

TREE CARE INDUSTRY

INSIDE *Buyers' Guide*
JULY 2004

The Official Publication of the Tree Care Industry Association

Volume XV, Number 7 - July 2004

Greater
Felling
Accuracy
*Using the
Tapered Hinge*

TRASH

to

Treasure
Recycling Tree Waste

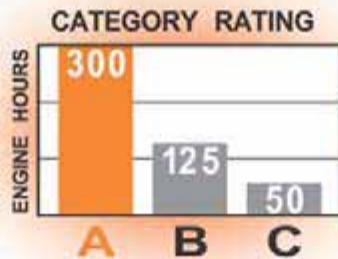


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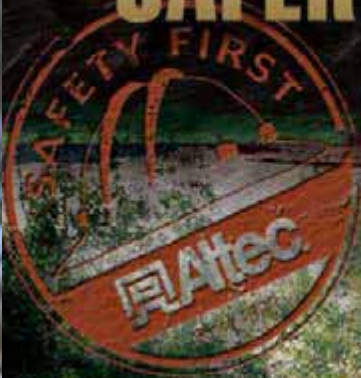
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Something happened on the way to Maastricht ...

By kind invitation of Pius Floris, ISA EC member and head of the committee that organized the 6th European Arboriculture Conference, I recently spoke in Maastricht, The Netherlands. I selected the topic "Enhancing our Professionalism – Creating our Message of Credibility and Necessity with the Public."

Having lived overseas, I know how important it is not to be the American coming to tell others how to run their businesses. We have much to offer each other on both sides of "the pond," and the knowledge exchange among all arborists worldwide is a critical advantage to the future of our industry.

Before I developed my presentation, I interviewed arborists all over the world and also Ernst & Young's Association Management Division, based in Brussels, to get a flavor of what was transpiring for small businesses and associations globally.

Short and sweet, here is what I found. It doesn't matter where you live in the world:

1. Regulations are increasing – government is watching and taking actions that affect small businesses.
2. Regulations are increasing – the government is paying attention to safety in our industry and is not finding our statistics acceptable.
3. Many companies are not following regulations, creating inequities among businesses.
4. Differing regulations across countries, and between states in the U.S., cause confusion.
5. Insurance premiums are increasing in staggering proportions.
6. Business costs are on the rise because regulations are increasing; employee costs are increasing; insurance premiums are increasing; and litigation is prevalent.
7. The slow economy is hurting everyone.
8. Arborists worldwide crave recognition as professionals.
9. Arborists are feeling pressure from related professions to standardize our practices and become more professional.
10. Arborists desire more curricula in schools and seek qualified employees.
11. Arborists would like to see poor practitioners and poorly run businesses vanish from the landscape.
12. Arborists recognize a need for common standards of tree care practices.
13. Arborists see a need for respect for trees, their owners, and have a desire to see more people working toward proper tree care and concentrating less on removals.
14. Arborists would like to see a worldwide coordination of scientific developments.
15. Arborists want to be relevant to, and valued by, the greater community.

Arborists shared with me that they believe we have a responsibility to:

1. Have strong associations;
2. Correct the gender imbalance in the profession;
3. Create greater knowledge and standards for entrance into the profession;
4. Educate arborists as business people;
5. Raise consumer awareness of safe work practices, the need for insurance and quality tree care;
6. Hold ourselves to ethical standards: don't pay cash under the table; follow regulations; follow proper safety practices; and follow tree care standards.

Arborists know what the challenges are, and arborists have expressed a desire to take responsibility for them. The time has never been more right to have common best business and best tree care practices established worldwide. It will take three things: arborists' unity, arborists' time and arborists' money. Are we ready to transform the industry?

