting us to keep these things from happening again.

Then, I thought about a quote from Willem Dafoe: “I’m learning in my old age that the only thing you can do to keep your sanity is to stay in the moment.”

On the one hand, we have to dream, and those dreams have to inspire us to new heights — that goodness and growth and transformation are truly possible. On the other hand, we have to be able to learn from these tragic times— yet not continue to keep living it over and over and over again. While we may never forget, and we may dream of a better time, we have this moment to live. That moment provides us with some sanity — an opportunity to learn without being so paralyzed by the past that we can’t dream.

I have talked with friends who are petrified, struggling to get through the day — some coping in very unhealthy ways. For some, they’ve just realized that they only have today. Somehow, in the bustle of life, they really did forget to look to today for the blessings.

Warren Buffet says that, “In the business world, the rearview mirror is always clearer than the windshield.” Of course, he’s right. When you’ve got the facts and the puzzle is put together, it’s easy to analyze all of the individual pieces and make wise pronouncements on why things happened the way they did. When you’re trying to find the right pieces, you know you’re staring a challenge in the face before you’ve even put the end pieces together. It’s harder to dream and make it happen. But you know what, it’s a lot more fun, too, especially as the picture comes into focus.

So my charge to you, as we enter uncertain times, is to remember that you only have today. Try to locate all the puzzle pieces you need in order to make good business decisions that will allow you to make it through. But in the middle of everything, don’t forget to remind yourself of the blessings you have today; of the capacity you have to do something you love; and that if you’re given another tomorrow, it will be now — and all moments in your life have always led to now.

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Cynthia Mills, CAE
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Overcoming Rigging Challenges
By Donald F. Blair

As an outgrowth of the presentation on rigging challenges that I gave at TCI EXPO 2000, I’ve been asked to pick two of my favorite rigging challenges and detail them in this article. The two projects I’ve selected are a hickory, which we removed in Maryland in 1991, and a redwood removed in April 2001. Both jobs were team efforts combining the skills and talents of the project contractor as well as several outside specialists. Both jobs required special techniques, special equipment and thinking “outside of the box” to accomplish the objective of a safe and efficient operation. In addition, both jobs were on steep slopes and involved rigging large volume wood away from residential structures. Neither site permitted the use of heavy equipment in a conventional manner.

The Big Hickory

In May 1991, my office in California took a call from Steve Mays with Carroll Tree Experts in Baltimore. A thunderstorm packing gusts to 80 mph had roared through the area in March wreaking the usual havoc. Among the fallen trees was a large hickory that had splintered at the base and fallen so hard into the side of a 3-story apartment building that windows had been cracked on the second floor. The tree had been struck by lightning some years before.

About one-half of the trunk had died as a result of the strike, but until the big storm, the tree had maintained enough of a connection between the roots and the top to maintain normal biological function. And the tree had been stable enough to remain standing. The tree was down a slope and shielded by surrounding trees, so that it had been pretty well protected from the usual winds, rain and snow loads.

Located in the rear of a corner property in a residential neighborhood, we would have to stage from a narrow, winding secondary lane with a downgrade. My first impression of the site was that a street from San Francisco had been moved to Baltimore.

The building had borne the full brunt of the impact and weight of the tree. From the base to first main crotch was a 65-foot length of trunk that we estimated at 20,000 to 25,000 pounds. The overall height of the tree was about 100 feet.

My first question to Mays was a simple one: “Don’t you have enough work to do without taking this one on?”

Mays felt that unless a firm such as his – an NAA member, established, experienced, equipped and insured – was willing to tackle this job, someone was going to get hurt or wreck the building. In breaking the challenges of the job down we had two major problems to deal with: hazard and accessibility.

Hazard

There was tremendous tension on the main leaders bearing against the building. The first main crotch was 28-inches in diameter,
and although fundamentally sound, had split with
the force of the impact. We didn’t know how stable
the tree would be once we began to lift it. We were
not going to permit a climber to tie-in to the tree
while we worked on it.

Accessibility

The only access to the tree was down a steep flight
of about 35 steps. We weren’t going to be able to
drive anything close. The only type of crane that
could be used to lift the tree in meaningful pieces
would have been one so large that the move-in and
set-up alone would have been $5,000. Utilities
would have been relocated and traffic would have
been blocked during the week or so that moving in,
setting up, doing the job, tearing down and moving
out would have taken. Not an acceptable option.

Requirements

One tree company had proposed putting a cable
on the tree and dragging it clear of the
building. The insurance company insisted
on a zero-impact removal. They would not
accept deliberate collateral damage to the
building during the removal process. We
couldn’t use a crane for anything more
than perhaps brush and limbs to the con-
tact points on the building.

Vision

We couldn’t push the tree up from below.
We had to lift it from above. The solution?

Directly behind the hickory standing in the
fall line was a huge white oak. On the street
side was a large beech. On the downhill side
was a large poplar. At that point I envisioned using
block and tackle, rigged from three trees to lift the
hickory, swing it clear of the building, and set it
down. In my mind I envisioned the derricks used to
unload cargo ships.

In the two weeks leading up to the removal Mays
made several trips to the site to survey distances and
measure tie-in points so we could select the correct
slings and arrange for a crane. We were going to
need winch trucks to pull the ropes once they were
rigged through the block and tackle. Mays had the
idea to use huge diesel tow trucks – not because we
needed the pulling power, but because the winches
on the rear are mounted on swivel davits that would
give us one winch straight off the rear and one 90
degrees to the side, where it could pull the block
and tackle line rigged to the white oak that was go-
ing to do the primary lifting.
Rigging

Carroll Tree Service made it clear to the insurance company that in order to do the job safely, highly specialized equipment that could not be rented would have to be purchased for this job and then probably never used again. The insurance company authorized the purchase of $4,000 worth of slings, rope, and three sets of 10-inch steel block and tackle. The trees had been measured at the rigging points so that each sling would be long enough to permit rigging in a basket hitch (strongest configuration). Finding 1,400 feet of 1-inch double braided winch line on short notice was the biggest challenge. I finally located what we needed from a maritime supply house.

Although we planned to use three sets of block and tackle in the lift, we made sure that one set was strong enough to carry the full weight if something unforeseen happened. The intention was to get the hickory clear of the building and then by giving slack on one "outrigger" block and tackle set and taking up on the other, we’d be able to swing the tree clear of the building and set it down.

Safety

All three trees selected for the lift — white oak as main gin, beech as uphill "outrigger," poplar as downhill "outrigger" — had defects at the bases. We couldn’t take a chance on having one of our star trees fall over, so we planned to guy each one of those trees off to two other trees. This job was going to be rope intensive!

Consultations

Mays had called me as a consultant, and I wanted to get a second or third opinion on my own. I called Rob Home with Custom Cut Tree Service in Roanoke, Va., to get his advice. He’d been cleaning up after Hurricane Hugo for several years and had considerable experience with large trees on big buildings. When I described the project to him, he not only concurred with the plan but also said that he would have to come up and see it in action.

Preparations

Mays sent a climbing crew to the site beforehand to climb the rigging trees, pre-hang climbing lines, clear approach paths for the ropes and get as much preliminary work done as possible. Saws were checked, cleaned and sharpened. Fuel was mixed; gear was laid out, checked, double-checked and loaded. Horne came up the day before with a Suburban fully loaded with ropes, saws, climbing gear, and rigging. For a man coming to watch, he came prepared to work.

Work Plan

To quote the Wicked Witch of the West: "These things must be done delicately!"

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**1992 Ford F800**: 7.8L diesel, 210 hp, Allison auto, 18' dump bed, 35,000 lb GVW, with Peterson loader. Use it for wood, trash, logs, etc... 32,000 original miles. **$34,500.**

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A. Secure the rigging trees to the anchor trees.
B. Secure the leaders in the white oak. Not only did we not want the tree to fall over, we weren’t going to take a chance on breaking out the leader supporting the rigging. Horne learned some hard lessons as a result of Hugo that he shared with us.
C. Secure the hickory before anything is cut, removed or shifted. The trunk was split at the base and the main fork was split. We used proof coil chain and load binders to prevent the base and crotch from splitting further.

c.1 We used the 30-ton crane to suspend Mays over the hickory so that he could get the binder set.
D. Clear brush and limbs back to the contact points on the building.

d.1 We used the crane to lift off what we could from the roof

d.2 We used the crane to give Horne a skyhook to work from so that he could safely rig other limbs that were roped off to an adjacent tree.

Note: At the time of this writing, professional arborists, ASC Z133 and OSHA have not been able reach consensus on the practice of allowing a climber to work suspended from a crane. A job like this more than demonstrated that being able to work from a crane can be done safely and is an absolutely necessary option for climber safety when dealing with hazardous tree removal.

Everything went smoothly in the oppressive heat. Mays had brought enough walkie-talkies for all to keep in contact without having to run up and down the stairs, roof or back and forth from crane to truck to tree. One of the trickiest operations was reeving the lines through the blocks. Considering the distances involved and the weight of the line, we worked carefully and deliberately to “get it right” on the first pass.

By 3:00 p.m. we had accomplished objectives A through D. Not long after that we were ready to lift the big hickory.

An Uplifting Experience

So far, everything had gone according to plan. We had originally envisioned securing the butt of the splintered trunk to something. That was the only snag. There wasn’t anything to secure to. We considered sinking ground anchors, but the ground was very rocky under a thin layer of soil. Finally, we decided to go ahead and take up the slack and see what would happen. We agreed to shut down and figure out our next move if the trunk showed the slightest sign off shearing off or uplifting.

Needing three winches, Mays had originally arranged to have two tow trucks on site. We looked at having to pack the crane up and move it out of the way so the second truck could move into position. Instead, we decided to use the crane to pull the winch line and send the other tow truck on its way. (I think the driver stayed to watch on his own time.)
Connected by the radios, I took a position near the trunk. Mays and Horne took positions from which they could control the winching. We drew all the slack out of each rig: so far so good, no problem with the trunk. We lifted some more, letting the white oak do the lifting and proving security with the outriggers. Slow and steady, smooth and easy, we had the hickory clear of the building! Suspended in the air by three sets of block and tackle, it was quite a sight. We paused to let the tree's fibers adjust to the new directions of strain, took a few pictures, swallowed lots of water, took a deep, collective breath and prepared to swing the hickory to its final resting place.

The white oak tackle became the pivot. As the crane took up on the downhill poplar, the tow truck let out on the uphill beech rigging and the hickory swung clear of the building just as if we'd planned it that way.

At that point I was annoyed by whoever had fired up a chain saw with a bad muffler —BaaapBaaapBaaapBaaap. I wanted to listen to the tree, not a chain saw, so I yelled into the radio, “find that chainsaw and shut it off!”

No one was running a saw. It was the sound of the splintered fibers at the base breaking off one by one as loading overcame resistance and the tree moved to stage right. I've never heard a sound like before or since, nor is it one that I shall ever forget. By 3:20 p.m., the big hickory lay subdued and flat on the ground. The client had told us that we could leave it where we laid it and let the ivy cover it up.

The big hickory became part of the legend and lore of Carroll Tree Service and a job that all of us involved will remember with pride for the rest of our lives. What made the job special were the following elements:

- Mays looked beyond his own resources to find the solution.
- Mays, Horne and I each brought a dimension of experience that meshed together to cover all the bases of planning and execution. Any of us working alone might have missed a key element in planning that could have affected the success of the job.
- Mays' crane operator and tow truck driver blended into the team seamlessly and made their contributions to the success of the job a real joy.

The Rest of the Story

Most people want to know what the final cost on the job was. The crane rental for the day with operator was $1,500. Tow truck charges were $500. Special equipment cost $4,000. (Purchased by the insurance company, they eventually sold it back to Carroll Tree for $400!) Final cost on the job including all other equipment and labor — including my fees and Horne's time — was $15,000. The client, the insurance company and all of us involved were completely satisfied with the plan, execution and final outcome.

Steve and Frank Dudek at Carroll tell me they've never encountered a challenge since that remotely approaches what we did. They still have the blocks and a lot of rope. With this job behind them, they have the confidence that they can tackle virtually any tree care challenge presented them — one way or another.

The Big Redwood

Flash forward ten years. Ken Johnson is on the line from California, calling on behalf of Mike Majors who had been asked to finish the removal of a very large coastal redwood. This tree just happened to have a wicked back lean over a residence. Majors had asked Johnson to put a crew together to help him, so he assembled Robert Phillips, Kent Antle and myself.

Everybody knows someone who is the “best climber” or best “big wood man” or even simply the “best arborist.” Majors is among the many uncelebrated, unsung masters of the craft. He has climbed El Capitan in Yosemite Valley more than 20 times along a dozen separate routes. Combining almost a quarter-century of experience with the reflexes of a circus acrobat, and phenomenal physical strength, this man functions safely in a tree in a manner that would appear foolhardy to even expert climbers. Having had the privilege of watching him work on various occasions over the years, my respect for his talent, experience and skill
in handling big wood is second to none.
The big redwood was about 28 feet in circumference at the base, split into two trunks. It was more than 100-feet tall when we got to it. The tree had been stripped, limbed and cleaned-up to that point by another tree firm. Apparently believing discretion is the other side of an insurance claim, they had declined to take the tree into the big wood.

Hazard
Perched on the very edge of a deep cut that had been made to level a foundation for the house, the redwood had a 15 to 20 degree back lean right over the structure. Fortunately, the tree was alive and did not exhibit any visible structural weaknesses. Depending upon how we dealt with the "school marm" trunk when we got close to the ground, we'd have to be careful not to lose one side or the other if they wanted to separate and roll when they hit the ground. The main hazard in this job was the proximity of the tree to the house, the slope of the site, and the size and weight of the wood that the climber and ground crew would have to contend with.

Accessibility
Like the hickory, this site precluded the use of conventional heavy equipment. Whereas everything on the hickory removal was downhill, everything on the redwood was uphill. All the ropes, rigging and saws had to be packed up a long, steep dirt driveway that was slick with the mud of spring rains. We were lucky; the backyard was still a construction site without any sensitive landscaping to worry about.
This log deck represents just a small portion of the mill-sized log sections that were roped from the tree. Working with both gin-pole and transfer-line rigging offers precise control to place logs throughout the hillside.

Requirements
We couldn’t rope the logs straight down; they’d end up right on the house. We were going to have to overcome the back lean and traverse the logs laterally 30 to 50 feet to a landing zone uphill of the redwood. At the beginning, this work was also going to occur more than 100 feet in the air. The client wanted the big wood left on site. This time, however, we weren’t going to be able to take the tree down in one piece. We couldn’t chunk it down in small pieces either. The client wanted mill-length logs, so we were going to have to take it down in 6- to 10-foot log lengths. That was fine, however, in order to overcome the back lean, we needed pieces long enough to get some leverage on them. We also needed pieces long enough to enable us to secure our lowering lines without worrying about them slipping off.

Vision
Like the hickory, we looked at the big picture around the site. Having co-dominant leaders, the redwood would let us use one as a gin to rope the other one down. That took care of the butt hitch. The tip-tie was going to come from a stand of redwoods uphill and about 100 feet away. They were tall enough to let us set a Hobbs block high enough to give us an ideal angle of approach for the tip-tie. We could tip-tie and butt hitch one side of the redwood, move it clear of the house, and set each piece neatly down in the landing zone. Then, using the uphill redwood for our gin, we would tip-tie the standing half and pendulum drop the remaining sections into the same landing zone.

Rigging
Once again, we were going to use more rope than anything else to accomplish our objectives. The main line was 400 feet of 7/8-inch Yale Double Esterlon (28,500 avg. breaking strength). We didn’t need that much, but I couldn’t see any point in cutting it. Since we didn’t have a rope bag big enough, we packed it to the job in a plastic garbage can. The secondary line was 300 feet of 5/8-inch Yale Double...
Another rigging technique used in this hazard removal was the swing drop, also referred to as a pendulum drop. Pullover, due to the back lean, is shown here using three techniques (left to right). The pulling was accomplished with the rigging rope itself. A separate pullover rope was used with a lowering device. Pull was generated using a running vector force rope.

Esterlon (16,000 avg. breaking strength). In addition, we had additional lines for tag lines and vector lines. To maintain precise rope control under these extreme conditions, we planned to use two Lowering Devices: one on the butt hitch and one on the tip-tie.

Note: Although 7/8 or 3/4-inch would have been our preference for the secondary line, the only other long line we had available was the 5/8-inch. On a strength basis, the 5/8-inch is rated closely to 7/8-inch single strand and 1-inch, 3-strand.

Preparations

Johnson had to have a mounting strap specially made to accommodate the girth of the tree. We had to lay out and inspect all of the ropes, blocks and slings reserved for the job. We didn’t need nearly as much equipment for this job as we did for the hickory. We had what we needed.

Starting in the top, we began with the lightest sections first. The 7/8-inch was always positioned to take the initial impact and carry the greatest load. The heaviest pieces of all were pendulum dropped off the 7/8-inch rope. Although I prefer a rope with the greatest practical mass for energy absorption (meaning bigger ropes rather than smaller), knowing ratings makes it possible to design rigging systems. Continued inspection of the lines showed no signs of heat fusion, broken strands or any other indication that we were pushing our limits.

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ent had spread a huge tarp over his yard to channel runoff into his drainage system. With the tarp rolled back, the ground below was much drier and easier to work on than unprotected areas.

Set-up

Following common sense and Z133, we held a job briefing, sighted in on the uphill redwoods that we'd set our gin from, and strapped in a lowering device. Majors went up around 100 feet, cleared a path for the lowering line, and set the block. With redwood bark as thick as 4 to 6 inches, Johnson cut a path around the tree so the lowering device strap could be set rock solid against sapwood instead of soft, compressible bark. Don't try this on a tree you're going to preserve.

Phase One

Phase one involved using one lead as a gin to butt hitch sections of the other, while the tip-tie came from the Hobbs block set in the uphill redwood. Once a piece was cradled between the two lines, we would be able to traverse the sections laterally to the landing zone. Each piece was going to be between 6 and 8 feet long. We were going to have to depend upon the strength and ratcheting ability of the lowering device to overcome the weight and back lean of each piece. Majors is strong, but he's not that strong.

Technical Tip: Under these conditions, most arborists would instinctively face the piece in the direction of the fall. Wrong! In that case, as the piece falls, it creates slack that will greatly multiply the impact force when the lines finally catch. Considering the fact that we were going to be rigging pieces that weighed more than 2,000 pounds, we had to reduce drop distances and impact forces as much as possible. Majors faced the sections 45 degrees outside of the fall line.

In this manner, each piece remained under tension and control as it took a long arc into the final approach and desired direction of fall.

Each piece went like clockwork. Johnson and Phillips were able to maintain clear voice communication as Phillips took up and Johnson let out. Ginning the first lead down as far as we could brought us to a great place to halt for the first day's labors.

Phase Two

The order of business for the next day was to get the gin down low enough to let us drop the rest of the tree from the base. We moved the lowering device from the redwood and mounted it uphill so that one device would control the load line and the other could be used to tension a tag line. We still had a lot of hack lean and weight to deal with. As we worked our way down the trunk, the diameter and corresponding weight increased dramatically.

The rigging technique we used is one of those good ones to know that you probably won't get to use very often. Called "swing dropping" or "pendulum dropping," think controlled chaos. What we had was a trip-tie from on high, and a suitable crash-landing site!

Majors faced out each piece with the same arc calculated in; we kept tension on the log with the tag line while Majors closed in on the hinge with the backcut. More cranking with the lowering device caused the log to fall into the face – and
away it went. I can’t calculate the impact force that these logs generated before coming to rest on site and on time, but the image of one of those old-fashioned steel-wrecking balls swung by a crane to knock buildings down is the best word picture that I can paint for you. It was the perfect technique for what we had to do. We were crashing into a site that was so rough to begin with. It soaked up what we did without leaving a trace. I would not recommend this method with pieces this heavy if the objective is zero-impact on sensitive landscaping.

Phase two went well until we got the stick down to a height that flattened out the swing and put an end to that technique. Fortunately, by now we were down to a height that would permit us to drop the stick in one piece.

**Note:** Pendulum dropping is one technique that actually works best when the gin is about equal to the height of the log being dropped. The lower height reduces the arc and the impact.

**Logger’s Trick No. 1**

Given a choice between dropping 42-inch timber and 84-inch timber, go for the smaller one if you’re not getting paid scale. The trick here was to rip down between the leaders so that each could be dropped in turn. Majors ripped one section down. We pulled it over and suggested that he rip it again to the final stump height. If we’d done that, we’d be back in the morning to drop the big stick. Majors had his mind set toward getting the whole tree on the ground that day, so he wouldn’t have it in his dreams that night.

The man with the saw ultimately has to make the decision as to what plan best suits him. He decided to make the big cut and get it over with.

**Logger’s Trick No. 2**

This close to the end of a spectacular job is no place to screw up and make a fatal miscalculation through haste. We weren’t going to take a chance on having the remaining short side of the double leader shear off when it hit, roll downhill and crash through the house we’d worked so hard to protect. Given a bottomless rigging bag, I’d have used proof coil chain and load binders as we did on the hickory, but this was a minimalist operation. Instead, we lashed the leaders together with rope. My biggest concern about the gear that many arborists seem addicted to these days is the stifling effect that “having it all” can have on field expedient thinking. Purpose-built, highly specialized equipment is wonderful, just as long as you never forget how to make do safely without it when you have to.

Majors set the face as we prepared to use the lowering devices to tip the stick into the fall line. He tied-in with a flipline so he could keep his balance and stay totally focused on the back cut.

Watching that big stick ease ever so slowly into the face and gradually succumb to the forces of gravity was a grand sight. The big log hit hard enough to register a blip on the Richter scale. The precautions taken in securing the short leader paid off; the 4,000-pound piece sheared off, but it didn’t go anywhere. With the remains of the day rapidly giving way to failing light, it was time to pack up for the night.

**The Rest of the Story**

All that remained to be done on day three was some final bucking – making sure all pieces were blocked and secured – and packing out the gear. Everything had gone smoothly. There had been no surprises and no damage or injury. In the final analysis, you can’t ask for much more when doing extreme rigging.

**Upon Reflection**

What I will always treasure about these two rigging jobs will be the teamwork and sense of accomplishment that came along with meeting the challenge. If you consider the lowering devices standard equipment as we do, the only special equipment needed was simply larger ropes, longer ropes and bigger blocks. There was nothing fancy about climbing either job. The Redwood demanded strength, skill and endurance from Majors to level the playing field. He made a job that would stop most climbers in their tracks look routine. For him, it was. The two most challenging rigging jobs of my career were accomplished flawlessly with the most basic of equipment, the most classic of techniques, and the very best of men. With all the changes that I’ve witnessed over the past decades, one fact has remained incontrovertible: the most important assets for effective problem solving are knowledge, experience, resourcefulness (and a whole lot of rope).

Donald F. Blair is the owner of Sierra Moreno Mercantile in Big Pool, Md.
Don't miss these upcoming events

October 30, 2001
9th Annual Community Forestry Workshop
Westminster, Md.
Contact: Katrina Tucker, (410) 848-4363

November 1-3, 2001
National Arborist Association
TCI EXPO 2001
Greater Columbus Convention Center
Columbus, Ohio
Contact: Carol Crossland, (800) 733-2622; crossland@natlarb.com

November 3, 2001
ISA Arborist Certification Examination
TCI EXPO 2001
The Greater Columbus Convention Center
Columbus, Ohio
Three-week advance registration required
Contact: Ohio Chapter ISA (216) 381-1740

November 4-6, 2001
The Irrigation Association
2001 Annual International Irrigation Show & Technical Conference
San Antonio, Texas
Contact: (703) 538-7080 or certification@irrigation.org

November 6, 2001
Tree Hazard Evaluation Workshop
UCR Extension Center
Riverside, Calif.
Contact: (909) 787-5804 or e-mail sciences@ucx.ucr.edu

November 7, 2001
Tree Hazard Evaluation Workshop
UCR Extension Center
Riverside, Calif.
Contact: (909) 787-5804 or e-mail sciences@ucx.ucr.edu

November 8, 2001
Ohio Chapter ISA, Tree Appraisal Workshop
An Introduction to the 9th Edition of the CTLA/ISA, "Guide for Plant Appraisal"
Brecksville Community Center
Brecksville, Ohio 44141
Contact: Ohio Chapter ISA, (216) 381-1740

November 9-13, 2001
PLCAA
22nd annual Green Industry Conference at the Green Industry Expo
Tampa, Fla.
Contact: (800) 458-3466

November 9-13, 2001
Associated Landscape Contractors of America
Green Industry Conference & Expo
Marriott Waterside and Tampa Convention Center
Tampa, Fla.
Contact: (800) 395-2522 or www.alca.org

December 3-6, 2001
Ohio Turfgrass Conference and Show
Greater Columbus Convention Center
Columbus, Ohio
Contact: (888) 683-3445 or visit www.ohioturfgrass.org

December 5-8, 2001
American Society of Consulting Arborists
34th Annual Conference
U.S. Grant Hotel
San Diego, Calif.
Contact: (301) 947-0483 or www.asca-consultants.org

December 11-12, 2001
Illinois Arborist Association
19th Annual Conference and Trade Show
Pheasant Run Resort
St. Charles, IL
Contact: April Toney (877) 617-8887; e-mail: ctoney1@earthlink.net

December 13, 2001
Ohio Chapter ISA, Tree Appraisal Workshop
An Introduction to the 9th Edition of the CTLA/ISA, "Guide for Plant Appraisal"
Winton Center,
Hamilton County Park District
10245 Winton Road
Cincinnati, Ohio 45251
Contact: Ohio Chapter ISA (216) 381-1740

January 7-11, 2002
Advanced Landscape Plant IPM
PHC Short Course
Department of Entomology
4112 Plant Sciences Building
University of Maryland
College Park, MD 20742
Contact: Debbie Wilhoit, (301) 405-3913, e-mail: dw34@umail.umd.edu or visit http://www.pest.umd.edu/events/events.html

January 16-18, 2002
Mid-America Horticultural Trade Show
Navy Pier,
Chicago, Ill.
Contact: (847) 526-2010 or www.midam.org

January 21-24, 2001
72nd Annual Michigan Turfgrass Conference
Holiday Inn South Hotel and Conference Center
Lansing, Mich.
Contact: Kay Patrick (517) 321-1660 or visit www.michiganturfgrass.org

January 28-29, 2001
Think Trees New Mexico
Crown Plaza Hotel
Albuquerque, N.M.
Contact: Bernalillo County Extension Service, (505) 243-1386

February 3-5, 2002
37th Annual Penn-Del Chapter
Shade Tree Symposium
Lancaster Host Resort
Lancaster, Penn.
Contact: (215) 795-0411
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MAT-3 moves to expanded facility

MAT-3, Inc., manufacturer of the MAT-TREE aerial tree care unit, has moved to its new location in Ixonia, Wis. MAT-3’s expanded facility is designed to improve the production of their aerial trucks and provide for better service to meet their customers’ needs.

MAT-3’s new address is: N8150 Maple St., Ixonia, WI 53036-0323, MAT-3 can also be contacted toll-free at 1-866-836-6265 or by fax at (920) 206-6260.

Micro Flo faces charges of selling illegal pesticides

The U.S. Environmental Protection Agency recently charged Micro Flo Company, a wholly owned subsidiary of BASF Corporation, with importing and selling millions of pounds of illegal counterfeit pesticides over several years. The EPA’s charges against Micro Flo, which is a large pesticide formulator and distributor with headquarters in Memphis, Tenn., amount to the largest enforcement case ever brought by the federal government for pesticide-related illegal conduct.

The EPA is seeking over $3.7 million in penalties, and has asserted over 670 separate violations by Micro Flo. The allegations against Micro Flo and BASF were initially investigated and brought to EPA’s attention by the law firm of Wright & Sielaty on behalf of United Phosphorus. The case originated when United Phosphorus discovered that Micro Flo had registered with the EPA – under Micro Flo’s own name – various pesticides produced by UP in India.

The EPA granted those registrations based on the quality and purity of UP’s pesticides, and Micro Flo’s certifications that its products would contain only UP’s pesticidal active ingredients. Despite those certifications, extensive evidence provided to the EPA showed that Micro Flo was importing millions of pounds illegal, unapproved pesticide active ingredients from other foreign producers. EPA’s own investigations confirmed that Micro Flo smuggled those active ingredients into the United States by falsely claiming that they were registered by EPA and produced by UP.

In fact, the EPA charges, those products did not contain UP’s EPA-approved active ingredients. Instead, those products contained potentially dangerous, counterfeit pesticides that had never been approved by the EPA.

The EPA’s complaint against Micro Flo, and other related information, can be viewed at www.pesticide.net/enforce/2001/microflo.html.

AgraQuest Signs Agreement with Gardens Alive!

AgraQuest recently announced that its biofungicide Serenade is now labeled by the U.S. Environmental Protection Agency for home and garden use. The product, already labeled for agriculture, is listed by the Organic Materials Review Institute (OMRI). All the same, crops that are on the agricultural label are also on the home and garden label. This includes grapes, apples, pears, onions, tomatoes, lettuce and walnuts.

AgraQuest also signed an agreement with the home and garden mail order company Gardens Alive! for selling Serenade to home and garden users.

Gardens Alive! sells its products to home gardeners who are purchasing increasing amounts of organic products.

AgraQuest is a biotechnology company that focuses on discovering, developing, manufacturing and marketing effective, safe and environmentally friendly natural pest management products for the agricultural, institutional, and home markets.

The Hartford advances payments to customers

The Hartford Financial Services Group, Inc. announced on Sept. 17 that it has begun advancing payments to customers for claims arising from the tragic events of this week.

“Our nearly $6 billion in consolidated surplus, some $200 billion in assets under management and nearly $1 billion in 2000 operating income provide The Hartford with the financial flexibility and stability to handle a catastrophe of this magnitude,” according to Ramani Ayer, chairman and CEO of The Hartford.

Ayer stated that policy language excluding coverage for acts of war would not apply in these circumstances. The company is currently reviewing a very limited number of marine policies that have exclusions for acts of terrorism.

Customers and business partners seeking to speak with employees who were formerly based at the 7 World Trade Center office may call 1-800-343-6655.

Dow AgroSciences LLC completes acquisition

As a result of its acquisition of Rohm and Haas Company’s agricultural division in June, Dow AgroSciences LLC has acquired the remaining 50 percent of RohMid LLC from BASF.

RohMid was established as a joint venture between American Cyanamid Company and Rohm and Haas Company in 1995. Following the acquisition of the American Home Products crop protection business in July 2000, BASF acquired American Cyanamid Company’s interest in RohMid.

Under RohMid’s joint venture agreement, the sale of the American Home Products crop protection business triggered Rohm and Haas’ right to acquire the remaining 50 percent interest in RohMid. Dow AgroSciences exercised this right as the new owner of Rohm and Haas’ former agricultural division.

RohMid sells MACH 2 turf insecticide in the U.S. Dow AgroSciences LLC, based in Indianapolis, Indiana, USA, provides pest management and biotechnology products.
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Winter Management Conference
Feb. 13-17
Ritz Carlton Kapalua
Maui, Hawaii
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Arborist Fetching Arch
Future Forestry Products Inc. has recently added the Arborists Fetching Arch to its line of equipment. The Arborist Fetching Arch is a winch-line powered, self-loading arch that will pick up and carry logs up slopes or over yards, given just a pulling line. Designed to be pulled with higher-speed winch lines, it can also be operated with ropes pulled from a remote location. The configuration of the Fetching Arch allows it to be operated by hand or from a winch line. It can also be quickly fitted with a towing tongue to be pulled by a vehicle as a Forwarding Arch. For more information, contact Future Forestry Products at 1-888-258-1445 or visit www.futureforestry.com.

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Brontosaurus
John C. Brown & Sons has introduced a smaller version of its Brontosaurus, an attachment that can turn a small excavator into an all-purpose land-clearing machine. With the 55 hp auxiliary engine and hydraulics mounted in place of the counterweight, the smaller Brontosaurus is designed for many 15,000 lbs. to 20,000 lbs. carriers, wheel or track. Use of rubber track pads allow for working on and around paved roads, curbs and lawns. For more information, contact John C. Brown & Sons at 14 B&B Lane, Weare NH 03281, call 1-888-227-6686, fax (603) 529-7979, e-mail bronto@gsinet.net or visit www.brownbronto.com.

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Silverado Summit
Royal Truck has unveiled a new Chevrolet Silverado with eight lockable storage compartments hidden in a factory-look body. The truck has 29 cubic feet of out-of-sight, weather-proof storage. The Summit's bed can carry 4-foot-by-8-foot plywood sheets. Other features include lockable in-line automotive door handle styles, sealed gas shocks to hold doors open, and two spaces long enough for pipes. Four of the eight compartments have side-opening doors and two have drop-down doors that can serve as horizontal work tables. The side-opening compartments have adjustable, lock-in-place shelves. Removable inserts can make the two 97-inch long, top-opening spaces suitable for small parts such as nuts, bolts and screws. For more information, contact Royal Truck at 1-800-834-7692 or visit www.royaltruckbody.com.

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Prodigy
PowerHouse Equipment has introduced its latest product, the Prodigy. The Prodigy is a 13 hp compact loader that can trench, auger, till, move materials and more. Touted as a "toolbox on wheels," the Prodigy's attachments include standard and mulch buckets, trenchers, auger power heads, 6-inch to 24-inch augers, tillers, rippers and tow hitches. The trailer can be pulled behind an SUV or pickup truck with no special brake hook-ups needed. For more information, contact PowerHouse at 1-800-476-9673, fax (803) 548-2762, or visit www.powerhouseequipment.com.

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MHL 360 Highdecker
Fuchs, a Division of Schaeff of North America, Inc., has introduced a new log handler called the MHL 360 Highdecker. The term “highdecker” is used because the log handler is capable of reaching log deck heights of 45 feet. Travel is through a 2-speed power shift transmission with a top speed of 9.3 mph. The hydraulically height-adjustable cab is a standard feature that lifts the operator to a maximum eye level of 20 feet, 6 inches high, and up to 7 feet forward of the chassis. The MHL 360 weighs 97,000 lbs. and will handle 9,000 lbs. at a reach of 55 feet. It is powered by a 226 hp Deutz water-cooled turbocharged diesel engine. Attachments include a live heel and log grapple. For more information, contact Fuchs at 1-877-907-8300, fax (214) 357-6884, or visit www.fuchusa.com.

Hustler Super Z
Hustler Turf Equipment has introduced the fast Hustler Super Z. With a top speed of 15 mph, the Super Z has a 25 hp Kawasaki engine, Hydro-Gear BDP21 hydraulic pumps and White CE 18-wheel motors. The Super Z can also be purchased with either a 60-inch or 72-inch side discharge deck. For more information, contact Hustler Turf Equipment at 1-800-395-4757 or visit www.excelhustler.com.

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Leading Employees Amid Chaos

By Wayne Outlaw

It has been said that in times of stability, management is needed. In times of difficulty and chaos, leadership is essential. Today companies in America, including every commercial tree care organization, are in a time of difficulty and chaos. No matter how well or poorly you felt you were doing, things have changed.

Our hearts go out to the Americans who were part of the Sept. 11 attack, had loved ones that were a part of it or have been directly affected by it. We are naive if we think that those directly affected are the only ones impacted. That one event has changed almost everything in our daily lives. In an email immediately following the attack I wrote that Americans are resilient, strong and resourceful. We will get back to business as usual soon. But the question is “What will business as usual be for the future?”

There is a tremendous amount of uncertainty today. I hope that by the time this article is read life will be much more stable. However, we have to assume that we are in for a long and possibly difficult period, both here at home and abroad. The events of that day and those that follow will naturally affect the employees we lead and the way we do business.

Now more than ever, there is a need for positive, compassionate, purposeful leadership. We must be sensitive and supportive of those we lead. However, we must never forget that if an outside force causes us to abandon the routines we need to do to protect the prosperity of the country, our company and even ourselves, the terrorist will have had far larger impact than any one single day’s events. If they destroy our feeling of safety and eliminate our financial security, they will have extended their destruction much further than the places of attack.

As we move to re-engage or re-energize employees in our businesses and learn how to obtain results in a new environment, we may have to dust off the skills we allowed to get rusty when times were easier. We may also have to develop new skills that stretch us as employees, managers, leaders and individuals. Due to the long period of prosperity and even longer period of personal security that we have enjoyed, there may be skills and approaches that we must now consider. If you would like to improve your ability to get results in these turbulent times – no matter the conditions – building or improving your leadership skills have never been more important.

There is a great deal of debate over leadership skills. Some say leadership is really not skill, but really the qualities of the individual that make him/her a leader. The problem with this premise is, if I accept that I can not learn what is needed to be a leader, then I am limited to my God-given talents. Others say that leadership is identifiable and specific skills can be learned. The truth, however, lies somewhere in the middle. It is not a finite set of skills, such as management skills, but a consistent set of traits and skills that enable you to behave in a certain way.

While some people may be blessed with traits that naturally make them leaders, we can work to improve our skills and build our leadership. While some may have not been blessed with the natural traits that people regard as leadership traits, they can learn the skills, approaches and techniques that people respond to in leadership situations.

If you would like to evaluate yourself based on the characteristics that the more successful leaders possess we have identified and learn how to improve your natural abilities, go to www.OutlawGroup.com/free_article.htm.

The challenge before us today is to move forward in our businesses as quickly as possible with purpose and compassion. Only when we get back to what we do well, such as our core competency of trimming trees, selling a job or even writing articles and consulting, can we alleviate some of the damage done by this foreign threat. We must become productive without losing our sense of compassion. To do this I suggest the following actions when you lead employees positively.

Acknowledge the Emotions

The fear and uncertainty that people are feeling today will not go away quickly. Allow employees to state their feelings. The workplace, especially a physical one like trimming trees, is not where people are usually comfortable dealing with emotions. However, these emotions are still present. While you are
not trained as a counselor, you must be sensitive to the range of emotions that people are experiencing and take the time to work with employees if needed.

Refer to Employee Assistance

If you own a large organization, your company may have an Employee Assistance Program to refer an employee or a family member who is having difficulty. If your company does not, there are programs available through local government, social service agencies and church organizations that are very beneficial.

Refocus Activity

It is easy to become distracted about the current news reports or conjecture about what will happen in the future. Watching video of cruise missiles hitting Afghanistan can be mesmerizing. This energy, if focused away from the job and productivity, can be draining and lead to production slowdowns and problems. Therefore, it is best to focus on small projects or with larger, ongoing projects, break them down into smaller pieces and set deadlines for employees to work toward. By narrowing the focus and speeding up the movement from one piece of work to another, we can stay on track and on task. By focusing employees on accomplishing specific tasks or amounts during the day (or even shorter periods of time), they can experience a sense of accomplishment.

Reward Success

Any time a person’s confidence is shaken, he or she needs positive reinforcement. As a leader, you and their manager have the unique opportunity and obligation to provide positive reinforcement to employees. In addition to being cordial and staying in tune with employees, it is important to take every opportunity to reward positive actions and successes. Don’t wait until everything is done, reward the steps along the way.

Foremen, crews and general foremen tend to supervise many younger workers, and they may be the most affected during this crisis. It may be the first time they have experienced such devastating issues. They may have friends called up into the reserves. Even in good times, the supervisor has a tremendous responsibility to lead with purpose and compassion because they are helping form opinions about the workplace and their future work ethics. Today your responsibility is even greater.

Take the time to evaluate how you lead and manage others. Make a commitment to become more than a more skilled leader. Become a more compassionate and purposeful one.

Decision on Ergonomics Delayed

The Labor Department announced Sept. 21 that it is postponing an announcement on how it will protect workers from musculoskeletal disorders and other ergonomic injuries because its resources have been diverted to respond to recent terrorist attacks in New York and at the Pentagon.

The decision was originally slated to be made by the end of this month, but will be made later this fall, the department said.

"Members of the Department's Occupational Health and Safety Administration have been heavily involved in the rescue and recovery efforts at the World Trade Center and the Pentagon since Sept. 11, which has prevented the Department from devoting full attention to Ergonomics," according to Labor Department officials.

Among those waiting for the ergonomics decision are organized labor and industry opponents. AFL-CIO Occupational Safety and Health Director Peg Seminario said the delay was "understandable and not inappropriate."

The DOL has been focused on the World Trade Center attack and the Pentagon, providing on-site support and addressing issues of workers, including many who have been killed and others who are now unemployed.

OSHA's new role in Safety

OSHA Administrator John Henshaw delivered a clear message to an audience of safety professionals at the National Safety Council Congress and Expo in Atlanta recently: OSHA must do more than just ensure compliance with standards.

At the meeting, Henshaw explained that one of his broader goals is to draw upon the knowledge and expertise of other health and safety professionals. The administrator, who started on the job three months ago after Senate confirmation, said that under his watch the agency would focus on leadership, fair enforcement, outreach, and partnerships.

Together with professional groups, trade associations, and labor unions, OSHA will lead what he said would be a national dialogue on safety and health.

OSHA enforcement has remained relatively constant over the past year. The number of inspections thus far in 2001 are at about the same level as this time last year and the number of citations for serious violations has increased only slightly. In addition, average penalties have also increased.

Henshaw said the job safety agency's compliance officers must do more than "interpret standards and issue citations"; they also must be seen as safety experts. Consequently, he said, he has appointed a group of OSHA staffers, headed by Frank Payne of the OSHA Training Institute, to review requirements and costs for obtaining professional certifications for OSHA inspectors and other agency personnel.

The OSHA head has outlined a number of possible initiatives in the outreach area, including a renewed emphasis on compliance assistance and outreach to workers and business owners whose native tongue is not English, particularly Spanish speakers. He believes the country would see greater returns on investments in injury and illness reductions with compliance assistance than in any other initiative.

Henshaw said he will seek to expand the agency's partnership and voluntary programs at all levels, adding that he hopes many more companies could be encouraged through such programs to gradually improve safety and health performance.

The OSHA administrator said that "all options are still on the table" regarding the Labor Department's upcoming decision on how it will address musculoskeletal disorders. Specific provisions regarding musculoskeletal disorders and noise-induced hearing loss have been delayed. The agency will hold hearings on those issues early in 2002.

Henshaw also reiterated that the agency's revised record-keeping rule is set to go into effect Jan. 1, 2002.

Other items on his agenda include:

- the need for strong enforcement, tempered by the realization that repeated citations of the same work sites may mean that the agency's approach is failing;
- showcasing employers that have reformed, accentuating the positive instead of dwelling solely on citations and penalties;
- meetings to discuss whether the right measures are being used to drive agency objectives regarding its targeted enforcement program;
- bringing the national and regional OSHA offices closer together to ensure more consistent enforcement.

Peter Gerstenberger is vice president of business management, safety & education for the National Arborist Association.
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Making a Difference

By Scott Jamieson

It was my first flight to visit my teammates in the Northeast since the terrorist attacks of Sept. 11. As my plane approached LaGuardia airport in New York, I could see the tip of Manhattan from my window. We drew closer and I realized I was seeing what I could no longer see – the World Trade Center twin towers missing from the New York skyline.

The pilot banked the plane and turned to follow the Hudson River, and those of us on the left side scrambled to the right side of the plane in order to look into the heart of the city. We flew directly above the rubble. The magnitude of the destruction, even from our view at 3,000 feet, literally took the air from our lungs. The only words were a soft-spoken whisper of “Oh my God” from one female passenger. As I sat back down, all I could do was look to the west toward New Jersey and wipe the tears from my eyes.

Sept. 11 and the days after seemed to make many things we were all working on irrelevant. We struggled at our company to “get on with things,” but that e-mail, that memo, that strategy, just seemed inappropriate to deal with at that moment. What had been masked by the noise of the daily hustle and bustle screamed for attention when the world fell silent in those days. The eerie silence in the skies as the nation’s air traffic was stopped seemed to help reveal what was really important in our short lives. Our families, our friends, and our teammates’ well-being jumped to the top of our lists of priorities. It seemed so clear, so right, to be close to our families, both inside and outside the company. It seemed so necessary.

Although productivity slowed and even stopped, it is my belief that in those days more people made a difference in the lives of others than they ever had. The daily grind and routines we get caught in serve often to numb us into activities that don’t really make a difference in our lives – or the lives of anyone else, for that matter. It is only when we stop and focus our energies on what is really important that we begin to contribute, that we begin to make a difference in this world.

One doesn’t have to save the world to make a difference. Contribution is most often found in the small acts that reverberate in the hearts of those who give as well as those who receive. Making a difference is that smile in the hallway, saying “hello” to someone who is looking down, helping a client preserve his or her tree, asking your teammates if they are doing OK, making that proper pruning cut 90 feet in the air, or taking the time to write a thank you note.

Leaders do what matters most, when it matters most, and for those who matter most. They focus their energies on the activities that have positive impact. Intentions are meaningless, because it is only through impacts that we make a difference. We work in an industry where contribution and making a difference should come naturally. Our very work in preserving trees contributes to the well-being of our planet. It is the people who really benefit, as they should. Whether it is from the beauty of a preserved tree, the shade that is maintained, or the increase in property values through trees, our industry makes a difference each and every day in the lives of others.

Today there is a renewed sense of urgency to contribute, to matter and to make a difference. Don’t squander this opportunity. Check your lists and make sure you’re working on things that truly matter and make a difference in the lives of others.