Cynthia Mills, CAE

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 Publisher

Tree Care Industry

Publisher
 Cynthia Mills, CAE

Editor
 Mark Garvin

Managing Editor
 Don Staruk

Technical Editor
 Peter Gerstenberger

Art Director
 Richard May

Advertising Sales
 Sachin Mohan
 (516) 625-1613

Classified Advertising
 Dawn Stone

Accounting/Editorial/Sales Offices

3 Perimeter Road, Unit 1
 Manchester, NH 03103
 Phone: (603) 314-5380
 Fax: (603) 314-5386
 E-mail: tcia@treecareindustry.org
 www.treecareindustry.org

Circulation

TCI, PO Box 15907
 North Hollywood, CA 91615-5907
 Fax: (603) 314-5386

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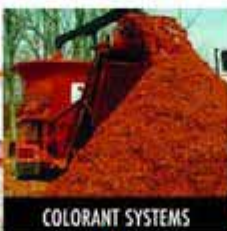
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Greater Felling Accuracy Using the Tapered Hinge

By Daniel Murphy

The ability to fall a tree accurately is crucial in preventing property damage and often allows the arborist to quickly fall a tree rather than climbing and rigging a technical removal. Understanding the mechanics of a good hinge is essential in developing falling accuracy and confidence. This article will focus on the mechanical principles of a tapered hinge, which when combined with proper falling techniques, give excellent control in falling side leaning trees.

These principles have long been understood and taught by professional loggers and can be found in books by Douglas Dent and Jerry Beranek. Though well understood and used by the logging industry, the use of tapered hinges seems to be far less established in the tree care industry. This article is primarily written for the benefit of the urban arborist.

It is generally preferable to fall a tree or spar either in the direction of lean or directly opposite the direction of lean. However, often the only unobstructed landing zone lies to the side of a tree's lean. Here the faller faces a risk that the lean of the tree will cause the hinge to fail, prior to the tree committing to the desired direction of fall. The results can be catastrophic. The faller has several options to create a mechanical system that has enough strength to resist gravity and usher the tree into the desired direction of fall.

Many arborists compensate for a side leaning tree by adjusting the gun (that is

aiming the notch to sight the tree) past the desired direction of fall. This method uses a standard hinge with holding wood of equal width across the length of the hinge. Logging instructor Tim Ard suggests "aiming the tree an additional 50 percent of the side lean in the opposite direction. For example, a tree with 5 feet of right side lean must be aimed 7½ feet to the left of the intended target."¹ This adjusted gun technique is somewhat imprecise, but will work in trees with moderate side lean,

especially on trees like elm and hickory, which have excellent strength of wood fibers to resist hinge failure. However in falling trees with a heavier lean, especially when leaning toward valuable property, this method cannot be trusted.

In *Professional Timber Falling*, Douglas Dent clearly states that the preferred method for falling a side leaner is to compensate for lean by using a tapered hinge. Dent calls the tapered hinge "an extremely