Scott Jamieson is president of Hendricksen the Care of Trees, Inc. in Wheeling, Ill.
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Uncle Sam, in the form of our tax laws, is willing to pick up a portion of the expenses of every tree care and landscape professional attending and/or exhibiting at TCI EXPO 2001. That’s right, every business owner and employee can legitimately claim an income tax deduction for the expenses paid or incurred in attending a trade show or convention.

The expenses of exhibiting or selling at a trade show or other event are, generally speaking, tax-deductible business expenses. All that is required to qualify for these tax deductions is that you show, if asked, that attendance or exhibiting at the trade show, meeting, convention or other event benefited the tree care business.

Imagine the possibilities! You can attend virtually any trade show or convention and claim the expenses as an income tax deduction. Similar tax deductions are available when you have a promotional or sales booth at a trade show designed for the public. In essence, the government is willing to pick up the tab for a sizable portion of the expenses of your attendance at TCI EXPO 2001— if you follow the rules.

Deducting the Essentials

The expenses incurred traveling to Columbus are tax deductible. Tax deductible travel expenses include plane, train, bus or car costs between your home and TCI EXPO. Also included are the expenses of taxi cabs, commuter bus and airport limousines, baggage and shipping costs for samples or display materials, lodging and meals, cleaning, telephone calls, and even tips. And, don’t forget the costs associated with attending the convention itself.

The cost of lodging and meals are also legitimate deductions if you are away from home overnight or even just long enough that you need to stop for sleep or rest. When it comes to meals, the tax rules contain quite a few restrictions—and a number of loopholes. Generally, the deduction for meals includes all amounts spent for food, beverages, taxes and related tips. The tax deduction for meals, however, is limited to 50 percent of the amount actually spent.

Under the tax rules, an attendee or exhibitor can use either the actual cost of the meals or a standard amount in order to figure out the convention-related meals expenses. If you, as an individual, are reimbursed for those expenses, how you apply the 50 percent limit depends on whether your employer’s reimbursement plan is accountable or non-accountable.

Bringing Company

If an attendee’s spouse, family member or other person comes along to TCI EXPO, the attendee or the tree care business cannot ordinarily deduct the guest’s travel expenses. (That benefit ended some years ago, although several bills before Congress seek to restore the deduction.) The travel expenses for any accompanying individual are deductible only if that individual:

1. is an employee;
2. has a bona fide business purpose for the trip; and
3. would otherwise be allowed to deduct the convention expenses.

In order for a bona fide business purpose to exist, the tree care professional must prove a real business purpose for the individual’s presence. Incidental services—such as typing notes or assisting in entertaining customers—is not enough.

When, for example, our tree care business owner, Joe Smith, drives to Chicago to attend a convention, he takes his wife, Jane, with him. If Jane is not an employee of the company—even if her presence serves a bona fide purpose—her expenses are not tax deductible.

Joe pays $115 per night for a double room. A single room costs $90 per night. He can deduct the total cost of driving his car to and from Chicago, but only $90 per night for his hotel room. If he uses public transportation, he can deduct only his fares. Since the rooms reserved at the host hotels at TCI EXPO are the same rate for single or double occupancy, the deduction may be taken in full. Bear this difference in mind when calculating deductions at other trade shows, however.

Both self-employed business owners and employees can deduct a standard amount for their daily meals and incidental expenses while attending TCI EXPO. The standard meal allowance is an alter-
native to the actual cost method. It allows the attendee to deduct a set amount, depending on where and when the attendee travels, instead of keeping records of actual costs.

If the standard meal allowance is used, the attendee must still keep records in order to prove the time, place and business purpose of travel. If your employer is a relation or a tree care business corporation in which you are more than 10 percent owner, you cannot use the standard meal allowance.

The standard meal allowance is the Federal M&IE rate. During 2001, the standard meal allowance varied between $34 and $42 per day for most areas of the United States. Some locations are designated as high-cost areas, qualifying for higher standard meal allowances. Maximum per-diem rate, including lodging, varied between $124 and $201 per day in 2001.

Selling Your Business or Your Wares

Under our income tax laws, it is immaterial whether the booth you set up at TCI EXPO or Student Career Days is for the purposes of promoting your business, your products or your services – or for the purpose of selling your goods, products or services. On the one hand, you have sales expenses, on the other advertising or promotional expenses – all of which are usually deductible.

The expense of creating a unique display or booth may not qualify for an immediate income tax deduction. If, however, that display or booth is for one-time use only and if it is not adaptable to other events or venues, then perhaps an immediate tax deduction as an expense for property with a useful life of one year or less might be in order.

If depreciation is the route that must be taken, don’t overlook the tax deduction for abandonment of a business asset for the entire book value of any asset that is no longer useful to the tree care business. Naturally, that asset must actually be abandoned or disposed of (not merely stored).

Further Convention Enjoyment

The tax rules clearly state that all travel expenses are tax deductible if the trip to TCI EXPO was entirely business...
related. But what if an attendee or exhibitor decides to combine that trade show attendance with a vacation? This question becomes especially important to company owners thinking of attending the NAA's Winter Management Conference (WMC), which in 2002 will held in February in Hawaii.

If the trip is "primarily" for business and, while at the conference or trade show you extend your stay for a vacation, made a non-business side trip or have other non-business activities, you can still deduct your business-related travel expenses. Those expenses include the travel costs of getting to and from the convention destination and any business-related expenses at that destination.

If, however, the trip was primarily for personal reasons, the entire cost of the trip is a non-deductible personal expense. Naturally, you can deduct any expenses you have while at your destination that are directly related to attendance at TCI EXPO or WMC.

**Backing Up Expense Deductions**

In order to claim any tax deductions, you must be able to prove that the expenses were, in fact, paid or incurred. In fact, the following expenses generally must be substantiated by adequate records or sufficient evidence corroborating the taxpayer's own statement because the IRS deems them particularly susceptible to abuse:
- expenses with respect to travel away from home (including meals and lodging);
- entertainment expenses; and
- business gifts.

Self-employed individuals and employees whose expenses are not reimbursed may, however, use a standard meals and incidental expense (M&IE) rate computed by the IRS to figure meal and incidental expenses while traveling away from home. Although the actual amount of the deduction is taken from tables provided by the IRS, you must still prove (through adequate records or sufficient corroborative evidence) the time, place and business purpose of travel.

**Writing Off Education, Fun and Business**

By now it should be evident that every tree care professional can write off or deduct the expenses of attending or exhibiting at TCI EXPO, WMC or other event. All that is required under our tax laws is that a legitimate business purpose for those expenses exists.

In reality, the agenda of the convention does not have to deal specifically with your tree care and landscape maintenance business. It is enough that you can reasonably be expected to gain some business benefit from attending or exhibiting at that event. Since both TCI EXPO and WMC are designed to further your business, there's no doubt your attendance is tax deductible. Make sure you hold on to those receipts!

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<td>APM 12 30LP45</td>
<td>12&quot; Chain for Echo/Poulan/Husky (45 drive links)</td>
<td>$7.95 ea.</td>
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<td>APM 14 30LP52</td>
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<td>16&quot; Chain for Echo/Poulan/Husky (56 drive links)</td>
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<td>14&quot; Chain for Stihl (50 drive links)</td>
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One area of chain saw operation that should be considered most important when discussing safety is the reactive forces of the spinning saw chain around the guide bar. Many lacerations to chain saw operators take place when reactive forces cause a loss of control. A chain saw operator who is unaware of the reactive forces is likely moments away from an unexpected injury. These three forces and their combinations should be understood completely before operating a chain saw for any task:

1. **Push Back**

"Push back" is the rearward force created when the top of the bar is used in undercutting (upward cut). In addition, a pinch or bind occurs during a downward (bucking) cut in a log or limb that stops or slows the chain's movement on top of the guide bar. The action of the chain saw is to push backward toward the operator. In some conditions, this could unexpectedly force the operator off balance, resulting in the rotating saw chain making contact with the operator, causing injury.

2. **Pull In**

"Pull in" is the forward-pulling force created during downward cutting action of the chain saw. We know this is a basic cutting position of an operator, however, this action of the saw can cause dangerous reactions by the operator. Injury is often caused by over-reacting or loose footing from improper stance.

3. **Kick Back**

"Kick back" is the rotational force created when the upper corner (upper tip) of the guide bar, with the saw chain spinning, comes in contact with any object, and is pinched or caught in bind during a cut. This rotational force occurs only in the top corner section of the guide bar tip. However, kick back may be part of a combined reaction with push back or pull in. For example, a push back could occur, pushing the saw backward until the upper tip contacts an object, at which point rotational kick back occurs.

Explanations of these forces can also be found in your saw's owner's manual. Read and understand the entire owner's manual. Pictures and text generally illustrate at least the kick back section of the bar. Videos illustrating reactive forces are also available from manufacturers of chain saws and saw chains. These are your first areas of reference.
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If you use a chain saw in your work, does this situation change? Not really. It is required that employers, supervisors, etc., give employees training regarding the use of tools in any work task. Equipment manuals should be available to you to study before beginning work with any tool or equipment. It is your responsibility, however, to become comfortable with equipment controls, safe operation, and personal protective equipment needed during use of the tool.

Kick back may be part of a combined reaction whereby the operator pushes the saw backward until the upper tip contacts an object, causing rotational kick back.

When planning to use a chain saw, be sure to follow these steps:

◆ Read the manual.
◆ Wear all proper and required personal protective equipment.
◆ Study and use proper stance.
◆ Keep the bar tip 45 degrees plus from your body at all times.
◆ Keep the saw power unit close to your body to maximize control.
◆ Never cut over-extended or above shoulder height.
◆ Be aware of your fatigue level.
◆ Maintain chain saws and saw chain at peak performance.

When cutting conditions are awkward or critical, request or select a reduced kick back bar and chain combination for the task.

Remember: Training for the task and a thorough understanding of the reactive forces is first priority. If in doubt—seek an answer! Keep in mind that accidents are unplanned events.

Tim Ard is president of Forest Applications Training, Inc. He provides training and demonstrations across North America. For more information, contact Forest Applications Training, Inc., P.O. Box 1048, Hiram, GA 30141-1048. Phone: (770) 459-3791. Web: http://www.forestapps.com. E-mail: timard@forestapps.com.

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New equipment and the right machine for each job are two reasons companies turn to rental agencies for chippers.

What do savvy tree professionals do when the chips are going to fly? They can avoid going out on a financial limb by using a simple cost-saving technique popular in so many other industries – commercial renting.

Chippers for rent – especially the smaller units – have long been favored by homeowners and building maintenance personnel. At first, the need was to simply limit yard waste for aesthetic purposes or to cut hauling and dumping costs. Lately, however, the growing popularity of renting specialized equipment such as chippers – even from high-profile rental agencies – has been in response to mounting pressure to limit volume due to bans on green waste in landfills.

Among arborists, those same criteria certainly are important but on a much grander scale – and there’s also the profit and loss business side to consider. A short-term need for another chipper may not justify adding another machine permanently to your equipment lineup.

Neither landscape contractors nor tree care companies get off any easier than the landowner, facing higher tabs for hauling green waste to the landfill or composting facility on a regular basis. Even if there is a convenient – perhaps free – locale for disposal, every trip costs money in gas and vehicle wear and tear. So arborists are continually searching for ways to decrease these costs.

Though still low on the contractor’s radar screen, renting, in general, has served some commercial companies’ needs. Now, when it comes to chippers there are three specific benefits to renting:

- access to the right sized chipper;
- equipment that’s always service-ready;
- availability when the job calls for it.

Numbers show that renting tree equipment is growing in popularity, mainly because customers prefer to shift the upfront investment and the maintenance of such equipment to the rental stores rather than absorb the costs themselves. Contractors are finding that the dependability of a relatively new, well-maintained rental unit can be more advantageous, efficient and economical than owning the equipment themselves. It all comes down to the basic economics of their businesses.”

While rentals might not be the first, most obvious solution to the short-term need for a chipper, renting can prove to be a profit-driven one, say manufacturers and rental agencies – if the arborist takes a business view of the problem.
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Paul Cicero at Southside Total Power, headquartered in Englewood, Colo., knows both sides of the sell-vs.-rent equation, since his company both sells and rents a full range of chippers ranging from 6-inch to 18-inch units.

In his experience, the bottom-line impact for the arborist who rents is twofold: flexibility and cost control. Even as the daily rental costs rise to upwards of $350, the benefits are obvious, he says, the most obvious being simply the freedom from long-term financial commitment. "Renters are committed to pay only for what they use," he notes.

Next, outside of damage due to negligence, the renter is free from repair and maintenance costs. From lubrication to repair and sharpening of chipper blades, which can range upwards of $40 to $50 per set as often as every week, the rental company pays to keep the machines in working order. Commercial tree care companies involved in heavy land-clearing use know how often blades need maintenance.

Most important, says Cicero, even though it seems that the renter is paying more by the day or week vs. buying, renting is one way to fix costs accurately, which helps in figuring costs for specific bids.

### Short-term renting

In addition to the obvious benefit of having a new or almost new chipper ready when you need it, short-term renting has other benefits of business interest to the arborist. Rental expenses are a direct cost write-off. Renting requires no extensive or costly capital equipment bookkeeping, asset management, depreciation or salvage value tax issues. Nor do renters incur the hidden overhead costs to manage those functions.

Second, there are no extensive credit checks, time-consuming loan applications, monthly payment schedules or other ancillary costs, such as casualty insurance, registry tags for towed units, or off-duty storage.

Third, short-term renting can actually pay for itself in labor costs. How? Renting a larger unit for a specific job might, in

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Some companies rent larger machines for extra production short term.
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11’ Chip Body with Mancab and Toolbox Package
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NT-16-CT
16’ Chip Body with Underbody Toolboxes; 2001
International 4700; DT466 Diesel

93 Ford-SD
12’ Chip Body with Mancab and Toolbox Package
1993 Ford F700; 5.9 Diesel; 6 Speed Transmission

93-Ford-AL
55’ Working Height Aerial Lift of Conn.
AL-50 1993 Ford F700 5.9
Cummins Diesel

GMC-XT-55-FP
60’ Working Height;
Hi-Ranger XT-55;
2001 GMC C7500
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Please circle 33 on Reader Service Card
Stay safe with your rented chipper
(And other tree equipment)

Based on research for this article, TCI has compiled a core safety list for using rented chippers. Much of it applies to other power equipment use as well. Managers might consider reviewing the basics with operators and posting the list as a reminder in high-traffic areas.

When you rent:
- Review equipment safety procedures. They vary from machine to machine.
- Walk through startup, operation, and shutdown with rental agency.
- Make sure you/your operator knows how to use the machine safely and efficiently.
- Don’t tamper with controls.
- Don’t open panels.
- Do not service in the field.
- Check insurance coverage.

When you operate
- Following safe working practice when feeding brush into a brush chipper is absolutely essential. “Use good judgment and respect the potential dangers and fatal consequences of improper operation,” cautions Vermeer.
- Read, understand and follow manufacturer instructions.
- Use proper personal protective equipment: hard hat, hearing protection, eye protection with full-face shield, safety shoes, gloves (with long, snug-fitting cuffs to reduce the chance of an operator being snagged by a branch), and reflective clothing (if working near traffic areas).
- Keep spectators and unprotected workers away from machine during operation.
- Position discharge chute to direct material away from bystanders or co-workers.
- Examine the brush pile for stones, wire, nails or other hard objects that can damage cutting knives or become dangerous projectiles.
- Feed material only from the side of the feed table.
- Release fed limbs immediately after they begin feeding; then move away to the side.
- Feed material base first to reduce the chance of an operator being snagged by a limb and pulled into the machine.
- Trim material that continues to jam or does not feed properly.
- Never climb onto running equipment – especially the feed table – or touch the feed rollers with hands or feet.
- Use a branch, limb or wood object to push short material into the machine.
- Follow normal shut-down procedure and wait for all rotating components to stop before opening the machine to remove a plug.
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Straight financing requires more money down and better credit than leasing, Cicero notes, but a lease is more flexible on the front end since it requires less of both. Cicero often cautions against long-term leasing for all but the very savvy arborist. "Leasing means there are virtually no options out and no payoff options short of very expensive buyouts. You are locked in for the entire lease term for so many months or years - even if you get a windfall." The reason, he says, is that the leasing agent structures profits on reliable month-to-month payments, which makes it costly to buy your way out of a lease.

"Typically, professional arborists are looking for our heavy-duty commercial units," says Cicero. "With 6-, 9-, 10-, 12-, 13-, 14- and 18-inch capacities, users can match their equipment cost exactly to their need."

With that kind of thinking, contractors figure that by renting they essentially pass the up-front investment on to the rental companies. At the same time, they are lowering their personal debt and letting the rental company assume the "utilization risk" and the maintenance expenses.

"A contractor needs to look at the numbers when weighing the decisions to rent or buy," confirms Trey Sharp, district manager in Illinois for Rental Service Corporation. In his opinion, "Any piece of equipment priced over $35,000 that is in use less than 70 percent of the time should be rented. The contractor comes out ahead renting equipment that sits idle more than 30 percent of the time, because of factors like budgeting for downtime, maintenance and the cost of a mechanic."

Rental agencies and manufacturers agree that there are three basic questions customers should ask themselves when making the decision to rent or buy:

- How often will the equipment be used?
- What are the regular maintenance costs after the purchase?
- How many machines will be needed to accomplish all the potential jobs?

Once the decision to rent has been made, stresses Mark Rieckhoff, environmental product specialist manager at Vermeer, a customer should visit the rental store with several things already settled in his mind.

"The customer should have already asked himself a couple of questions," explains Rieckhoff. "First, where and what is he going to be chipping? If he is going to be in a yard chipping small material, he will want a small machine. If he is going to be clearing larger trees from a pasture, he wants a larger machine."

Second, the arborist will need to know the maximum dimension or diameter of the material to be chipped. "It is important that the customer knows this information so he is not renting a machine that is too big or too small for the job. Most often, the bigger the unit, the more it costs to rent," Rieckhoff says, adding that once the unit is off the yard, there is more to consider.

"Once customers have decided what unit to rent, they need to learn the ins and outs of their chipper. Before operating a chipper, everyone involved in the operations should thoroughly read and understand the operator's manual and its safety instructions."

Good advice for everyone using a new piece of equipment for the first time!
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WO# 6707
Steps to a Better Property Lease

So your property lease is up for renewal. Well, polish your reading glasses and sharpen your pencils: It's time to fine tune the fine print to get more favorable terms. Rent, after all, is one of your biggest expenses. In these times of lower expectations for revenue increases, it makes sense to fatten your profit by paring your overhead.

"Many people believe that if their space needs are being met, come renewal time they should just sign on the bottom line," says Myra Maher-Martin, vice president of Joe Foster Company, a Dallas-based real estate brokerage and advisory services company operating nationwide. "Strategically, that is not in their best interest."

The problem is that landlords often have creative ideas about modifying lease terms. "If landlords are going to try to obtain more favorable terms, tenants should do the same," advises Martin.

Before deciding on a broker, ask for references in terms of current clients. Then get feedback from the references. Did the broker pursue better lease terms tenaciously? Bring in a lease that was "on budget" in terms of your current needs? Complete the work on time? And how well has the broker's lease withstood the slow erosion by operating expense pass throughs?

Be aware there are two types of brokers: "tenant" and "landlord." The latter represents space marketed by property owners, so there can be a conflict of interest when it comes to lease terms. It's smarter to use a "tenant broker," who represent tenants exclusively. You may also seek the help of a consultant who specializes in property leases. One good source of experts is the membership list of The Counselors of Real Estate (CRE), comprised of real estate, financial, legal and accounting firms who specialize in property lease negotiations. The CRE is at 430 North Michigan Ave., Chicago, IL, 60611. (312)-329-8427. You can search for consultants in your region, on the Web at www.cre.org.

Looking for more detail on the fine points of the fine print? A number of white papers on the most critical areas of property leases are posted on the Web at www.rentaudit.com, the Web site of The Robert Thomas Group, a Chicago-based real estate lease auditing firm. Another good reference site is at www.leasesmart.com, maintained by ITRA Palm Beach, a tenant representation company in Stuart, Florida.
crashed, for example, parts of San Francisco suddenly went from one of the nation's tightest property markets to one of the softest,” says Maura Cochran, president of Bartram & Cochran, real estate and economic development consultants in Hartford. “Silicon Valley is vastly overbuilt.”

Space availability will vary by city and neighborhood. And office space vacancies don’t always mirror conditions in markets for the space needs of commercial tree care companies. Prior to developing a lease renewal strategy, find out what’s happening in your area.

“You need to know if you are in a market that has become stronger or weaker,” says Cochran. “Talk with real estate brokers in your town.” (Many brokers publish current market analyses on their Web sites.)

As a general rule, if a market has more than seven percent vacancy it is considered a tenant’s market, with a requisite improvement in negotiating power. Even if your lease has some time to run, you may want to negotiate an extension now. Given the economic storm clouds on the horizon, your landlord may jump at the chance for shelter in the form of a proven tenant. Fact is, the landlord will benefit in many ways if you continue your lease. For starters, there will be no costly unrented time while a new tenant is located, and no expensive fixing up and painting of your premises.

“You don’t have to wait until your lease is up for renewal,” stresses Susan Hays, a principal with the Hartford-based law firm of Updike, Kelly and Spellacy. “If you are midway through your lease and you are happy, negotiate an extension now.”

In general, be smart and negotiate early. If you wait until the last minute, your landlord may try some delaying tactics, which can eventually cause you to sign a poorly examined document when moving to new quarters is no longer an option.

“Some landlords will string along tenants until they don’t have time to move,” warns Mark Fajack, a vice president at Cost Analysis Management Co. (CAMCO), Cincinnati. “So

1. Check the terms of your renewal options.

Does your lease provide for a renewal option? This is the first thing to find out. If you have already renewed your lease once, there may be no additional automatic options left, which can pose problems.

“Sometimes people negotiate better renewal option terms,” says Hays. “They may say, ‘I would like a five-year lease and the option to renew for an additional two five years periods.’ If they have a really good site, this is a way to lock the landlord into allowing them to stay longer.”

Landlords would rather have a single 10-year lease than one 5-year one with an option to renew. However, they may agree to options if you will guarantee escalators in terms of rental amounts. As with any other lease negotiation detail, options are matters of give and take. Pay attention to the time frame in the renewal option. Be aware of any demands that you notify your landlord of intent to renew before a certain number of months prior to lease expiration.

2. Find a “walk-away alternative” before negotiating.

If you are going to negotiate from a position of strength, you need to know you can walk away from your current position because you have an alternative location to fall back on.

“Few tenants take time to get a walk away alternative,” says Martin. “But it’s...
crucial.” Besides leverage, there’s another benefit to having an alternative location: you can visualize your negotiation as an entirely new piece of business rather than an alteration of a previous agreement.

“You want to consider every critical term of your lease a negotiable item,” explains Martin. One final point: Don’t try to fake your walk-away alternative. You must always have a real one for it to work, or otherwise you will pull your punches during negotiations.

3. Watch for unfair escalation clauses.

Outside of the base rental rate, the stickiest part of a lease is the operating expense escalation clause. Sometimes called “pass through clauses,” these call for your rent to increase according to a formula that determines your pro-rated share of the actual rise in a building’s operating expenses. Unfortunately, such clauses often include so many types of operating expenses that they result in unexpected liabilities for tenants. Many landlords view these clauses as profit centers, while tenants see them as methods used by landlords to stay even. In your negotiations, attempt to eliminate expenses that relate to the risks of ownership rather than of leasing. These include marketing costs for the building, or amortization of maintenance and energy conservation and cleaning equipment. Capital improvements to the elevators and other building systems should be amortized rather than expensed directly. Also watch for landlords who manage more than one building but assess all of their overhead expenses to the tenants of one building. Back in the days of high inflation, the escalation rate was tied to the consumer price index (CPI). In those days, tenants would attempt to put a “cap” on the increases to lessen risk. While we don’t see such rapid price hikes anymore, sometimes rent increases are still tied to a CPI escalator formula.

You should examine the terms that apply in your lease. Many leases will simply say that the rent will increase by a certain amount each year, say 5 percent. Whatever the escalation terms, both sides are attempting to limit risk. If your lease calls for 5-percent increases during renewals, you may end up paying more or less than the going rate for similar properties, depending on what conditions are affecting your market.

4. Obtain “finish allowances.”

Your property has undergone some wear and tear over the years and could use a facelift. What kind of money will the landlord devote to this purpose? The landlord will have budgeted some money to fix up your space in the event you decided to leave. How much of that money can you obtain for repainting and refinishing? Try to get some repair and maintenance of your interior space, including paint and carpeting and ceiling tiles.
5. Change base year to the current year.

Here's another tip that relates to operating expenses. Operating expense escalation rates replicate the increases in such costs over a “base year,” which is generally the year your lease began. When you do renew, make sure the base year is adjusted to the current year, rather than to some former date.

6. Beware a change from gross lease to net lease.

In a “gross lease,” the landlord bears all of the risk for repairs and maintenance. In a “net lease,” the tenant pays for a portion. Know which kind of lease you have. And beware an announced change in the lease that can leave you liable for thousands of dollars in additional expense.

“One Michigan business signed a lease renewal that provided for a modest rental increase to $17,000 a year,” says Fajack. “But the landlord didn’t mention the contract was changing to a net lease. As a result, the business is paying $5,000 more than anticipated.” You can avoid similar bad news by making sure you are not switched out of a gross lease unannounced.

7. Assure your right to audit operating expenses.

So you’ve agreed to pay a portion of the operating expenses for your property. But how can you make sure the numbers from your landlord are accurate? Make sure your lease contains language that allows you to audit bills in a timely fashion. You want to be able to audit these expenses, because in some cases they can add up to 30 to 40 percent of your total rent. Such expenses may include janitorial expenses, insurance, administrative costs to run the building, electricity and other utilities, real estate taxes and a host of other line items.

Given the variety of what may be included, it’s important to negotiate a lease that itemizes exactly what you will be paying for. And many leases will contain explicit language that permits the tenant to audit the operating expenses.

“Sometimes leases are silent on the subject, and in those cases we believe enough case law has developed over the years that a tenant has a right to see what they are paying for,” says Wiesner, who advises against signing leases that are overly restrictive in terms of audit rights. “A lease may state that operating expenses must be audited within 10 days of the issuance of a statement. We find this is impractical for most tenants.”

What time frame should you negotiate? “I wouldn’t sign anything for under three months, and I think three years is reasonable,” says Wiesner.

8. Don’t waive your right to obtain money due.

As part of your renewal, you may be asked to sign an attachment to the effect that the landlord does not owe you any
money. “If signed improperly, this can hurt you,” warns Wiesner. “I’ve seen cases where landlords have owed tenants money that has been waived away.”

Prior to signing, perform due diligence to make sure you are not owed anything. Some categories to watch: overpayments on prior leases, tenant improvement allowances, and rebates or free rent with your previous lease. The “free rent” amounts can be easy to overlook if the specified months are staggered. For example, suppose your landlord had originally sweetened a five-year lease offer by specifying two months free of charge. At the same time, though, the landlord assured that you would stay for the long term by assigning those rent-free periods as months 36 and 37. It’s up to you to make sure you do not pay for those months, or, if you mistakenly do so, do not waive your right for reimbursement later.

9. Restrictive sublease clauses.

Try to preserve your right to sublease space without your landlord’s written consent. If your landlord insists on the right to approve sub-tenants, try to limit the time allowed to reach a decision to 30 days or so. Some leases allow the landlord 90 days to approve a sublease. In that time, the sublessor will have long since decided to rent some other space.

10. Beware holdover clauses.

Suppose that you are unable to move to your new location smoothly and on time. This condition, called a “holdover,” may have come about through no fault of your own. All of the moving companies, for example, could go on strike before moving day. If your lease calls for onerous payments to the landlord in such a case, your profits could be hit hard. Some contracts go so far as to stipulate that the tenant pay double the monthly rent, as well as damages to the landlord. Suppose another tenant cannot move in on time because you have not moved out, and that as a result the tenant cancels the lease. Damages to the landlord could be deemed to be very high and you will be liable if the contract so states. Get any such clause out of the contract. Alternatively, you may be able to get the penalty reduced to 125 percent of the monthly rent.

“Don’t let the landlord get the upper hand on holdovers,” insists Martin. “You may be held liable for the landlord’s loss of another tenant. Make sure you use a broker who is knowledgeable about the correct lease language.”

11. Original condition clauses.

Some leases contain language that requires you to leave the premises in their “original condition” when you depart. Try to get this term defined specifically so you are not penalized for normal wear and tear, and have a dollar limit placed on the value of any required restoration. Another smart move is to take some photos of the premises when you move in, so you have evidence of any pre-existing conditions that were not of your making.

12. Eliminate personal guarantees.

Maybe when your business was young, your landlord would not offer a lease without a personal guarantee. Times have changed now that you have proven yourself.

“It’s easy to forget the existence of these guarantees, and that you are now exposed for more money because the rent has gone up,” says Martin. “Negotiate out the clause.”

The tips in this article will help you negotiate more profitable conditions come lease renewal time. Plan ahead. Thoroughly analyze your contract, and don’t sign on the bottom line until you get the best deal possible. The net result of all this negotiation will be more profit for you, since excess rent and expense payments will not erode your bottom line. Your landlord, too, will be better off with a happy tenant who decides to stay for the long term rather than look for better conditions elsewhere.

“The best lease,” concludes Martin, “is win-win for everyone.”
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A personal digital assistant (PDA) provides a low-cost alternative to more expensive systems for collecting data on public and private trees. Many PDA programs are available for use by arborists and tree managers.

Introduction

Until recently, the collection of tree inventory data has involved the use of expensive hand-held computerized data recorders or simple paper systems to record information on the type, size, condition, health, and maintenance requirements of public and private trees. Whether one was inventorying trees growing along public streets, on private property or in recreation areas such as golf courses, collecting and managing the information required equipping inventory personnel with hand-held data recorders costing thousands, or involved costly data entry once the field work was completed. Today, low-cost solutions to field data collection and storage needs are available, using Personal Digital Assistants, or PDA’s, collectively referred to as Palm Pilots. These hand-held devices are inexpensive, easy to use and

Tree Inventories:

In the Palm of Your Hand

By Dr. David V. Bloniarz, Shaun V. Phelan, M.Ed. and Dr. H. Dennis P. Ryan

State-of-the-art technology is providing arborists with new, affordable inventory tools, making fieldwork more efficient and less costly. The PDA is one of the more useful advances for completing field surveys.
offer an affordable solution to many users’ data collection needs.

Whether you are developing a municipal tree inventory system, tracking the health of park trees, managing trees growing on golf courses, or cataloging trees for homeowner clients, the use of a PDA can increase efficiency, reduce the potential for data input error, and improve the timely reporting of data. Eliminating the need for manual data entry following field collection activities adds to efficiency and reduces the cost of this inventory program. The use of inexpensive PDA’s enables one-time entry of data while working in the field, eliminating the need to own or rent costly equipment, or complete timely data-transfer procedures after returning to the office. Typically, a PDA capable of recording tree inventory information can be purchased for about $150. Inventory software is available for free, or can be obtained from a variety of sources at affordable costs.

Ultimately all of the data collected on a PDA will be downloaded to a database operating on a personal computer. Therefore, the PDA should be viewed as a data-collection tool, from which data will be transferred to a spreadsheet, database or standalone inventory management program. Its usefulness is to streamline field data collection operations, but is not substitute for the use of fully trained, proficient field personnel. However, the use of a PDA complements the use of skilled staff and makes their work in the field more efficient and cost effective.

The computer backbone

The Palm Operating System (OS) is one of the most common computer platforms on which PDA’s function. Several manufacturers produce PDA’s that use the Palm OS, including Handspring, Sony and Palm Pilot. Each of these companies produce products which utilize the same computer program to operate, therefore individual preferences will determine which manufacturer’s product a user chooses. While other manufacturers and operating systems are available, the Palm OS is the most widely used system today. Therefore,
Data collection using a personal digital assistant provides field personnel with a lightweight, inexpensive and easy-to-use tool for collecting data on trees and transferring it to a database program on a desktop computer.

Pendragon Forms software allows the user to customize data collection forms on a personal computer, for use on a PDA. Custom input forms such as this one can be created with minimal technical expertise.

The MCTI login screen allows users to identify the community, the range tree identification numbers and inventory personnel.

The MCTI screens duplicate data entry fields that might be found on a paper-based inventory tally sheet.

tree inventory tools that utilize the Palm OS are offered here.

The primary requirement to operate the PDA inventory programs outlined here are that they be capable of running the Palm OS and have a minimum of 2MB of memory. Other functions, such as a color screen, increased memory or a cellular modem, are not needed to operate most inventory programs, but may increase personal productivity or comfort. Choosing a PDA for your needs will direct the final cost and configuration of what you ultimately purchase, and can range from $150 to nearly $500. The more memory that your PDA contains, the less likely you will be to overload its storage capacity, eliminating frequent downloads of data to a desktop computer. Increased memory will raise the cost, so you should closely examine costs and benefits of the additional investment.

Only five years ago, a street tree inventory was completed by community volunteers in Brookline, Mass., who used Husky Hunter 16 data recorders, which sold for over $1,200 each. At that time the purchase or lease of the hand-held units was clearly unaffordable for many communities or commercial firms, which is dramatically different than the situation today. Outfitting a cadre of community volunteers or staff with today’s current technology is fully affordable in most cases.

In the event that you are purchasing many units, it is best to buy the same type and capability, so that if a unit goes out of service it can be replaced or shared
with another user. This redundancy will reduce downtime during your inventory operations and ensure that all users are fully skilled in the use of your units.

Palm-based solutions
Many Palm OS programs are available for use in PDA's, and many can be useful to the arborist, tree manger or consultant. Business applications range from datebooks and address books to mileage and travel logs. A seemingly endless palette of applications are available for purchase or free download via the Internet, enabling PDA users to become truly “digital” in their approach to data management. In the same manner that paper ledger books were replaced by computer spreadsheets, the PDA is increasingly becoming the tool of choice for business managers. Arborists, consultants, and tree wardens can take advantage of many PDA programs that provide specific tools for the industry, and can adapt others that are used by other professions.

Several commercial tree vendors provide PDA and other hand-held computer programs for use in the industry, including tree inventory operations. These are generally linked to desktop database applications that are used to archive and study data. These programs offer valuable data-management capabilities to municipalities, commercial tree care firms, consultants and tree managers. Data collection is usually accomplished using a PDA or other hand-held data recorder or computer. For a list of NAA members who sell computer arborist-specific software, call 1-800-733-2622.

The USDA Forest Service Northeast Center for Urban & Community Forestry, in cooperation with the University of Massachusetts/Amherst and the City of Springfield, Mass., Park Department has developed programs for public distribution, and they can be downloaded from http://www.umass.edu/urbantree/palm/. The applicability of these programs for tree managers is outlined here.

Pendragon Forms data collection system
One popular Palm OS software program, Pendragon Forms 3.1, is available for under $175. It allows for easy collection and processing of tree survey data, or any other digital databases, for that matter. This software can be used to create customized database templates for tree surveys, or other data collection needs, such as work orders, without specific programming experience. This easy-to-use program allows the user to develop PDA collection templates, using the Pendragon Forms program, which can be modified, updated or revised based on particular needs. Additionally, the USDA Forest Service has created two public domain inventory database templates, available for download, that utilize Pendragon Forms software. These templates can be downloaded and used “as is” on a PDA, or modified by the user. A street tree inventory template and a hazard tree rating template are also available for download.

Pendragon Forms allows for flexibility and customizing of the data-collection process, and enables the user to develop additional electronic forms that can be used to track information related to your tree management operations. However, the templates available for free download are fully functional, and incorporate key inventory criteria, such as species, size, condition and maintenance needs. These templates demonstrate the capability of the software while providing PDA data-collection tools that can serve as the foundation for tree inventory and hazard management operations you may undertake.

In addition to using Pendragon Forms for inventory data collection, it is very easy to build custom database input forms for collecting information on a variety of tasks, ranging from work orders to equipment maintenance. The program enables the user to recreate traditional paper forms in digital form for use on a PDA. No special programming experience is required, and can be accomplished using the Reference Guide that is supplied with the software. Sample templates are also included with the program, allowing the user to examine various capabilities of the program.

More information on the Pendragon Forms is available at http://www.pendragonsoftware.com. A free, 14-day evaluation copy is available at the site, enabling use of the templates developed by the USDA Forest Service and its partners.
Mobile Community Tree Inventory (MCTI) System

The idea behind The Mobile Community Tree Inventory (MCTI) system was to design a tree inventory software application that could be distributed to arborists, tree managers, city foresters and consultants at no cost via the Internet. The idea also was to have it packaged as a stand-alone program, requiring the purchase of no additional computer software. MCTI was developed through a partnership of the USDA Forest Service Northeast Center for Urban & Community Forestry, the City of Springfield, Mass., and the University of Massachusetts/Amherst. Realizing that the implementation of any new data-collection system can be very challenging, the MCTI development team reviewed several existing inventory models and worked with professional arborists to develop a program that addressed the challenge of integrating a computer system into the deeply rooted human processes used in surveying trees.

The MCTI system is comprised of three components, with each building on the foundation of the previous level. A tree care firm or municipality needs to identify the level of MCTI capability they feel is appropriate and begin working with that MCTI component. Some organizations may have previous inventory experience and feel comfortable starting with the third level of the MCTI process; others may want to start at the first step.

Level 1: A paper record

The MCTI design team recognized that a number of municipalities complete a significant amount of their tree inventory utilizing trained community volunteers. These volunteers may have little or no experience working with computers or PDA’s. However, the organization does not want to lose the opportunity to collect valuable data. In this case, the use of paper inventory (or tally) sheets may be appropriate.

The paper based data collection system has certain advantages. The system is non-threatening to individuals who are uncomfortable around technology. The form is simple enough to be completed by a layperson and is it is designed so the data can be easily entered into the MCTI system at a later date. A copy of the MCTI paper inventory sheet is available for download at http://www.umass.edu/urbantree/mcti/.

There are a number of challenges that are associated with this method of data collection. The more opportunities the data collector has to write down information, the more opportunity there is for error. The collector may have poor handwriting or may record information in the wrong survey box. This would prevent accurate analysis, making much of the inventory data unusable. Even though paper remains the standard for storing information, paper data is very difficult to analyze quickly and accurately.
Level 2: The desktop program

The next component in the MCTI system is a computer-based software application. This software resides on a computer much the same way a word processor or e-mail application does. The software uses has an easy-to-use screen to enter the data and a database to store information. The data can be entered from the paper-based forms or by using a PDA, which will be outlined in the Level Three discussion that follows. Using the MCTI software application represents a dramatic step towards efficiency. Information is stored in a database using unique numbers to identify specific trees. Trees in the database system can be searched or modified with just a few mouse clicks, instead of searching a file cabinet. The system comes with a summary report that produces over two dozen useful statistics. Included in the report are the average number of trees per mile, the number of trees per person, and the average tree diameter at breast height. Trees can be inventoried numerous times and long-term care can be examined.

A person with a working knowledge of computers will need about 30 minutes to customize the MCTI program for their specific organization. In setting up the program for its initial use, you will need to enter information about your organization including state, community name, and species of trees likely to be found in the survey area. This and other information will help the MCTI software complete the screen menus automatically each time you use the software.

The quality of the information stored in the database depends entirely on the quality of the information going into the database. Data coming from paper forms is more likely to have errors. Using the PDA component along with the desktop application enables the user to utilize a fully computerized system for tree inventory data collection, storage and analysis. The desktop application and the PDA software outlined below can be obtained free of charge from the USDA Forest Service’s Northeast Center for Urban & Community Forestry’s Web site at http://www.umass.edu/urbantree/mcti.

Level 3: The PDA application

The most efficient and cost effective way to collect and analyze tree inventory data is to use the complete MCTI package.
collecting data with very little instruction. The MCTI package ensures that errors are minimized and speed is maximized when collecting and reporting data. The user picks choices by tapping the PDA screen instead of the error-prone process of writing out information on paper.

The PDA software has anticipated many common inventory problems. Tree identification numbers are commonly assigned in sequential order. The software allows the user to set the starting number of the ID sequence each time they begin collecting data. This feature is especially helpful if you are using multiple teams to collect data. By assigning numeric ranges, the users can be assured that two teams will never assign the same number to different trees. The PDA software also accepts Global Positioning Systems (GPS) coordinates if you are using this type of system to record a tree's location.

Once a team has completed their inventory session, transferring data from the PDA to the database is simple and fast. The user places the unit into its docking cradle and presses the "HotSync" button. Over a thousand trees can be transferred to the desktop database application in under one-minute. The transferred information is immediately available and included in the summary reports. A complete product description and recommendations for purchasing a PDA is available in the MCTI manual.

The MCTI reference manual, PDA application and desktop software are available for free download at http://www.umass.edu/urbantree/mcti.

Using Pendragon Forms, a series of data entry templates can be created on a personal computer and uploaded to a PDA for use in the field. These template designs can be custom designed and uploaded to individual PDAs.

you put data-collection capability in the palm of your hand today?

Dr. David V. Bloniarcz is project director of the USDA Forest Service Northeast Center for Urban & Community Forestry located at the University of Massachusetts/Amherst. Shaun V. Phelan, is the director of information technology for the City of Springfield, Mass., Park Department. Dr. H. Dennis P. Ryan is director of the urban & community forestry program in the Department of Natural Resources Conservation at the University of Massachusetts/Amherst. For more information or to link to the sites and software developers outlined in this article, please visit the USDA Forest Service Northeast Center for Urban & Community Forestry at http://www.umass.edu/urbantree/palm/.
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As a tree falls, it will often brush other trees and leave broken limbs hanging in surrounding trees. Some times falling trees will crash down off the stump and roll sideways or straight ahead, creating pressures on tree limbs. In reviewing accidents, it’s evident chain saw operators are frequently injured by falling debris immediately after felling. Whether the tree is downed by a storm or by a chain saw, when approaching the tree prior to limbing the operator should evaluate the downed tree using this simple five-step plan and look for:

- overhead and ground hazards around the tree;
- the possibility of roll or twist;
- up and down pressure;
- forward or back pressure;
- planned cuts.

Many injuries attributed to chain saws occur during limbing and bucking. Limbs and the trunk can be under great pressure with tremendous energy ready to burst forth at the slightest movement. Recognizing these pressures and understanding how to position yourself to make these cuts safely should be foremost in your mind. Follow these guidelines for making safe limbing and bucking cuts:

Whenever possible, do not stand on the downhill side to limb or buck a downed tree. Removing limbs may allow the tree to roll on you. Similarly, buck a tree into logs only on the uphill side of the tree. A bucked log could dislodge and roll over you. There may be certain situations, however, that will force you to limb or buck from the downhill side. If you have any reason to think the treetop or log will move, you could or should stabilize/secure it with chocks or other means.

Be sure of your footing and take your time to clear limbs, knots and other debris you cut from the tree trunk. Keep your work area relatively free of severed limbs. Contacting these with the tip of the bar could cause kickback when you least expect it. Removing this debris also can reduce trip hazards.

Whenever possible, keep the tree trunk between you and the limbs you are removing and avoid walking on the trunk to guard against it rolling and throwing you off.

Limbing should always be done at full throttle and limbs should always be cut flush with the trunk if possible. If there are limb pressures that prohibit this, trim off the limbs after the log has been pulled to a better limbing position with a truck or tractor.

Here are some special cuts that can be used when limbing and bucking.

**Limbing and Bucking a Down Tree – Pressures and Binds**

*By Tim Ard*
Limb bk

Back and side pressure on limbs can be handled using a limb bk. If limbs have back pressure on them, they can severely injure an operator when they are severed from the tree. A good technique to use in these circumstances is a limb bk. The purpose is to prevent a limb under pressure from kicking back and striking the leg or pinching the saw. The first cut is made on either the top or bottom side of the limb. It is preferable to make the first cut on the side with compression pressure and the second cut on the side with tension.

The first cut on the limb is made close to the trunk of the tree and the second cut on the opposite side of the limb is made slightly above and parallel to the first cut. It is important that the two cuts are parallel to the trunk and bypass so that all fibers are severed. This will create a step in the limb that will prevent the limb from kicking back and hitting the operator. This is similar to the way in which a raised back cut prevents the butt of a tree from kicking back over the stump (see Photo A).

Top bk

Up and down pressures of treetops and butts off the ground create pressure on the stem that can be handled with a top bk.

If the stem of the tree is under stress, a top bk can be used to prevent the top from kicking up and striking the operator. The first cut is made on the side of the tree that is under compression. The second cut is made on the side of the tree that is under tension.

This prevents pinching the saw. The placement of the top and bottom cut depend on whether you want the top or the butt held in place. If the top cut is made closer to the top of the tree and the bottom cut is made closer to the butt, the severed top will lock under the log. If the top cut is made closer to the bottom (butt) and the bottom cut is made closer to the top of the tree, then the top holds the log down. Both cuts must bypass so that all fibers are severed.

Tongue-and-groove

If there is danger of a tree or log rolling, a tongue-and-groove cut can be used. To make the tongue-and-groove, a bore cut is made through the center of the trunk or branch. Then up and down cuts are made on the side of the trunk or log that is closer to the butt of the tree. Each of these cuts should bypass the bore cut, but should not meet. With all fibers severed, the tongue-and-groove will prevent the tree or log from rolling and will hold it firmly in place until skidding equipment moves it to the landing. This technique works great in harvesting on steep terrain where bucked logs could roll downhill (see Photo B).