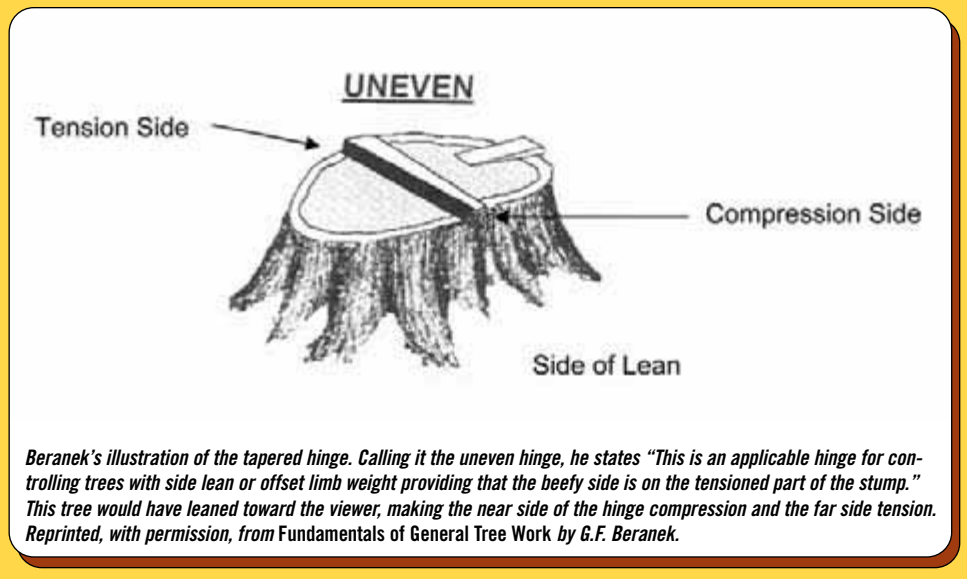
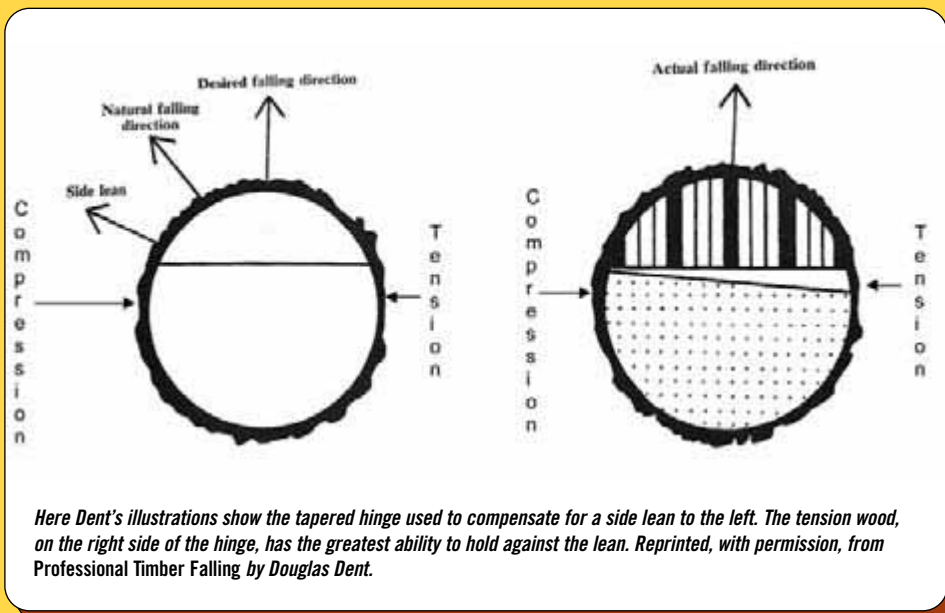


This large cherry has a significant side lean and is threatening a house that is not in the picture. The decision to fell rather than climb this removal was made because there was 1) a wide open landing zone, 2) a well-placed tree from which to anchor a retainer line, and 3) enough sound wood on the tension side to trust the hinge. Notice the pull line (outlined in green), and the retainer line (outlined in red). Both lines were set from the ground and tied off at arrow A, using the fishing pole technique, which does not require isolating lines. All photos courtesy of Daniel Murphy.

important part of the faller's technique." Jerry Beranek also recommends this technique in the *Fundamentals of General Tree Work*, referring to it as the "uneven" hinge. On a standard hinge, the width of the hinge (or holding wood) does not vary, so that the face and the back cut are parallel. The tapered hinge differs in that the holding wood is very narrow on the compression side (toward the direction of lean), and then gets consistently wider, reaching its widest point on the tension side. This is easily achieved by making the back cut at a slight angle to the face.

Here are Dent's instructions for cutting a tapered hinge. First, the notch is cut facing the desired direction of fall. The back cut is then made to create a hinge, which is tapered across its length, with the widest part of the hinge being placed on the tension side, opposite the lean.