Bucking, which involves cutting the tree trunk into specified log lengths, presents numerous challenges for the operator depending on how the tree trunk is positioned on the ground.

If the tree or log is flat on the ground...

Cut down from the topside of the trunk or log. Take care not to cut through and into

Photo A

Photo B

Spring poles like this one can be deadly time bombs for the arborist who does not know how to deal with them safely.
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Our G2500TS is ideal for climbing. At just 6.4 lbs, it's the world's lightest weight commercial chain saw. Yet, this top handle chain saw is powered by our popular, reliable 25.4cc, 1.19 HP two cycle engine.

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Spring poles – how to safely deal with them

Spring poles are bent-over saplings pinned to the ground by downed trees or bent limbs under tension that are pinned by the weight of the tree when it falls. To be considered a spring pole, the sapling or limb must be anchored on both ends. Spring poles are deadly time bombs waiting to go off that can kill or severely injure if a chain saw operator does not know how to deal with them safely.

The best way to manage spring poles is to avoid them. However, if a spring pole must be cut, it should be done in a safe manner. The safest way is to release the tension slowly at the maximum point of tension. This point is where the pressure should be released evenly, slowing any violent movement.

To locate the maximum point of tension, extend a vertical line from the base of the tree and a horizontal line from the highest point of the spring pole. Where these two lines intersect, an angle is formed. Divide this angle in half and visualize a line splitting the angle in half and extending back to the spring pole. The point of maximum tension is where the imaginary line would touch the spring pole.

Spring poles may be cut from underneath or from the top. If you choose to cut a spring pole from the top, you must stand at a 45-degree angle to the rear of the spring pole to avoid being hit by it if the tension suddenly releases. From this
position, the chain saw can be used to make a succession of small shallow cuts on the top at the maximum point of tension until the fibers begin to break by themselves. The cuts must be made with the saw at maximum RPM with a slow rate of feed. As the fibers begin to weaken due to the cuts, the tension in the spring pole will slowly release. The operator should move away from the spring pole and let the pressure release itself. Once the pressure releases, the spring pole can be cut off safely.

Spring pole pressure can also be released from underneath. To do this, the operator should stand 45 degrees to the rear of the spring pole and use the chain saw to shave wood off the underside of the spring pole at the maximum point of tension. Do not cut into the spring pole (perpendicular to the stem). The compression of the wood will pinch the saw. After enough wood is shaved, the fibers will begin to break by themselves and the operator can stand back and let the spring pole release its tension naturally.

The reason for standing 45 degrees to the rear of the spring pole is to clear yourself of the arc the spring pole will travel if side or back pressure exists.

If the point of maximum tension on the spring pole is higher than the shoulders, the spring pole should be released from the top that is pinned. The operator can stand under the spring pole, trim any branches that may be in the way, and then release the spring pole by cutting off the top. The spring pole should fly harmlessly above the operator and not cause injury.

Summary

The techniques discussed and their proper use are dependant on a comprehensive and complete plan. If you have any questions about what technique to use, most likely you are not using a complete plan. In this case, you should seek someone with more training and experience for assistance. Calling in another professional is not a wimpy thing to do — it’s smart!

Always use personal protective equipment when operating a chain saw. Head, eye, ear, hand, leg and foot protection when operating a chain saw are not an option in my book. Purchase, borrow or rent PPE, and wear it, before using a chain saw. Another excellent source of information is a saw owner’s manual for your specific equipment. Always read and understand it before operating the piece of equipment.
Urban Forestry is a science which deals with trees that have been impacted by human activity. This may be a tree in someone’s yard, the local park, or a planter in the mall. These trees generally are growing in areas that place them under great stress due to soil, moisture or temperature extremes. We ask them to live in a close association with grass, flowers, cement, asphalt and people. We water them with herbicides, blow smoke through their crowns, salt their roots, heat up the soil and build houses around them. And after all this abuse, when they finally use up their reserve of energy and die, we blame the innocent insect or disease organism that was the last thing we saw before death.

As an urban forester, it is your job to help the tree stay healthy in this hostile environment. It is not an easy task, but it is often quite exciting. Travel is guaranteed, since our patient rarely comes to us for a checkup. As soon as we think we have the situation under control, one of the many factors affecting the tree’s growth changes or the tree mutates. It is a new science. We only learned for sure that how a branch is attached to a tree in 1983. I have worked in the field for 33 years and all I know for sure is that I know a lot more things now that I don’t know about trees, than I knew that I didn’t know 30 years ago. If that last statement confuses you and makes you want to ask more questions, then you may be the ideal person to help the trees. If you want to memorize all the answers and have a perfect score on every test, both in college and in life, you may be in trouble.

The opportunities for employment are many and starting wages often near twice the minimum. The work week in the busy season will approach 60 hours for big overtime pay and more taxes for the government. As more of the “boomers” retire and want someone else to do their yard work and tree care, the job market will increase. The trade magazines have more articles on attracting and retaining employees than on tree care. The opportunities are worldwide and have no gender gaps.

The people who succeed will be resourceful. They will have more answers in their library than on the tip of their tongue. They will know how to say “I don’t know, but I can look it up.” They will be able to blend clues left by nature with knowledge they acquired in school and knowledge from books, the Internet and their worldwide contacts to formulate a course of action to balance the ecological system, which is the tree and its environment.

Urban forestry techniques have changed also. We used to do a lot of things to trees. We trimmed them, bandaged them, applied dressings, fed them, sprayed them to eliminate insects and diseases, and balanced them by weight and size. We treated them like animals. Trees are not animals, however. They cannot move to avoid danger, although a couple have been known to jump in front of cars late at night. They do not heal, they only seal away an injury, hiding it and creating a record for anyone to read that knows the language. They can only be fed by the interaction of the sun and various elements, which they must mine from the soil, at a great expense of energy on their part. Since over half of the tree is out of sight below the earth’s surface, it is extremely hard to balance them.

It is even harder to ask them where it hurts or what happened to them.

Now we do things for trees. The new field of plant health care concentrates on keeping the plant healthy and happy so that it can solve its own problems. If every insect or disease organism had the potential to eliminate trees from the landscape, they would have done it sometime in the last several hundred million years. The facts are that a healthy tree can live in a natural balance with these perceived problems. The organisms’ jobs are to eliminate stressed, weak trees from the ecosystem, so that their bodies can be recycled and the space they occupied will be available to their younger, more vigorous replacements. We allow the trees to absorb elements from a “healthy” soil. We allow beneficial insects and fungi to multiply to fight those that would injure our tree. We maintain the environment in which the tree is growing in a condition as near what the tree would inhabit in the “wild” as possible. We provide them with the resources to feed themselves and compartmentalize injuries. And we let nature balance the system.

If we do a good job of this, we will not be hauling large loads of brush away from the job site. Herein lies another of the changes in the profession. In the past, if we went to a job site and merely told the people what they could do to keep their
plants healthy, we were not likely to be paid. Doctors do this to us all the time. The “free estimate” was the hook to get into the yard. Now how many businessmen are going to make a living giving free advice? Didn’t it seem odd that there was almost always something that needed to be done to the plants in the yard? Do you want to go to the surgeon who is only going to get paid if he amputates something? Our trees don’t want to either, but they are not the ones making the phone call and decision.

Education is changing also. The trend in some schools is away from closed-book tests. Employers want people who can find the right answer, not those who think they remember. A recent article in the Chronicle of Higher Education suggests several potential changes in delivery of courses. Training is likely to be by correspondence or over the Internet, from the “click” institutions rather than the “brick” ones. Guest speakers for class may be in another country, the extra credit readings may be ads (the source of a lot of new ideas in the real world), and your classmates may be sitting in Atlanta, Fairbanks, London and Sidney. This mix will lead to suggestions, perceptions and interactions that would not happen in the conventional classroom. It also creates networks that can serve the student well in employment after graduation. By turning in assignments online, including labs complete with photos and diagrams, students learn to work with people and organizations on the other side of the world.

These courses fit the work schedule of those wishing to continue their education or go back to school while on the job. The learning process will be more individualized, driven by the student. The focus will be less on “seat time” and teaching and more on learning and outcomes. Institutions will not be judged on their admission standards, but on what they add to each student’s employability. Those instructors, who can truly “reach” the student, will be able to reach thousands around the world, becoming the celebrities of the future. Their names will outshine the institution’s. Degrees will give way to transcripts of a student’s competencies and portfolios may be used to record a student’s lifetime educational history from a variety of sources. Funding may flow to the student to allocate to the educational facilities that provide the mix of knowledge that the job requires, rather than to the schools. Accreditation may be based on competencies desired by industry, rather than based on standards set by the education system itself. An instructor’s field experience may be a major part of his or her credentials.

So, if you are considering continuing your education after high school – or for those already working in the field who want to advance in their careers – you have even more choices in the future. The best path is one that interests and challenges you. With the variety of jobs available now, there is no reason to work in a job you don’t like. If your choices involve urban forestry or another of the natural resources, I hope you will consider MSU-Bottineau to receive the training to carry you into the world of the future.

Bob Underwood is an Associate Professor of Urban Forestry at MSU-Bottineau in Bottineau, N.D.
**Tree Crossword**

53. always
54. Ctrl-Alt-______
55. fabled monster
56. certain Slav
57. Fraxinus

**DOWN**

1. crabapple malady
2. love, in Pisa
3. extravagant celebration
4. prepares brush for chipping
5. twigs' cores
6. actress Thurman
7. giant conifer
8. type of clay loam
9. year (Sp.)
10. dangerous narcotic (abbr.)
11. poetic contraction
19. bud site
21. large hatchet
24. gawk
25. level
26. following
27. forestry class (abbr.)
28. petri dish occupant
29. type of soda
30. employ a spade
31. Japanese long-horned, etc.
34. “jumping Jack Flash, it’s ______”
36. Arafat’s grp.
37. take up nutrients
39. cut off limbs
40. Forty-______
43. govt. ag. grp.
44. snake-like fish
45. son of Adam
46. similar to a mycoplasma (abbr.)
47. certain medical test (abbr.)
48. neither-______
50. first lady?

**ACROSS**

1. bow under snow load
4. gaff
8. winter tree nemesis
12. Garth Brook’s grp.
13. half-______ (football event)
14. ____Z133
15. large ISP
16. “Just ______” (a little bit)
17. silently concurs
18. stick
20. ball of paper
22. approves
23. photosynthesis product
27. gloves’ partners
28. Bambi’s mom
31. Blvd.
32. S-shaped
33. trimming estimate
34. leaf tip
35. stadium sound
36. short wooden dowel
37. causal _____ (in pathology)
38. _____ rinse (prepare for disposal)
40. MJ’s org.
41. decay
42. fluxes
46. restaurant offering
49. Conan’s lead-in
51. “______ no evil!”
52. boxer Spinks

**Answers in December 2001 TCI**

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**Peavey Tree Pruning Poles & Supplies**

Peavey Manufacturing Company is pleased to offer a complete line of top quality pruning poles and equipment for the professional, as well as the amateur, who wants a quality made tool.

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If artful leadership is uncommon, then admired leadership is exceedingly rare. Over the past decade, CRA, Inc., an executive development consulting firm, has pursued admired leaders in Fortune 500 companies, attempting to learn what makes them tick. They have identified and scrutinized that small handful of leaders with a reputation for achieving extraordinary results.

Self-Evaluate Your Business’ Safety and Health Program
Presented by Paul Cyr
Paul will walk the audience through a real-life safety and health program self-evaluation. After completing this in-depth analysis, participants will be able to self-evaluate and learn specific strategies to improve their current program.

Arboriculture and the Law
Presented by Attorney Randall S. Stamen, ISA Certified Arborist
This program will involve discussions between the audience and attorney Randall Stamen regarding lawsuits concerning trees, arborists, public entities, and property owners. Stamen will present the facts, applicable statutes and court decisions for each illustrated case and explain how each lawsuit could have been avoided.

Tough to Get 'Em – Tougher to Hold 'Em!
Keeping Good People in a Marketplace Desperate for Good People
Presented by David W. Richardson, CSP
You have invested serious time and money in developing a strong staff of committed personnel... now what can you do in today’s constantly changing economy to keep them? Learn creative, proven strategies to lead, challenge, encourage, motivate, and reward (not necessarily monetarily) valued employees who invest in a career with your organization.

Marketing Madness, Metamorphosis, and Motivation
Non-Traditional Marketing in a Very Traditional Environment
Presented by David W. Richardson, CSP
Is your marketing program presenting what your customer is really buying? Come prepared for a fast-paced seminar where we compare high-profile companies no longer in business with those that absolutely dominate their markets — how did they get where they are? Learn specific strategies to help you reach your targeted customer while establishing and/or enhancing your brand in a captive marketplace.

The Soul Advantage: The New Kind of Leadership
Presented by John Izzo, Ph.D.
Competition in business is fierce, and a company known as a great place to work is often a company that expects and gives nothing but excellence! Today, the corporate advantage is the soul or spirit of a company. A company that is known for its inspiring leadership, ability to nurture artistry and excellence, and its commitment to employees will determine its success in this millennium.
Managing the Large Claim

Understanding the process is key to managing a large insurance claim

By Sam S. Revenson

Do you have more than 50 employees? Do you have more than 50 pieces of equipment? Do you have more than 50 vehicles? If you can answer "yes" to any of these questions, you have a high probability of experiencing a large insured claim.

What is a large claim? It is a claim with dollar values greater than the company is able or willing to pay out of operating expenses. For the purposes of this discussion, it is a claim in excess of $150,000.

Managing a large claim can be both time-consuming and frustrating. It takes people dedicated to tackling a variety of technical issues over an extended period of time. For example, it is not unusual for a total loss to take one to five months for final reconciliation. Subrogation (or transfer of the right to collect from a third party) can last up to two years longer.

Property claims

The process of filing a property claim can be summated into 10 steps. Let's explore the process and some approaches and actions to make it work for you:

1. Pre-incident records are kept.

Before an incident even occurs, records must be kept. Your ability to document equipment values, worker training, site conditions, customer contracts, and equipment condition plays a big role in establishing presentation of information.

2. Incident occurs.

Examples of incidents include crane overturn, boom collapse, fire, collision, falling objects, and operator error.

3. Company investigates and gathers information internally.

Internal investigation and information gathering helps you stay in control of getting the correct information to the decision-makers. Do not rely solely on the insurance company investigators to identify and present all relevant information.

4. Claim is reported to insurance company.

Reporting the claim to the insurance company in a timely manner is a condition of your insurance contract. Failure to meet this requirement can void the insurance contract coverage.

5. Insurance company investigates and gathers information.

During the insurance company investigation, which may take several days, there will be variety of outsiders with whom to meet. By phone or in person, your organization should have a single person to manage these exchanges. This doesn't mean you won't bring in various employees to provide first-hand expertise and information.

Your ability to, age the information and process is performed in the trenches here. During review of the information by the insurance company, you want to be involved. Keep abreast of the claim at all junctions.

6. Insurance company reviews information.

Supervisory claims personnel the quantity and quality of the information and compare it with the actual insurance policy contract to determine if coverage is applicable, in what amounts, and under what conditions.

7. Negotiations are made for payment of the loss, including any salvage values.

During the claim settlement negotiation, your internal representative managing the claim will need to build consensus.

Because of the dollars involved, it is important that the chief financial officer and possibly the chief executive officer be presented the work to date and settlement recommendation being negotiated.

8. Payments are made.

A draft is issued to the parties with an insurable interest. These parties can include named insureds, additional insureds, and loss payees. Release forms may be required to be signed by an officer of the corporation and notarized.

9. Insurance company, with cooperation of the insured, attempts subrogation.

As explained above, subrogation is the transfer of the right to collect from a third party who may have some responsibility for the incident occurring. If there was a manufacturer's defect or the equipment was operated improperly by a lessee, a collection opportunity exists. Because your insurance company has compensated you directly, it wants the opportunity to be reimbursed for payments made to you. If the insurance company is successful in being compensated for the full cost of the claim, your deductible contribution could be returned.

If, however, you have prior to the claim agreed to a "waiver of subrogation" with the third party, your insurance carrier's rights have been nullified. Such a waiver is usually shown on requested Certificates of Insurance provided by your insurance company (at your request) to the third party. Should subrogation occur, you are required to...
cooperate with your insurer in its legal wrangling, which means working with the insurer’s legal counsel in preparation for possible court proceedings.

10. Final adjustments are made.

The last step is the final monetary adjustments. These adjustments can include any supplemental payments paid by your insurance company for damages hidden until actual repair work was performed; salvage values determined; subrogation completed; and tax or internal accounting credits assessed.

Liability claims

What has been covered so far is the most straightforward type of claim: the property claim. Two other types of claims, which involve injuries to others, are liability-oriented: property damages or injuries to people. The principles discussed for property damages still apply, but the claim is more involved. These guiding principles include the following:

♦ good information recorded prior to the incident;
♦ hands-on management of the claim by a single source within your organization;
♦ consensus building with affected management within your organization.

Because these types of claims involve other people and/or the property of other people, these claims take longer to settle. If legal action is required, the claims are even more involved and time-consuming.

Let’s move on to the people involved from the legal and insurance company side in a large liability-oriented claim. When the claim is initially reported, you will contact either your insurance agent or the claim-reporting center of the insurance company, which will gather a brief description of the claim as well as contact and policy data. This information will then be organized on a standardized form and sent electronically to the claims office that is assigned to your region. You want the contact person at your company responsible for managing the claim to be prominent on the form that goes from the claim center to the regional claims office. Ask for an immediate contact once the claim has reached the claim office. This is at no cost to you; it is authorized and paid for by your insurance company. Legal counsel will also be gathering information and interviewing personnel and may take depositions for court proceedings needed to reach settlements or recoveries from a claim incident.

The claims process can be managed to reach specific relevant outcomes. You are the most important component to achieve these outcomes. Like so much in business, it comes down to people. Your direct relationship with all the people in the claims process is an opportunity to extend your influence.

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Tree Fertilization: An Arborist’s Perspective

By Lauren S. Lanphear

As a point of introduction, I am a 1979 graduate of Hiram College, with a double major in science and religion. You might think this to be a unique combination. Indeed it was — I was the only Hiram student at the time choosing such a path. Something leads me to believe there have been few if any others, whether before or after my time. However, since then I’ve learned to appreciate the value of my degree in my ongoing task to care for that which “only God can make!”

The first time I was asked to make a presentation on the topic of tree care was December 1977. I was only 21 years old and in my junior year at Hiram. My father had been asked to speak about his company’s elm care program at a symposium sponsored by the National Arborist Association (NAA) at the U.S. National Arboretum. An excellent delegate, my dad managed to talk me (con me) into doing a portion of the presentation.

At least a dozen Ph.D’s had preceded me to the podium! Included were the likes of Gene Himelick, Garold Gregory, Dick Campana, Spencer Davis, Jay Stipes, and Alex Shigo. Talk about intimidating. Sometimes naiveté can serve one very well.

In like manner to my elm care presentation, my perspective on the topic of tree fertilization comes not from that of a researcher, but from of a practicing arborist. Hence, it is not my intent to offer these thoughts as scientific research results. Rather, I hope to share what I believe to be relevant observations and conclusions based upon my own experience with tree fertilization over the past 20+ years.

I would like to touch on five areas:

1. Guidelines for Tree Fertilization presented by Dr. Elton Smith of the Ohio State University in December 1978 at a Tree Fertilization Seminar sponsored by the NAA.

2. My company’s tree fertilization program.

3. Comments about tree fertilization standards.


5. Personal observations and suggestions regarding tree fertilization research.

This tree, growing in the front lawn of St. Gregory’s church, is one of the oldest trees in South Euclid, Ohio, and is estimated to be over 300 years old. The lawn is in frequent use at various times throughout the year. Sidewalks are heavily used by schoolchildren and churchgoers alike. Despite the annual pro bono fertilizations, in 1998 the tree had leafed out a pale green. An inoculation of mycorrhizal spores combined with a humate application to stimulate root growth was performed. The results were almost immediate. The tree turned a healthy dark green. Pruning removed the deadwood, eliminated potential hazards to the surroundings, and enhanced the structural integrity of the tree. This centuries-old tree should remain a healthy and significant asset to the community for many years to come.
Guidelines for tree fertilization

First of all, I would like to discuss the basis upon which our company’s tree fertilization program was designed. Like most arborists, we seek the best and most currently available scientific information in the design and development of our tree care practices and programs.

Our company’s tree fertilization program was designed based upon guidelines that came out of a symposium sponsored by the NAA. Dr. Elton Smith of the Ohio State University led the Tree Fertilization Seminar held in December 1978. Let me enumerate some of the principals for tree fertilization that come directly from my file notes, recorded at the time of Dr. Smith’s seminar.

• Once plants are established and growing well, the function of fertilizing is to maintain satisfactory growth and health, but not necessarily produce optimum height or caliper as the production nurseryman is seeking.
• Desirable growth, cold tolerance, and drought tolerance are all demonstrated beneficial effects of proper tree fertilization.
• Location of trees may influence fertilizer practices. The more stress conditions, the less like a native or natural condition, the more likely the need to give greater attention to tree care, including more regular fertilization to maintain healthy growth.
• Species differences: Certain trees, particularly when grown away from their native habitat (as is the case in many landscape situations), may have specific nutritional needs.
• Soil characteristics: Know the texture of the soil, along with pH, drainage, and organic matter.
• Fertilizer characteristics: Understand the burn potential and salt indexes of fertilizers.
• Rate: Approximately 3 pounds of actual N per 1000 sq. ft. of root zone per year. Slow-release materials allow single applications of full rate. Otherwise, applications must be split up to avoid leaching and plant injury.
• Ratio: 3-1-1, 4-1-1, 3-1-2, or 4-1-2.
• Surface application of fertilizer is comparable with soil-injected methods when it is practical and when not in turf areas.
• Timing: Autumn, after the first hard frost is first choice, followed by late winter / early spring, then early summer. Annual fertilizing is preferable than longer intervals for the growth of the tree.

Forest City Tree Protection’s program

I reiterate, as practicing arborists, my...
company is not in a position to perform research. We are called upon by our clients to recommend and provide services that maintain and enhance the health and safety of their trees. We must use our professional judgment, coupling the best available scientific information along with our experience to tailor a program that brings desired results while being cost effective and practical.

(a) Objective:
The objective of our company’s fertilization program is healthy plants, with desirable growth, appearance & color.

(b) Rates:
Originally, we applied an annual rate of 1 – 3 pounds actual nitrogen per 1000 square feet of available root zone. With the addition of humates, mycorrhizae, and other bio-stimulants to our fertilizer mix, we have reduced our application rates to ½ - 2 ½ pounds of actual N per 1000 square feet.

(c) Product:
For the majority of our applications we use Doggett’s 32-7-7 and 30-7-10 products. We chose these products because a substantial amount of the nitrogen is derived from urea formaldehyde or Nitroform. We believe that slow-release products reduce undesirable leaching. They also allow for single annual treatments with release throughout periods of root activity, while minimizing potential for plant injury. Not necessarily better growth, but cost effective, practical, and safe.

(d) Method:
We prefer the sub-surface application method because it avoids run-off and erosion and places nutrients below the upper portion of turf roots. Ground covers, slopes, and soil types in our area are all additional factors that make sub-surface application preferable.

(e) Timing:
We do most of our tree fertilization in the late fall, after the first hard frost. Then next busiest period of fertilizing for us is in late winter / early spring. We recognize there is little hard scientific evidence to support concerns about stimulating growth that will not “harden-off” before winter. However, until this issue is resolved more definitively, we would prefer to avoid applications in late summer / early fall.

(f) Results:
Results in our “real world” of practical arboriculture over the past 20 plus years have convinced us of the value of a properly designed tree fertilization program – healthy, stress tolerant trees with desirable growth, appearance and color. We now have over 900 clients on a fertilization program.

Although anecdotal in nature, the following note, received from one of our clients, is indicative of the how our program is received by our customers.

“Several years ago the beautiful ash tree in my yard appeared to be dying. The upper section of its trunk, along with numerous branches, was dead. I thought the tree was doomed. You examined it and said that the application of liquid fertilizer to the tree roots might give it new life. I was anxious to save the tree. You made the first application of fertilizer in fall of that year. The next year new growth appeared and the tree looked like it might revive. Fertilizer was applied several more years and each successive year the tree had increased new growth. Now the tree looks as good as new. I never thought this would happen. I'm glad I followed your suggestion to have you fertilize the tree.”

Standards

My father served as chairman of the NAA’s Standards Committee for a number of years. I can recall him sharing about the experiences of Freeman Parr, the chairman when the NAA first attempted to develop tree care standards. He received considerable resistance and negative feedback to the initial efforts. He heard a common refrain, “There’s no way you can write one standard to serve for the entire country.”

As my dad was quick to point out, the very fact he was chairman of the same committee several decades later was evidence contrary to those naysayers. He would add, “No standard is perfect, nor will there ever be a perfect standard. But the existence of a standard is far better than no standard at all!”

I believe my dad’s sentiments are just as true today as they were when he first shared them with me over 20 years ago. I believe his sentiments are just as applicable to the ANSI Standards our industry now recognizes as they were to the standards first developed by the NAA.

I was privileged to have been involved with the development of the NAA’s first tree fertilization standard, credit for which must go in great measure to Dr. Elton Smith. Today we now have the industry-consensus ANSI 300 Tree Fer-
tillization Standard. As would be ex-
pected, it is an improvement over the
original NAA Standard.

This standard, like those that preceded
it, is not perfect. But, like its prede-
cessors, it is not written-in-stone, never to
be changed, but an ever-evolving process
toward optimizing applications. Stan-
dards are always intended to be adapted
toward optimizing applications. Stan-
dards are always intended to be adapted
to the specific situation. Standards are
not perfect, but it is my firm conviction
that we would be far worse off as a pro-
fession without them.

Myths and ethics

In the December 1998 issue of ISA’s
Arborist News magazine, Dr. Robert W.
Miller authored an article, “Tree Fertil-
ization: Science, Myth and Ethics.” Dr.
Miller is a professor of Urban Forestry
at the University of Wisconsin – Stevens
Point and serves as the editor or ISA’s
Journal of Arboriculture. The article
generated considerable interest, both pro
and con, as evidenced by “Letters to the
Editor” in subsequent issues.

I have the greatest respect for Dr. Miller,
having worked together with him on ISA’s
Board of Directors for several years. At
the same time, I would be remiss if I did not
respond to a number of statements made
about arborists and tree fertilization pro-
grams. And I don’t really intend to single
out Dr. Miller either. His article is reflect-
tive of comments made by other presenters
during the course of this workshop, as well
as some made by others in trade magazines
and professional journals.

A matter of semantics. In marketing our
program, we talk about “fertilizing,” not
“feeding.” We don’t promote it as “deep”
root feeding. At the same time, we don’t
get hung up on semantics at the risk of turn-
ing-off, or alienating, or antagonizing
clients. Just like with “organic” vs. “inor-
ganic” or “wound healing” vs. “wound
closure” vs. “compartmentalization.”
Sometimes these debates are best left to
arborists and scientists. As a business
owner, I know these issues are not high
priorities of my clients.

Don’t paint all arborists with the
same broad brush. It is wrong to paint
all arborists with the same broad brush.
Dr. Miller states, “Many arborists use a
lot more myth than science when it come
to fertilization even though science pro-
vides evidence to the contrary.” From my
experience, this is surely not reflective of
the vast majority of arborists’ fertiliza-
tion programs with which I have
knowledge.

Blurring the line. The line between
“research” and “opinion” gets blurred
when someone like Dr. Miller, recog-
nized within the industry as a
“researcher,” offers his personal “opin-
ions” in a context that could easily be
construed as “research.”

Blanket Associations. It is wrong to
make a blanket association between tree
fertilization and ethics, or lack thereof.
Tree care practices change, such as the
treatment of pruning wounds. But it
doesn’t mean that when wounds were
painted, arborists were “unethical.” It
just means they were doing what was
understood to be the proper practice at
the time. Likewise, fertilization stan-
dards and practices will continue to
evolve, but most arborists today have
developed their programs using the best
available information.

What is excess? Dr. Miller states, “Ex-
cess fertilization can lead to
environmental problems.” On a certain
level, I don’t think anyone would dis-
agree with this statement. At the same
time, in the context of his article, with-
out defining what constitutes “excess,”
it could easily be construed that Dr.
Miller believes most arborists are applying
excess amounts of fertilizer, even if
following industry accepted standards.
Dr. Miller may indeed believe this, but
it is just his opinion, and certainly one
not supported by a wealth of established
research.

You Can’t Ignore Mother Nature.
You can’t ignore the impact of remov-
ning leaves and other organic material
from the landscape.

Pest resistance and desirable appear-
ance may not necessarily coincide in the
same tree. There may be a trade-off be-
tween desirable growth and appearance
vs. insect and/or disease resistance. Dan
Herms’ research has demonstrated that
the application of fertilizer may not in-
crease insect resistance; in fact it may
very well even decrease insect resistance
in some cases. At the same time, his re-
search also showed that the tree with the
highest degree of insect resistance might
not be the tree with the most desirable
growth and appearance.

Out of touch with reality? Dr. Miller
scoffs at claims that researchers like him
are just “out of touch with reality.” From
my perspective, researchers, just like com-
commercial arborists, must face the reality of financial resource availability and practical constraints of the situations in which we work. One of the researchers that presented in this Tree Fertilizer Seminar was honest enough to admit that the research he did was dictated in no small measure by the availability and source of research dollars. We can’t ignore the fact that tree care research is influenced by the need for financial support and the biases of the individual researchers. In my opinion, it is only when researchers don’t acknowledge this that they become “out of touch with reality.”

Research reality and needs

In preparation for my presentation, I did a quick search of publications from the past 5 – 6 years. What I found was a surprisingly limited number of articles regarding tree fertilization. I found very few relevant articles in the Journal of Arboriculture. Most of the information made available to arborists in recent years regarding tree fertilization I found in trade magazines including, Tree Care Industry, Arbor Age, and Arborist News. At the same time I think its fair to say that far more practicing arborists read these latter publications on a regular basis than they do the Journal of Arboriculture.

The lack of relevant articles in the Journal of Arboriculture just emphasizes the need we have for more relevant research in the area of tree fertilization. At the same time, we must not lose sight of the fact that what research is done, must not only be reported in the Journal. To reach the broader audience of practicing arborists, it must also appear in a readable, understandable, and applicable format in media that arborists regularly read.

Current Research Needs. Research on tree fertilization needs to include the product types and application methods commonly used by commercial arborists:

♦ Urea Formaldehyde (UF, Powder Blue Nitroform) products. (A surprising number of researchers at this symposium reported on their work with Osmocote, a coated granule product, and one that few, if any arborists that I know, actually use in their tree fertilization programs.)
♦ Sub-surface application methods.
♦ “Real-world” landscape trees of various species, sizes, and ages.
♦ Below-ground effects, not just above-ground effects, including both root growth and mycorrhizae colonization.
♦ Effects of mycorrhizae inoculants and other root-biostimulants should be evaluated, including a particular emphasis on the potential to reduce fertilizer application rates.
♦ Inter-disciplinary cooperation, involving horticulturalists/plant nutritionists, agronomists, entomologists, and plant pathologists.

Conclusion

From my perspective as a practicing arborist over the past 20 plus years, it is my opinion that a properly designed fertilization program is a valuable tool in maintaining and enhancing tree health. My company’s experience with tree fertilization has proven its worth to our clients in maintaining healthy plants, with desirable growth, appearance, and color. The development and continuing refinement of our company’s tree health care program is dependent upon continued relevant and applicable research from the scientific community. Dialog is vital to the process. Research will be better and more relevant because of it. Tree care practices will be better, more effective, and environmentally sound because of it. It is in this spirit that I hope my comments make a positive contribution to this process.

The article was presented at the Tree Fertilization Symposium sponsored by the Ohio Chapter, ISA. This and other presentations at the conference may be obtained from the Ohio Chapter publication, “Proceedings from an International Conference on Tree and Shrub Fertilization.” Lauren Lanphear is president of the Forest City Tree Protection Co. and Lanphear Supply in South Euclid, OH. He has presented tree fertilization seminars and workshops throughout the U.S. For more information about arranging a training session for your company or presentation for your organization, contact Lauren at via email at either forestcitytree@hotmail.com or llanphear@lanphearsupply.com or by writing Lauren c/o Lanphear Supply, 1884 S. Green Rd., OH 44121-4296.”
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What Causes Insect and Disease Outbreaks on Trees?

Part II

By Clive G. Jones

Introduction

There is a tremendous diversity of insect herbivores and plant pathogens on trees, including a very large number of species that can adversely affect tree growth, survival and aesthetics. Given that every insect herbivore and plant pathogen species on every tree species is a unique combination, it can be argued pessimistically that managing problems on trees will necessarily always consist of specific local solutions that depend upon the tree species and its condition, local environment and particular insect or pathogen species. While I would never deny the critical importance of case-specific knowledge for managing these problems, in this series of three articles I argue that an understanding of general ecological relationships among trees and their consumers can do much to enhance management of insect and disease problems on trees.

The articles summarize our current understanding of relationships among trees, their insect herbivores and plant pathogens, and the environment, showing how this understanding may be of use in arboricultural management. Patterns of insect and disease attack on trees have relatively orderly and predictable underlying ecological causes. These causes indicate that it may be possible to risk-rate trees and situations most likely to lead to problems, and suggest management strategies based on those causes.

In the first article (See TCI, October 2001) I asked: What keeps trees free from attack by insects and diseases? I pointed out that, on average, insect herbivores and plant pathogens were relatively rare on plants, generally causing low amounts of damage. Although the natural enemies of insect herbivores (but not pathogens) and the weather do play an important role in keeping these organisms rare, the inherently low quality of tree tissues as food may well be the most important factor. Trees have low and very variable nitrogen content, a critical nutrient for insects and pathogens, and they contain a diversity of physical and chemical defenses that collectively make the extraction and processing of this limited and variable nitrogen difficult, dangerous and costly. Management strategies that maintain low tree food quality can help reduce the frequency and severity of insect and disease problems on trees.

Here I ask: What causes insect and disease outbreaks on trees? Does the answer to this question have anything to do with the answer to the first question, and what are the management implications of the answer?

Outbreaks

In the first article I pointed out that, on average, insect herbivores and plant pathogens annually consume less than 10 percent of newly produced tree tissues – Annual Net Primary Production. However, averages, while useful for revealing general tendencies, can also be misleading. For example, the gypsy moth consumes an average of about 10 percent leaf area a year by eating barely detectable amounts most years when moth populations are low and consuming up to 100 percent every 10 years or so during periodic outbreaks. Outbreaks certainly do occur on trees. In these situations insects or pathogens consume large amounts with detrimental effects on tree growth and survival, even to the extent of eliminating tree species from particular ecosystems. Some infamous insect examples in the United Kingdom include periodic eruptions of the winter moth on oak, aphids on lime and sycamore, and leaf miners on holly. In the United States and Canada, periodic outbreaks of the spruce budworm and gypsy moth on oak occur over millions of acres. Dutch elm dis-
ease has nearly eliminated American elm. Chestnut blight eliminated American chestnut as an overstory tree species in the United States in less than 50 years. In the first article in this series we saw that most of the time insect herbivores and plant pathogens are relatively rare, and trees usually stay green suffering relatively little damage. However, it is clear that not all insect herbivores and plant pathogens are rare all the time and not all trees stay completely green all of the time.

Outbreak characteristics

Outbreaks are highly variable phenomena. They vary in extent from individual trees to forests of millions of acres over entire regions. They vary in severity from minor to major in terms of tree defoliation or mortality — even for different outbreaks on the same tree species at different times or places. They vary in frequency of re-occurrence from single, unique events, to seemingly regular cycles that repeat every 10 to 50 years. Despite this highly variable phenomenology, outbreaks have some interesting properties that give insights into their causes.

Relatively few species of insects and pathogens are responsible for outbreaks, but they do not belong in unique taxa. There are outbreak species across a wide range of both insect and plant pathogen taxa, and many of the species that are closely related to outbreaking organisms do not outbreak. This indicates that the capacity to outbreak is not a particular taxonomically unique or restricted feature.

Outbreaking insect and pathogen species invariably have high intrinsic rates of reproduction, although there are many species that have high intrinsic rates of reproduction that do not outbreak. This indicates that high reproductive potential is a necessary but not sufficient characteristic for being an outbreaking organism.

Many outbreaking insect and pathogen species are regular offenders, suggesting that these organisms can consistently respond given the right circumstances. Outbreaks usually involve a single species of tree; sometimes just a particular genotype of a tree, and occasionally, closely related tree species in the same genus. Outbreaks are often caused by a single species found only on that tree species. This indicates that these organisms are sufficiently well adapted to their host plant that they can take advantage of circumstance.

Outbreaks are often associated with extreme environmental conditions, such as drought, flooding, or hot or cold weather. Outbreaks tend to occur at particular sites within the overall geographic range of the plant, such as in stands of uniform age structure, on soils of particular nutrient or water content, or in places exposed to local air pollution. In the case of insect herbivores, but not plant pathogens, outbreaks have been observed to occur following a decline in the abundance of predators.

Although this is a diverse and by no means exhaustive list with no immediately obvious interconnections, it does indicate that outbreaks seem to require some sort of triggering or catalytic change.

What triggers outbreaks?

You will recall from the first article that poor food quality, natural enemies, and the weather keep insect herbivores and plant pathogens rare. If so, then favorable changes in these factors seem reasonable candidates for initiating outbreaks. Findings accumulated from research in many specific systems over the years generally support this contention. As far as we can tell, increases in food quality, decreases in natural enemies and favorable weather are the most general, non-exclusive causes of outbreaks. Outbreaks can be initiated by increases in plant food quality that occur under a variety of abiotic environmental conditions, including the influence of the weather. I will return to these important effects shortly.

Second, for insect herbivores only, outbreaks can be caused by declines in
their natural enemies, with the weather sometimes playing an important indirect role by decreasing natural enemy survival. Outbreaks of a number of insect species on trees have been shown to follow declines in natural enemies known to regulate herbivore populations at low density, i.e., prevent outbreaks. Examples include the pine looper, grey larch moth, black-headed budworm and winter moth in the United Kingdom, winter moth and spruce budworm in Canada, and gypsy moth in the United States and Eurasia. Our work on gypsy moth outbreaks in the United States is an example where a single natural enemy can determine whether or not outbreaks will occur.

Using a combination of long-term monitoring and experiments causing and preventing moth outbreaks, we have shown that in low density moth populations, white-footed mice are the key predators that prevent moth populations from increasing. Mice are generalist predators whose abundance is almost entirely determined by acorns and unaffected by moths, even though they feed voraciously on moth pupae. When there are bumper acorn crops, there are many mice that keep moths in check, but if acorn failure occurs, mouse populations crash and moth populations erupt. Unlike the gypsy moth example, the causes of declines in natural enemies are often not known, but there are situations where this appears to be caused by extreme weather conditions. For example, outbreaks of a psyllid, a sucking insect on Eucalyptus blakelyi in Australia, are associated with low temperatures that kill the parasitoids that attack the psyllid.

Lastly, weather can also be an important direct cause of outbreaks by creating conditions that enhance insect and pathogen growth rates, survivorship and reproduction. In particular, warmer, wetter conditions are often favorable for spore germination, growth and reproduction of pathogens, and higher temperatures are well known to cause increased growth and development rates of insect herbivores. Direct effects of the weather may also be strongest when the other factors are not particularly constraining, such as when plant food quality is high and/or when natural enemies are least abundant.

A focus on tree food quality

I will focus on outbreak initiation via increases in plant food quality that can occur under a variety of abiotic environmental conditions, including weather events. The reasons for doing this are very similar to those given for focusing on the role of food quality in keeping trees free

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from insects and diseases that appeared in the first article of the series.

First, increases in plant food quality often appear to be a major cause of outbreaks, and increases in food quality may be an important contributing factor — even when a decline in natural enemies or direct effects of the weather are playing the major role.

Second, increases in plant food quality associated with outbreak initiation may actually involve a relatively limited number of general mechanisms across a diversity of plant species, insect herbivores and plant pathogens. Not surprisingly, these general mechanisms appear to be closely related to the same three basic underlying causes of poor food quality in plants that were discussed in the first article: low nitrogen concentrations, variable nitrogen, and defensive mechanisms that make the extraction and processing of limited nitrogen difficult, dangerous, and costly. In contrast, although direct effects of the weather and natural enemy declines are often important causes of outbreaks, the particular weather conditions and the exact natural enemy species involved are largely idiosyncratic and case-specific across insect herbivores and plant pathogens. In fact, declines in the abundance of different natural enemies may be responsible for different outbreaks of the same insect.

Third, unlike natural enemies and the weather that are difficult or impossible to manipulate, there may be potential for preventing or moderating environmentally induced increases in plant food quality. An examination of the mechanisms responsible for increases in plant food quality ultimately reveals some important general traits and relationships that tree managers could influence to reduce the likelihood of outbreaks on trees.

Environment, outbreaks and tree food quality

Outbreaks are associated with a diversity of abiotic environmental conditions. Extreme environmental events — droughts, hot or cold weather — are perhaps the most well-known triggers of outbreaks. However, outbreaks also occur at more local sites. They have been reported when sites become flooded, in soil types of unusual nutrient composition, when plants have been heavily fertilized with nitrogen or phosphorus, and in places exposed to local air pollution. Outbreaks are probably most common in agricultural ecosystems, hence the need for pesticides and fungicides. Here the inputs of nitrogen, phosphorus and water are generally very high, and plant genotypes have been selected for high palatability to humans or livestock. Experimental outbreaks have
been created by fertilizing with nitrogen or phosphorus, by withholding water, by over watering, by shading, and by fumigating with a variety of oxidants.

Why do we think that many of these outbreaks are caused by increased food quality? Increases in food quality can be definitively invoked to explain outbreaks caused by experimentally fertilizing plants with nitrogen or phosphorus, by withholding water or over watering, and by fumigating plants with a variety of oxidants before herbivores are added or pathogens are inoculated. Although direct climatic or natural enemy effects cannot be ruled out, outbreaks in agricultural ecosystems, or shading-induced outbreaks, food quality effects cannot be ruled out either. Many naturally occurring or experimentally created outbreaks are preceded by increases in per capita reproductive output of insect herbivores and plant pathogens. Increases in this parameter clearly indicate increased food quality - in contrast to increased survival that could be caused by declines in natural enemies, direct effects of weather or increases in food quality.

How do these conditions increase food quality? Drought, flooding, heat shock, freezing, air pollution exposure, shading, and nutrient fertilization are all well-known to have marked effects on plant growth, development, and physiology that result in profound changes in tissue biochemistry. Plant tissue biochemistry is often responsive to variation in the environmental availability of light, water and nutrient resources, and often sensitive to environmental perturbations that cause plant stress and/or damage, such as heat and cold shock, drought, frost, and oxidant injury. Compounds reported to increase in concentration in plant tissues in response to altered environmental resources, stress or damage include total nitrogen, total organic nitrogen, protein nitrogen, soluble amino acids, and sugars that can be readily metabolized as a source of energy by insect herbivores and plant pathogens. Components reported to decrease in concentration include carbon, fiber and lignin, simple phenolic compounds, tannins, alkaloids, and a variety of other defensive chemicals. Based on the general plant tissue characteristics that determine food quality that were discussed in the first article in the series, an increase in nitrogen and/or a decrease in defenses should lead to an overall increase in food quality to insect herbivores and plant pathogens.

Clearly, not all plants respond by uniformly increasing tissue nitrogen and decreasing defensive chemicals to the same degree. We can find examples where an increase in the same environmental resource, or stress or damage factor, caused increases in nitrogen and/or decreases in defenses in one plant species, but no change or even decreased nitrogen and increased defenses in other plant species. Consequently, we should not expect changes in the abiotic environment to uniformly increase food quality and uniformly cause outbreaks. We expect some situations to result in increased food quality, some to decrease food quality, and some to have no effect. Of those resulting in increased food quality, some smaller fraction will actually result in increased insect herbivore or plant pathogen abundance. We do know from studies that have measured both plant biochemical responses and insect herbivore or plant pathogen responses to altered environmental resources, plant stress or damage, either natural or experimental, that when there was an increase in consumer abundance it was usually accom-
panied by increases in one or more forms of tissue nitrogen and/or decreases in one or more chemical attributes that can be construed as defensive.

Two examples

Two contrasting examples of the role of food quality in outbreaks can help illustrate these complex relationships. A number of species of bark beetles undergo periodic outbreaks on conifers in the United States. These outbreaks are often associated with severe drought events. A primary defense of conifers against beetle attack is to exude copious resin containing toxins into the puncture wounds made by the beetles as they attempt to invade the tree. The resin traps the beetles and seals the wounds, and the toxins can kill the beetles as well as serve as antifungal agents against associated fungi that the beetles use to help overwhelm the tree defenses. Since the resin and toxins are primarily made of carbon, their production depends on rates of photosynthesis, which in turn depends on the availability of water. Furthermore, high rates of resin exudation into the wounds require high turgor pressure, also water-dependent. Drought stress reduces photosynthesis and turgor pressure, reducing resin and toxin production and resin exudation rates, allowing beetles to successfully attack the tree. The decrease in resins and toxin concentrations improve food quality to beetles and fungi, increasing beetle reproduction, hence outbreaks.

Outbreaks of a psyllid in Australia follow droughts as well as periods of unusually low temperatures that I mentioned earlier. In contrast to the low temperature outbreaks caused by declines in a natural enemy, drought-induced outbreaks result from increases in phloem nitrogen concentrations and increased psyllid reproduction.

In summary, while I do not want to dismiss the importance of declines in natural enemies or direct effects of the weather in initiating outbreaks, it is likely that many outbreaks on trees are caused by environmentally induced increases in food quality.

Suggested Further Reading


Year-to-year damage from gypsy moths is minor, but during outbreaks they may consume up to 100 percent of a tree's foliage.

What locales are most prone to drought, flooding, or air pollution, may help identify places where outbreak potential may be higher.

Third, avoid damage and injury to trees, both above and below-ground. Although low levels of damage can sometimes increase tree resistance, moderate to severe injury can weaken plant defensive systems.

Fourth, for reasons that will be explained next month in the last article in the series, some types of tree species are less likely to undergo environmentally induced increases in food quality than others. Irrespective of the value of using particular tree genotypes that are stress-tolerant, arborists may also want to select these “environmentally insensitive” types of trees for planting because they can have a lower overall risk of insect and disease outbreaks.

Acknowledgments

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Clive Jones is a research scientist at the Institute of Ecosystem Studies in Millbrook, NY. An ecologist, he studies how trees defend themselves against attack by insects and pathogens, how the environment affects tree defense, and what causes insect outbreaks.
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Maximize Cutting Efficiency

Stump grinding or cutting machines are popular, yet specialized, pieces of equipment in commercial arboriculture. While many companies offer stump grinding as an exclusive service, others have one or two machines that allow the business to provide a full range of options to clients. Since use of stump grinders—unlike chain saws, which are an integral part of tree care—varies widely, knowledge of proper use and maintenance also varies widely.

Many operators grind their own teeth, perform daily maintenance, and almost become as familiar with their machines as the manufacturer is. Others pull their grinders out of the back of the shop infrequently, and run the machine until the teeth are so worn they cease cutting. Below is a performance guide to help maximize stump-grinding operations. It is a compilation of answers taken from thousands of phone calls logged in at Leonardi Manufacturing Company.

**Q&A**

**What is the proper bolt length?**

Bolt length should be 1/16 inch to 1/4 inch below the surface of the pocket. (See Photo A.) This keeps the bolt protected and makes removal easier. A bolt above the surface of the pocket, which has been hammered over, can damage or destroy the threads of both the bolt and pocket during removal. It is OK for the bolt to be sunk down—thread engagement is most important. The general rule is that the amount of thread engaged should be equal to the diameter of the bolt (5/8 inch). With this much of the bolt threaded, the threads will not fail before the bolt does. Keep in mind that if you do not have enough recess as the pocket wears, you will start to hammer over the bolts.

**How do I gauge the teeth?**

It is important that the teeth are gauged properly. Generally, the correct gauge measurement is 1 3/4 inches from the tip of the tooth to the front edge of the pocket. Improper or uneven gauging can cause choppy cutting and possible premature tooth failure. (See Photo B.)

**Do I use square or round teeth?**

A square tooth is the original type of tooth. A square tooth is more prone to chipping than a round tooth. Some people believe that the square tooth is easier to sharpen. The type you use is more a matter of personal preference than operating performance. (See Photos C and C1.)

**When should I use hard carbide?**

You can use hard carb-
bide when you are grinding in soils with virtually no rock and also if your usual carbide shows high amounts of wear without any chipping. Hard carbide wears longer, but is more prone to chipping in rocky areas.

What is the best way to identify left and right teeth?

Place the tooth on a table with the carbide up and facing away from you. If the tooth bends to the left, it's a left. If it bends to the right, it's a right. (See Photo D.)

What's the best way to combine straights and crossovers?

If you use only lefts and rights when you plunge into a stump you will create a "V" of uncut wood approximately 3 inches wide where teeth do not come in direct contact with the stump. (See Illustration 1.) You will have to move the wheel back and forth by 3 inches in order to grind this out. To reduce this amount of movement you can add two straight teeth at the outside edge of the wheel, opposite each other, and on opposite sides of the wheel. The amount of wood uncut would then be reduced to just the thickness of the wheel. This solution is best for small wheels with a limited number of teeth positions.

To have complete coverage and to eliminate extra movement altogether, you will need to use crossovers. (See Photos E and F, and Illustration 2.) Some of the larger
machines have positions for this. You should install your straights and crossovers at the outer locations where two or more pairs of teeth are located the same distance from the edge of the wheel. (See Photo G.) If you have a large wheel with these positions and you are using normal cutting teeth, then the front tooth would do all the cutting and the second tooth would have no material to cut. Therefore, there is nothing to be lost by making the second tooth a straight or crossover. Some recent tests have indicated this will help your wheel to cut smoother in all situations.

If you do not have these positions, are not experiencing choppy cutting and don't plunge, you may not want to sacrifice your cutting teeth for straights and crossovers. They do not add to your cutting when you swing left or right. Another consideration would be the thickness of your wheel. For example, on a half-inch wheel, the amount of wood left when using straights is one-half inch, which really does not warrant using crossovers.

How do I inspect for wheel damage?

Your wheel should be cleaned and inspected for damage whenever teeth are changed. If there are cracks in the wheel, don't run it. If there is a slight amount of damage to the wheel (1/16 of an inch or less), you can use a grinder to grind the high spots off. Then install a wheel saver to prevent further damage.

To check wheel damage when the pocket is tightened: You should be able to slip a sheet of paper between the pocket and the wheel on both sides of the pocket. If the paper does not fit, either the pocket is tipped to one side or the wheel is damaged enough that a tooth may be thrown. Another type of wheel damage is the elongation of the bolt holes. If the holes are excessively elongated, your machine will cut slower and pound more. The only real remedy for either of these cases is to repair or replace the wheel. (See Photo H.)

Can you recommend a better way to clean bolts and pockets?

First, please wear your safety glasses. For quick and easy dirt removal out of the socket head of the bolt, use a dull (so it does not grab) half-inch drill bit in your cordless drill.
loosen the tooth. If your pockets remain in the machine for two weeks or longer, it is recommended that you use Never Seize or Dry Molly rather than oil for long-term protection.

How do I make sure the torque is right?

After the threads are cleaned and lubricated, use an air gun to run the bolts into the pockets. (Dirty threads on the bolt or pocket will give false torque.) Be sure to draw the bolts down evenly so that the pocket does not tip to one side. Generally, most air guns will not produce the correct amount of torque. A piece of pipe and a breaker bar will tend to over-tighten the bolts, which will stretch and weaken the bolt. (For example, 1½ feet of pipe used by a 200-pound man equals 300 ft/lbs. This is too much.) Therefore, a torque wrench is the best

When installing bolts, you should wire-brush the threads if they are rusty or dirty. (Often wires will be thrown from a wire wheel.)

Also, it is important that the threads of the pockets be cleaned. To do this you should first blow out the bulk of the dirt with an air gun. (Keep those safety glasses on.) Then take a tap, oil it, and run it through the threads. However, taps can be brittle in that they are sometimes easy to snap off or chip. Using a tap also requires the use of a tap handle.

Leonardi Manufacturing has developed and manufactured an inexpensive alternative to using taps for cleaning the threads of pockets. Its thread cleaner consists of a 2⅛-inch bolt with handle that has three separate grooves for dirt removal. It also includes a protective sleeve.

The thread cleaner is used like a tap. First oil it, then run it through the threads. As you back it out you will see that the dirt will collect in the three grooves. Just remember that the thread cleaner cannot tap — it only chases the threads to remove the dirt and build-up.

Now that the bolts and threads in the pocket are clean, put a small amount of Never Seize or Dry Molly on the bolt threads (oil can be used for periods up to two weeks). A small amount of lubrication, with proper torque, will not

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method used for the final torque. 

Again, be sure to alternate and gradually tighten each bolt so that the pocket will not be tipped. After the pocket is properly tightened, you should be able to slip a sheet of paper between the pocket and the wheel on both sides of the pocket. If the paper does not fit, either the pocket is tipped to one side or the wheel is damaged enough that a tooth may be thrown. For additional safety, re-torque the bolts after grinding the first stump.

It is important to remember that fine-thread bolts can be easily damaged. Use caution when handling these bolts; try not to drop, toss or dump them in or out of a box. This could cause dings in the threads of the bolts, which could make them difficult to thread.

To attain maximum productivity when grinding:

A. Make sure you have the proper height of cut. (See Illustrations 3 and 4.)

B. Make sure you have the proper depth of cut. (See Illustration 5.)

C. Adjust the swing speed properly.

Gently turn knob clockwise until it stops. Place mark on control knob so you can count the turns. Now back out two and a half to three turns (so swing speed is very slow at first) and start cutting with the correct height of cut (See Illustration 3 and 4) and the correct depth of cut (See Illustration 5). At the same time, slowly adjust the knob so you can run the machine with a sufficient load.

The advantages of using this method are:

1. You will have the least amount of passes to remove the stump. This reduces any wasted motion outside the stump.
2. This also slows down your swing speed giving you more reaction time.
3. If you do hit something, you will spread the force out among the teeth and have less damage.
4. This also spreads the wear out evenly, maximizing the life of the teeth.

This article attempts to answer some of the most common questions asked by stump cutter operators of Leonardi Manufacturing staff. Not all machines or teeth function in a similar manner. The answers here are to be used in conjunction with and not as a substitute or a replacement for the manufacturer's machine manual provided with your equipment. To the extent that this article conflicts with the manufacturer's machine manual, the conflicting language presented here should be disregarded with users proceeding in accordance with the manual.
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TREE CARE INDUSTRY - NOVEMBER 2001
Equipment needs for the plowing contractor can run the gamut of hand shovels to massive 24-foot wide snow pushers, depending upon the need of the customer. How you price your services can have a decided effect on what kind of equipment is needed to complete a particular plowing project. If a contractor is pricing services strictly “by the hour,” then finding the most productive equipment to do the job can present a catch 22. If a piece of plowing equipment (a snow pusher, box plow for example) makes a loader five times more efficient, it is very difficult to upcharge the customer’s hourly rate by five fold. Customers just won’t accept it. However, in “per push” or “seasonal pricing” situations, increasing productivity five-fold means higher margins for the contractor. It may also provide a competitive edge when quoting against someone with inefficient equipment.

Unfortunately, plowing snow is done today much like it was 75 years ago. While the advances in technology for moving snow have been minor and mostly limited to making the “ease” of operation more attractive, snow is (for the most part) still moved today much like it was decades ago. Way back then, horse-drawn carriages pulled plows that pushed snow off to the side, much like the standard straight plow does today on the front of pickup trucks. Motorized vehicles made the process faster, but the process is still the same. With the advent of motorized vehicles, plows moved to the front of the “carriage,” but the fundamental process remained the same. Even today, snowplowing operations are a reflection of the same philosophy, in that we push the snow out of the way, usually to the left or right of the vehicle.

Along with hydraulically operated plows came ease of operation. Hydraulics made it much easier to maneuver the plow setup, and allowed operators to stay inside the cab to move the plow from side to side. The addition of electrically operated switches saved

Choosing the Right Equipment for Maximum Productivity in the Snow Industry

By John Allin

This V-shaped plow clears a wide path to clean lots quickly.

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The snow pusher, pioneered in upstate New York, has increased snow removal efficiency. Their use on loaders has drawn in more potential operators for moving snow.

These can be purchased for skid steers and smaller loaders. They come as small as 5 feet wide, which is ideal for a lot of retail centers walks. Moving massive quantities of snow with one operator has cut sidewalk snow removal time by as much as two-thirds. And with the decreased labor market in recent years, mechanizing sidewalk snow removal operations has become quite attractive to snow contractors everywhere.

In addition, polyurethane cutting edges have also helped increase productivity. Steel cutting edges wear - and wear quickly. All those sparks you see when running down the road with the plow down is the steel is coming apart from its grinding against pavement. Polyurethane doesn't tear like rubber and is considerably stiffer, thus allowing for some cutting action on the pavement surface. Polyurethane slides, but it is durable and has some cutting action, too. The squeegee effect of polyurethane also limits the need for increased chemical application to achieve bare pavement. Even though initially it is more expensive than steel, polyurethane is becoming increasingly popular with plowing operators everywhere because it lasts up to four times longer than a steel cutting edge. Combine the productivity of snow pushers with the advanced technology in polyurethane cutting edges and you will be more environmentally friendly, more efficient in your methodology, and probably more profitable.

Some folks would like to think that with all the technological advances of the recent years we should be able to find a better way to move snow in winter months - possibly by doing it all chemically, electronically, or even metaphysically. Unfortunately, in this instance, it appears that the old-fashioned way is still the best way - with some slight productivity increases with newer equipment. Chemicals can't do everything, and using more chemicals is often not very friendly to our environment. We will just have to learn to deal with the current technology and strive to be better businessmen instead of innovators of equipment.

John Allin is president of Snow Management Group in Erie, Penn., and board president of the Snow & Ice Management Association, Inc. He can be reached via email at john@allinco.com when he isn't traveling around the country quoting new snow business.
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Dogs hear sounds our ears can't detect. Bats see shapes our eyes can't perceive in the dark. And customers pick up subliminal signals from you and your employees that make or break the sale.

Potential buyers, while listening to you, think they're making a rational decision based on what you say. But meantime, a big "Yes" or a big "No" is growing in their hearts - and often it has nothing to do with how good your product is. Like love, it’s pure emotion. Men, did your "gut feeling" ever tell you to jump ship on a deal? Women, did your "women's intuition" make you accept or reject an offer? Like the ear of the dog or the eye of the bat, a special sixth sense told you something just wasn't right.

That's the same antenna your customers use when deciding to buy or not to buy.

This is not just speculation. Recent studies at the Center for Neural Science at New York University indicate that, before buyers have had time to process a rational thought about your product, they're well on their way to opening their wallets or...
deciding to walk out the door. In this article, we’re going to reveal the subconscious factors that make up your customers “buy” or “no-buy” decision, and how you can control it. The well-known sales pro Zig Ziglar once told me, “People don’t care how much you know until they know how much you care — about them.”

Ziglar, author of *Secrets of Closing the Sale* and other books on sales success, was right. Your face and body are a 24-hour broadcasting station revealing highly personal information to any customer within eyeshot. Every smile, every frown, every move you make can pull customers to you — or propel them toward the competition. Every inch, from the crinkle of your forehead to the position of your feet, must give a command performance if you want to effectively present an “I care about you” attitude. Here are five techniques to assure that all your movements aim right at the hearts of your customers:

**Technique No. 1: The slow-flooding smile**

Researchers have catalogued dozens of different types of smiles. There are warm smiles and cold smiles. There are real smiles and fake smiles. (You’ve seen plenty of those on faces of presidential candidates visiting your city who say they’re “thrilled to be in, uh...uh... ...”) Top sales pros know their smile is one of their most powerful weapons, so they’ve fine-tuned theirs for maximum impact. They’ve mastered the slow, flooding, or “You are special” smile. Here’s how.

Don’t flash an instantaneous grin the minute you spot your customer — as though any human who walked into your line of sight would get the same response. Instead, make your customer feel as though your smile is specially for him or her. You accomplish this by a split-second delay. Look at your customer’s face for a moment. Then, like recognizing and old friend, let a big warm responsive smile flood over your face and overflow into your eyes. It will engulf the recipient like a warm wave and convince customers your flooding smile is genuine, and only for them.

Your body takes the next step, literally.

**Technique No. 2: The big baby pivot**

When a little 4-year-old feels bashful, he slumps, puts his arms up in front of his chest, steps back, and hides behind Mommy’s skirt. However, when little Johnny sees Daddy come home, he runs right up to him, he smiles, his eyes get wide, and he opens his arms for a hug. A loving child’s body is like a tiny flower bud unfolding to the sunshine. Twenty, 30, 40, 50 years of life on Earth makes little difference.

When 40-year-old Johnny is feeling timid, he slumps and folds his arms in front of his chest. When he feels no special friendship with a customer, he turns away slightly and inadvertently closes him off with myriad body signals. However, when spotting a long-lost old school chum walk through the door, Johnny races over to him with open arms. Likewise, you can make your customers feel welcome with your position.

If appropriate, walk over to the customer the minute he or she comes in the door. When talking with customers in

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**Subtle Techniques That Make the Sale**

THE SLOW-FLOODING SMILE:
Don’t flash an instantaneous Cheshire cat grin the minute your customer walks through the door. Look at his or her face, pause momentarily, then let a personalized smile engulf the recipient like a warm wave. It convinces your customer your smile is genuine, and only for him or her.

THE BIG BABY PIVOT:
Like a giant daffodil spreading its petals to the sunshine after a rainstorm, unfold your arms, and turn toward your customers to signify openness to them and their ideas.

BELLY TO BELLY, NO BARRIERS:
Try to have no counters, desks, chairs or equipment between you and your customer. Take a tiny step forward and then let your customer move forward or back to choose the distance between you. You want him or her to be comfortable so the buying decision is as painless as possible.

STICKY EYES:
Pretend your eyes are glued to your customer’s with sticky warm taffy. When you must look away, do so ever-so-slowly, reluctantly, stretching the gooey taffy until the tiny string finally breaks. This convinces customers that you are there for them.

LIMIT THE FIDGET:
If you want to come across as entirely credible, try to squelch all extraneous movement. During your sales presentation let your nose itch, your ear tingle, or your foot prickle. Do not fidget, twitch, wiggle, squirm or scratch. And above all, keep your paws away from your puss. Hand motions near your face and all fidgeting gives your listener “the gut feeling” you’re fibbing.
their yards, pivot your body toward them. (Women, make that 100 percent toward male and female customers. Men, make that a full 75 percent.) It subliminally says, "I think you are very special."

Remember, deep inside, every customer is a big baby rattling the crib, waiting out for recognition of how very special he or she is.

**Technique No. 3: Be belly to belly, no barriers**

Another subliminal factor is how far you stand from your customer and even what barriers are between you.

Attorneys are exquisitely aware of this. They pay special attention to how comfortable you feel standing close to them, and just how far forward or back you’re leaning while answering their questions. Attorneys sometimes ask you to stand so they can secretly check out whether you rest on your forward foot signifying a desire to participate — or on your back foot revealing a desire to pull away. They even take a step toward you to test if you move forward. Your potential buyer is subconsciously getting into the position that feels right for him or her. Likewise, if your customer moves toward you, you should not step back. Let your customer choose the distance between you. After all, you want your customer to be comfortable so the buying decision is as painless as possible.

**Technique No. 4: "Sticky eyes"**

Now you’re making your sales pitch — talking and listening. You know that eye contact is important. But let’s dig a little deeper. A Boston center conducted a study to learn eye contact’s precise effect. Researchers asked people to have a two-minute, one-on-one casual conversation. They tricked half their subjects into maintaining intense eye contact by directing them to count the number of times their partner blinked. They gave the other half of the subjects no special eye contact directions for the chat. When questioned afterward, the unsuspecting blinkers reported significantly higher feelings of respect and liking for their colleague who had simply been counting their blinks, and thus proving that strong eye contact packs a powerful wallop.

Your customer’s emotional reaction to your profound gaze has a biological base. When you look intently at people, it increases their heart rate. Research showed that eye contact should be most intense when women are selling to women and opposite sex sales. Men selling to men should slightly reduce the intensity lest they feel threatened. Research has revealed yet another argument for increased eye contact. Besides awakening feelings of respect and affection, studies show maintaining a strong gaze gives you the impression of being an intelligent and abstract thinker. Because abstract thinkers integrate incoming data more easily than concrete thinkers, they can continue looking into someone’s eyes even during the silences.

Their thought processes are not distracted. To remind yourself to maintain strong eye contact, use the following technique, which I call “sticky eyes.” Pretend your eyes are glued to your customer’s with sticky warm taffy. Then even after he or she has finished speaking, maintain the contact a split second longer. When you must look away, do so ever-so-slowly, reluctantly, stretching the gooey taffy until the tiny string finally breaks. The extra split second speaks volumes.

**Technique No. 5: Limit the fidget**

I have a friend, a top purchasing
agent, who is sought after by many competitors in his industry. I once asked Joe the secret of his success. He said, "Because I can always tell when a vendor is lying, exaggerating or insecure about his product."

"How can you tell?" I asked.

He said, "Well, just last week, I was listening to a sales pitch for new copiers for our office. Throughout the pitch while the guy was telling me about the speed of the machine, the two-sided and color copying, his hands were relaxed and he was looking directly at me.

"I asked about special paper and sizes because we do a lot of in-house advertising flyers. Without swerving his eyes from mine, he told me it took practically any thickness and size paper. Then I asked about his company's after sale service record," Joe said.

"At that point, his eyes fleetingly darted away before regaining eye contact with me. Then, while answering my question, he shifted in his seat and at one point, scratched his neck." Joe said "That's all I needed. With his words, he was telling me their service record was excellent, but his body told me he was not being entirely forthright. Sure enough, I checked it out and their company has a lousy service record."

Top purchasing agents, human resources professionals, and police officers who interrogate suspected criminals are trained to detect lies. They know specifically what signals to look for. The rest of us, although not knowledgeable about specific clues to deceit, depend on a "sixth sense" to tell us when someone is not being truthful. The FBI, Justice Department, and most police departments have used the polygraph, or "lie detector," on suspects. And the interesting part is the polygraph is not a lie detector at all! All the machine can do is detect fluctuations in our autonomic nervous system — changes in breathing patterns, sweating, flushing, heart rate, blood pressure and other signs of emotional arousal. So is it accurate? Often it is. Why? Because when the average person tells a lie, he or she is emotionally aroused and bodily changes take place. When that happens, they fidget.

Polygraphs can give inaccurate results when a person is nervous despite telling the truth, such as an honest salesperson who is not lying, but is feeling nervous about making the sale. A salesman who doesn't feel strained at all could loosen his collar because the sun is hot. A saleswoman making a presentation outdoors could blink excessively because the air is dusty. Though erroneous, these fidgety movements give men "a gut feeling" the salesperson is being less than truthful, and women "the sense something just isn't right."

Consider the infamous Sept. 25, 1960, televised presidential debate between Richard Nixon and John Kennedy. Political pundits speculate Nixon's lack of makeup, fidgeting, and mopping his brow on camera lost him the election. Professional communicators are alert to this hazard. They consciously squelch signs anyone could mistake for shiftiness. They fix a constant gaze on their listener and never put their hands on their faces. They don't massage their arm when it tingles, or rub their nose when it itches. They don't loosen their collar when it's hot, or blink because it's sandy. They don't wipe away tiny perspiration beads in public or shield their eyes from the sun.

They suffer because they know fidgeting undermines credibility.

Now that you know...

There they are — five easy pieces in the personal puzzle of what makes up a customer's gut instinct about you. Think of yourself in these first moments of greeting a customer like a rocket taking off. When the folks at Cape Kennedy aim for the moon, a mistake in the millionth of a degree at the beginning, when the craft is still on the ground means missing the target completely. And a tiny body language blooper at the outset of a sales presentation can start a "No" forming in your customer's heart. But, with these five hidden persuaders, you'll be on right course to your customer's heart.

Leil Lowndes, best-selling author of How To Talk To Anybody About Anything, is a New York-based communications trainer who has coached top executives of Fortune 500 companies. She currently conducts seminars on subliminal sales for corporations, associations and trade shows. Her latest book is Talking the Winner's Way from Contemporary Books.
Improved Body Thrust

By Kris Edson

During my many years of tree climbing, I have had the chance to see various new and improved ways of doing things in all aspects of tree care and maintenance. Several years ago a good friend and fellow arborist, Drew Beben, introduced me to a simple and effective technique he uses to ascend trees. I call the style a “lanyard-assisted body thrust” for lack of a better term or description.

Make a mental picture of having just hit a toss 60 feet up a tulip poplar: both ends of your rope now lay parallel in front of you against the trunk of the tree. How would you ascend this rope to get to the first limb 50 feet up? Some might grab and growl with a belay man; others might tie in their friction hitch and go unassisted, or elect a secured foot lock; still others might tie in their friction hitch, add a slack tender, and have their groundsman assist as they go.

I'd like to offer another alternative: the lanyard-assisted body thrust.

Picture walking up to the above scenario and tying in your friction hitch of choice. Now unleash your lanyard and put it around the trunk as you would to ascend a tree with your climbing spikes on. Set your lanyard at a comfortable distance from the trunk on the side dee rings of your climbing belt/saddle and lean against the lanyard. You can now walk up the trunk several steps by keeping constant pressure against your lanyard: at this point, capture all the slack in your climbing system. You will have ascended several feet up the trunk. Release the pressure on the lanyard sitting into your saddle, flip the lanyard up the trunk, and repeat the process. As you become more adept at the system you will be able to gain several feet every time you reset your lanyard up the tree.

I have assisted in instructing a basic tree climbing class sponsored by the Pen-Del Chapter of the ISA and the Agricultural Extension Department of Pennsylvania State University. Although I have been instructing for the past 16 years, I became aware of this technique only six years ago. Before this technique, students’ hands often became badly blistered and they simply could not hold the rope tight enough to perform a body thrust entry into a tree. With the lanyard-assisted style of entry, many people have been able to enjoy their start into the field of the climbing arborist without the painful results of trying to build instant callous.

As I noted, this technique is not new. But it is also not widely known. The technique is also not for everyone – I never would have considered it 25 years ago – but age and proper use of tools have taught me otherwise. By using my climbing line and lanyard as tools I have been able to shift the heavy use of stomach and arm strength down to my legs where the muscles are still strong and have more endurance. I can easily ascend tree after tree with this style. Although this method is somewhat slower – roughly one minute for a distance of 40 feet, vs. 15 to 20 seconds for a good secured footlock – I have never placed a high value on getting to the top of the tree in seconds when I am likely to spend hours working aloft.

This style can be used anywhere along the stem to enhance your ability to ascend any part of the tree, also helping you conserve energy. Another adaptation could include a single line ascent using an ascender and attachment rope as your holding point between resets of your lanyard.

A note of caution – I would not use this technique on any tree where the bark is a strong characteristic of the tree (i.e. paperbark birch, shagbark hickory, etc.). This ascension method can be a bit abusive to certain bark, but I have found little damage on trees we climb often (elm, oak, ash, poplar, locust).

We often refer to this as the “old man technique,” and over time I have observed it to be helpful to all levels of climbers.

This can give you one more option to make your climbing a bit easier and, in some instances, more effective.

Kris Edson is the lead tree surgeon for The Pennsylvania State University.

1. Tie in friction hitch, position lanyard.

2. Lean back against lanyard. Walk up trunk as far as you can.

3. At this point, with friction, you can hold position. Notice slack in climbing system.

4. Tend slack in system.

5. Relax into saddle, releasing tension and lanyard.

6. Reposition lanyard and repeat process.
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The International Tree Climbing Championship on Aug. 12, 2001, in Milwaukee, Wis., was a proud and promising moment for arboriculture.

Large crowds at every event were exposed to some of the highest quality of competition to date. Don Blair, who emceed the Work Climb event, commented, "I can remember the days when we first started the Jamboree – there were times we had to actually rescue competitors! What a difference!"

And speaking of a difference, this year marked the first time that some very capable women climbers competed in the international event.

Compete they did, to a person displaying incredible finesse and skill despite the fact that a couple were relative newcomers to climbing and arboriculture. Not that we need to compare the sexes, but the eventual winner Christine Engel outscored nine of the male competitors in the prelims, even when handicapped by having one fewer event in which to score points!

The women’s events were structured slightly differently than the men’s, mainly in consideration of trying to fit all the events into the day. Women competed alongside men in the speed events – the Footlock and Belayed Speed Climb – but pared off to their own trees for the Throwline. They didn’t get a shot at the Aerial Rescue event, and the men’s Work Climb tree effectively became their Master’s Challenge.

In the women’s competition, Christine Engel of Germany placed first, followed by Wenda Li of Ontario in second and Kiah Martin of Australia in third. The rest of the field deserves mention because they acquitted themselves well. They were Tawni Halyk of the Prairie Chapter, Gabrielle Kleuver of the Dutch Chapter, Katherine Reagan of the Wisconsin Chapter and Ronja Uberschar of the Germany Chapter.

This day of international competition – truly arboriculture’s Olympics – is always filled with memorable events. However, my most vivid memory was not of the competition, but of several of the women competitors signing autographs for young girls. It was clear from the look in the girls’ eyes that the day had created new heroes – or, if you prefer, heroines – for them.

Our hat also goes off to Mark Chisholm, representing the New Jersey Chapter, who finished first in the pre-
### Classifications and Results

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<tr>
<th>Name</th>
<th>Classification</th>
<th>Footlock</th>
<th>Belayed Speed Climb</th>
<th>Aerial Rescue</th>
<th>Throwline</th>
<th>Work Climb</th>
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To put that point spread in perspective, it represented about a 1 ½ percent difference in the two men’s scores.

Dan Kraus of the Pacific Northwest Chapter placed third and first-timer Tony Wilson of New Zealand placed fourth in the Masters’ Challenge.

From the size and roar of the crowd at the end of the women’s event, it is clear that this competition is here to stay. Congratulations to all on a job well done!
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Are you motivated to help yourself and your company succeed?

Arborist/Sales representative needed for new region for national tree care company. ISA Certification required. Unlimited potential for growth in Main Line Philadelphia area. Alpine, The Care of Trees is known for exceptional employees and clients. We offer an excellent compensation and benefits package. Please fax/e-mail resume to: Alpine, The Care of Trees, 406 Swedeland Road, King of Prussia, PA 19406 Fax: (610) 239-7576 E-mail: mmilliard@thecareoftrees.com

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Experienced arborist/salesman to work in established sales territories on Hilton Head Island, SC and Savannah, GA. Full commission positions with 25K draw and benefits. Company vehicle purchase program and progressive commission schedule. Must be ISA Certified with 5 years experience. Call Chris at Historic Tree Preservation, Inc. at (843) 682-2487 or e-mail cgerards@mindspring.com

Interested in relocating to beautiful Denver, Colorado? Mountain High Tree Service and Lawn Care, an industry leader since 1974, is hiring Tree Climbers, Plant Health Care and Lawn Technicians. We offer top pay, unmatched benefits and a modern facility with new equipment. Check out our Web Site: www.mountainhightreeservice.com. Call our office: (303) 232-0666 or fax your resume to: (303) 232-0711 or e-mail us: mhttree@pcisys.net. Please send attn: David Entwistle.

Midwest Division

Safety & Training Coordinator

Join the industry leader in tree care as a Divisional Safety and Training Coordinator. This position will begin as part time commitment to a full time position. In this position you will work with local offices to educate employees on all phases of tree and plant care and provide training for others on how to manage work crews and personnel. You will also insure that our strict safety procedures are enforced and perform safety inspections of Bartlett equipment and crews. Previous field experience comprised of climbing, rigging and pest management are strongly recommended along with being an ISA Certified Arborist.

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Please submit resume with cover letter to Homer Tree Care, Inc., 1400 S. Archer Ave., Lockport, IL 60441, or call Rich or Steve at (815) 838-0320/Fax (815) 838-0375.

continued on page 110

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Maxed out in your current position? St. Louis, Mo., residential tree care co. in operation for 25 yrs is looking for a well-rounded individual with strong leadership qualities and the ability to train 12-15 team members in safety, equipment use, proper technique and efficiency. Must be able to schedule multiple projects and crews, maintain client satisfaction and high-quality standards. Climbing experience a must. Salaried position with benefits, vacation, holidays, medical, retirement, bonuses and advancement. Send resume to Metropolitan Forestry Services, Inc., 502 Old State Rd., Ballwin, MO 63021.

Pole Treatment Division Manager

DeAngelo Brothers, Inc., a progressive, fast growing National Service Company is offering an excellent opportunity in Division Management. We are seeking a highly motivated individual to join our team of dynamic successful managers. Qualifications require a degree in Forestry or Biology, with Management, Supervisory and Sales background. The individual must have extensive field experience with Wood Pole Treatment and be willing to travel throughout the U.S. Utility experience is a must.

Excellent communication skills, well organized with a positive attitude and strong work ethic are attributes that the candidate should possess.

We offer a competitive starting salary and benefits including health insurance and a 401 (k) program.

Call or fax resume to:

DeAngelo Brothers, Inc
Attention: Carl T. Faust
100 North Conahan Drive
Hazellton, PA 18201
Phone: 1-800-360-9333
Fax: 1-570-459-0321

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... continued on page 112
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Great Opportunity!
Can you fill the demand for professional tree care in the North Shore area of Chicago? Do you have the experience and expert knowledge, but little upward mobility? Here’s your chance to earn a salary, benefits, and great commissions with established clients in Lake Forest, Highland Park, and more! We are a growing company looking for an experienced and motivated arborist to fill a current sales area— not a new, unproven area. FAX your resume to (847) 729-1966 or call Dan at (847) 729-1963, if you want to make a positive change for yourself or your family.

Exciting Career Opportunities for Service Industry Managers

Come join one of the largest Vegetation Management Companies in the United States

DeAngelo Brothers, Inc., is experiencing tremendous growth throughout the County creating the following openings:

Division Managers
Branch Managers

We have immediate openings in:
MO, TX, CA, OR, PA

Responsible for managing day to day operations, including the supervision of field personnel. Business/Horticultural degree desired with a minimum of 2 years experience working in the tree industry. Qualified applicants must have proven leadership abilities, strong customer relations and interpersonal skills. We offer an excellent salary, bonus and benefits packages, including 401(k) and company paid medical coverage.

For career opportunity and confidential consideration, send or fax resume, including geographic preference and willingness to relocate to: DeAngelo Brothers, Inc., Attention: Paul D. DeAngelo, 100 North Conahan Drive, Hazleton, PA 18201. Phone: 1-800-360-9333. Fax: 570-459-2690.
Specifications:

A. General:
1. All G-60 Galvannealed Material (zinc coated, resists rust)
2. All Wiring in Conduit
3. Sealed Lexan Lens Lights Meet FMVSS 108 Specifications
4. Anti-Sail Mud Flaps
5. Hoist with Power Take Off
6. Trailer Light Connector, Six Pole
7. Pintle, Pin, or Pintle/Ball Combination Trailer Hitch with Tow Hooks
8. Bodies: Mounted, Undercoated, Chemically Degreased, Coal Tar Epoxy Coating inside Chip Box, Primed and Painted
9. Stainless Steel Hinge Pins with Grease Zerks
10. Weatherproofed Tool Boxes

B. Overall Body Dimensions:
Length: 168”
Height: 72” (Inside)
Width: 92”

C. Chip Box Material: (Galvannealed)
1. Floor: 10-ga. plate
2. Sides & Front: 12-ga. plate
3. Top: 14-ga. plate
4. Tailgate: 12-ga. plate with tubing frame (270° swing)
5. Runners: 8” structural channel
6. Cross Members: 3” structural channel
7. Rear Vertical Support: formed 1/4” plate
8. Rear Horizontal Support: 4” x 4” x 1/4” square tubing

D. Tool Boxes: (14-ga. Galvannealed)
1. Underbody Tool Boxes:
   (two) 48” long x 20” high x 20” deep
   2. “L” Cross Box:
      24” long x 92” wide x 26” high across chassis rails
      Door: 24” long x 48” high; six rope hooks, stationary shelf and water cooler holder
3. Ladder Box: (inside chip box)
   143” long x 17” wide x 27” high
4. Pruner Box: (inside chip box)
   168” long x 17” wide x 12” high
5. Locks:
   Slam, keyed with hidden theft resistant rods

E. Optional
1. Tool boxes and Step-Type Rear Bumper
   Behind rear axle 34” long x 20” high x 20” deep
2. Cab Protector
3. Top Ladder Rack with Access Steps
4. Electric Trailer Brake Control
5. Wheel Chocks and Holder

NOTE: Chassis Cabs Available to complete the package 102” CA Chassis Cab required.
The Kan-Du Stump Grinder ...

... is fast, efficient, economical and has over 12 years of proven reliability. It is hydraulically controlled, self-propelled and will travel at a fast walk in open areas and slowly on hills and in close quarters. It also has a hydraulically controlled, rear-mounted stabilization blade. It is easy to operate, has a 48-inch working width, yet will pass through a 29-inch opening and will grind 30 inches high and 24 inches deep.


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Arborist Needed!
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1998 FMC 35 gal. a minute John Bean Pump, 3 compartments with mechanical agitation, 2 Hannay Reels and hoses. Also several other old used sprayers. (317) 896-3257 or (317) 894-5015.

... continued on page 116
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For Sale: 1998 Altec LR3-55 (60 ft WH) with chip box. The lift is mounted on a 1998 DT-466 International diesel truck and is operated by a joystick. The truck has the 6+ transmission, cruise control and A/C. The truck is painted white and in excellent condition, $60,000. Also for sale is a 2000 Rayco RG-50 stump grinder with trailer, $25,000, and a 1998 68hp Kubota tractor 4wd with forks/bucket loader and logging winch on the back, equipment trailer included, $24,000 Call (336) 372-6680.

1998 Morbark Model 2400
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$24,900
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116	TREE CARE INDUSTRY - NOVEMBER 2001
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The 1400SD is the latest addition to our full line of brush chippers ranging from 6", 9", 10", 12" and now 14-inch capacity. The 1400SD is the largest 90 degree in feed disc style chipper on the market today. Patent and patent pending features like threaded knives, slide back feed roller and hopper assembly, ratchet style feed system, and self cleaning non clogging bottom feed roller are just a few outstanding features found only on Dosko.

**Exclusive Threaded Knife Design**

It's only fitting that when you build the best chipper on the market today, you fit it with the best knife system available. The threaded knives are precisely positioned in place, assuring accurate knife point location with no adjustment required. Whether installing new knives or reversing worn knives, it can be done in minutes, even on the job site.

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BUSINESSES FOR SALE

Established tree care business for 36 years on Maryland's Eastern Shore. Long-term contracts and good workforce in place. Year-round work with good growth opportunity. Possible owner financing. Box PL, TCI, 3 Perimeter Road, Unit 1, Manchester, NH 03103.

Naples Florida

Business For Sale

Well-established tree care business for sale in the heart of Silicon Valley, richest county in the world. Located in San Jose, California and serving the bay area communities for the past 9 years. Medium-sized company grossing over a million dollars annually with an average growth of over 20 percent per year in sales. Excellent reputation in the community with numerous repeat and referral work year-round. All trucks and equipment are late model. A well-trained, motivated tree care management team runs the company with little supervision from the owner. This is a turnkey operation for the right buyer. All inquiries can be made by either mailing to James Welsh at PO Box 501, Cupertino, CA 95015 or through our Web site at: www.commercialtree.com by e-mailing Robert for more information.

For Sale: Tree Care Business
Est. 19 years
Gross sales 219K, Net 71k
Only 50k down. Contact American Business Brokers www.abbrokers.com
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Tree Business For Sale
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continued on page 120

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See us at TCI EXPO 2001!

Please circle 52 on Reader Service Card
Established and profitable tree service for sale. Owner retiring. Located in upscale suburb of San Francisco Bay Area (Contra Costa County), Calif. Small company with excellent 3-man crew. Set up for ease of operation. Owner works 20-30 hours/week, nets $120,000/year w/1 week off every 6 weeks. Year-round work. Excellent reputation w/high percentage of repeat and referral business. Call (925) 689-4446 for information.

**EMPLEYMENT/OWNERSHIP OPPORTUNITY**
Successful tree care business in Midwest is seeking an experienced tree climber to earn ownership of company. Earn $16 to $20 per hour while building ownership. Total ownership may be earned in as little as four years. Company has no debt. Excellent reputation in community, repeat and referral business. Owner is wishing to retire. Fax resume to (217) 544-8113.

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TREE CARE INDUSTRY - NOVEMBER 2001

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One Lump or Two?
Dr. Glynn Percival and Dr. E. Thomas Smilev

Tree loss soon after transplanting is a serious problem for all involved in the landscape industry. Recent reports from the University of Ulster and the University of Washington have found failure rates for tree planting are typically 25 percent to 50 percent. Such losses can prove to be a heavy financial burden.

One of the main reasons for these high failure rates is that even when accepted nursery practices are followed, less than 5 percent of the actual root system may be moved with a tree. This results in severe water stress following leaf flush in spring as the root system is of insufficient size to support the water demand of the tree crown, a phenomenon known as transplanting shock.

Although a number of factors have been associated with transplanting shock, it is now widely believed that survival of newly planted trees is largely dependant on rapid root growth to absorb water from the soil, replenish water loss, and subsequently reduce water stress. Ideally, therefore, a cheap, non-toxic and environmentally friendly treatment that can be applied to a root system prior to or just after transplanting would be a great benefit to the industry. One of the simplest and most promising compounds tested by the Bartlett Tree Laboratories, based in Charlotte, N.C., and University of Reading in England, has been low concentrations of sugars.

We know what happens to tree growth in the presence of high and low concentrations of carbon dioxide, water and oxygen. However, note that the end product of photosynthesis is sugar (or, more accurately, sucrose), the same type of sugar we use to sweeten our coffee. This then begs the question: what happens to growth when a tree is supplied low concentrations of sugars?

Preliminary results have been very interesting. For example: Supplying sugars to birch root systems following severe pruning (removal of 90 percent of the root system) would be a great benefit to the industry. One of the simplest and most promising compounds tested by the Bartlett Tree Laboratories, based in Charlotte, N.C., and University of Reading in England, has been low concentrations of sugars.

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<table>
<thead>
<tr>
<th>Function</th>
<th>Genes repressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starch breakdown</td>
<td>lvr1</td>
</tr>
<tr>
<td>Starch breakdown</td>
<td>Sh1</td>
</tr>
<tr>
<td>Photosynthesis</td>
<td>Lhcb</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Function</th>
<th>Genes enhanced</th>
</tr>
</thead>
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<tr>
<td>Root growth</td>
<td>Sus1</td>
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<tr>
<td>Root growth</td>
<td>lvr2</td>
</tr>
<tr>
<td>Storage</td>
<td>Patatin class 1</td>
</tr>
<tr>
<td>Defense</td>
<td>PAL</td>
</tr>
<tr>
<td>Defense</td>
<td>Chalcone synth</td>
</tr>
<tr>
<td>Defense</td>
<td>Hrp</td>
</tr>
</tbody>
</table>

After Koch 1996

Table 1. The influence of sugars (200mm) on the RGP of silver birch

<table>
<thead>
<tr>
<th>Treatment</th>
<th>RGP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (water)</td>
<td>11</td>
</tr>
<tr>
<td>Sucrose</td>
<td>17</td>
</tr>
<tr>
<td>Fructose</td>
<td>13</td>
</tr>
<tr>
<td>Glucose</td>
<td>14</td>
</tr>
<tr>
<td>Glycine betaine</td>
<td>16</td>
</tr>
<tr>
<td>Galactose</td>
<td>12</td>
</tr>
</tbody>
</table>

RGP = Root growth potential (the number of new roots formed >1cm; a useful indicator of future plant performance).
the root system) to simulate transplanting shock increased root metabolism by promoting lateral root branching and root formation (Table 1).

Although sugars gave good results with birch in this instance, they should be interpreted with some degree of caution. At present it is more than simply mixing a bag of sugar with soil or compost and then planting the tree. If the sugar concentration is too high, this can put the tree under osmotic stress and/or encourage the buildup of pathogenic fungi in the soil. The sugar concentration that worked well for birch proved detrimental to other species such as beech and red oak.

This leads to the further question as to how exactly sugars promote root growth. Work by the University of Florida has gone a long way in explaining the answer. They have found that sugars function not only as substrates for growth but also affect the sugar-sensing systems that initiate changes in gene expression. For example, incubation of root systems in sugar leads to the repression of photosynthetic genes, decreased rates of photosynthesis, and enhancement in root development.

The University of Florida's results clearly demonstrate that genes that are enhanced are not only the genes for root growth, but also the genes involved in the defense against fungal, bacterial and insect pests (Table 2). Obviously a tree is more susceptible to attack from these pests when it is suffering from transplant shock than at any other time during its life cycle. The possibility of sugars having a dual role in altering the growth pattern of trees in favor of root formation and enhancing resistance by treating roots during or immediately after transplanting offers a simple system for reducing transplanting losses and increasing disease resistance. It should be emphasized, however, that although we know that genes for defense are enhanced, the degree of resistance for the whole tree is unknown.

These potential benefits may also account for the range of carbohydrate or molasses/sugar-based fertilizers that have recently become commercially available. Manufacturers claim these fertilizers work by stimulating vigor of root crops such as leek, potato and carrot, increasing yields by up to 20 percent. Unlike conventional NPK fertilizers, these fertilizers contain sugars.

Continuing research sponsored by the ISA at the Bartlett Tree Research Laboratories is investigating the influence of sugars singly and in combination with fertilizers. Ultimately, research is aimed at determining the optimal sugar type, concentration and mode of application required to maximize root growth without the associated problems of osmotic stress and disease buildup.

Dr. Glynn Percival works at Bartlett Tree Research Laboratory in Reading, England. Dr. E. Thomas Smiley conducts research at Bartlett Tree Research Laboratory in Charlotte, N.C.
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