As in all chain saw operation(s), this technique must be learned by doing. It is best to practice using the tapered hinge in non-critical situations to get a feel for its use in different species and circumstances. One way to approach the technique is to keep about the same total amount of fiber in the hinge as in a standard hinge, approximately 10 percent of the tree's DBH. By angling the back cut it is possible to remove about half of the fibers from the compression side while leaving that approximate amount of additional fiber on tension side. (see diagram)



Another way to learn this technique is to practice on trees that are either slight front leaners or set with a high pull line. Make the back cut by running the tip of the bar forward until it is about 1/2 inch from the notch on the compression side of the hinge. Then while using constant pull, leave the tip in place and push the body of the saw forward until the tree begins to move. This should leave a hinge that is 1/2 inch thick on the compression side and much beefier on the tension side.

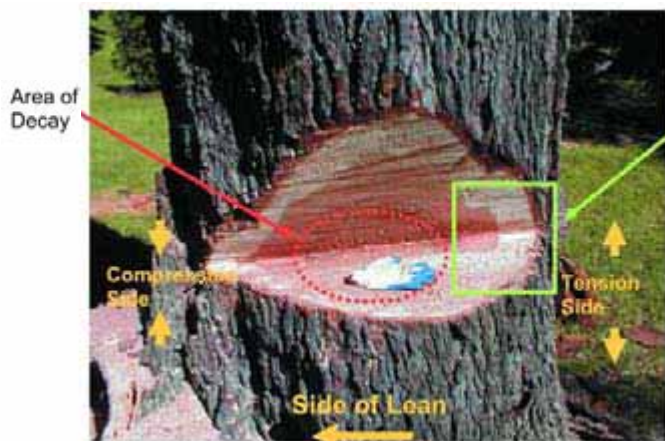
The tapered hinge takes advantage of the different properties of tensioned fibers and compressed fibers. The wood on the bottom side of a horizontal limb (or on the lean side of a tree) is under compression, because the weight of the limb is pushing the wood fibers together. Wood under com-

pression, when cut, will pinch the kerf, as when undercutting a limb. As the limb is undercut, its weight will begin to pinch the kerf, sometimes trapping the saw.

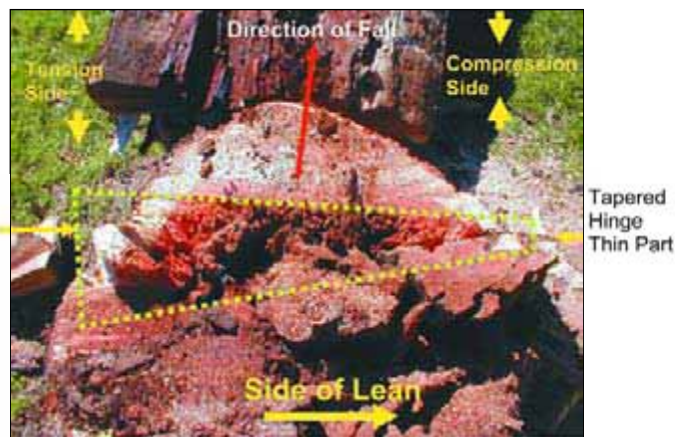
Conversely wood on the top side of a limb is under tension. Tensioned fibers are being stretched or pulled apart. As wood under tension on the top side of a limb is cut, the kerf will begin to open, until the limb fails.

Tensioned fibers provide the majority of strength in any system such as a limb or a hinge. Compressed fibers do little to keep the limb or hinge from failing. Because arborists have been taught to undercut any heavy limb, they rarely get a chance to see a large limb fail at the slightest violation of tensioned fibers. Some time ago, I removed a large tulip limb without an undercut. The chain had barely touched the top of the limb, when it exploded. The same limb could have been undercut at least halfway through before failure. Most arborists are familiar with the fact that wood under compression can be cut without causing a limb to fail. A large limb will invariably pinch the saw in an undercut before the limb fails. This clearly demonstrates the superior holding ability of tensioned fibers.

The great difference in strength and holding ability between wood under tension and wood under compression is the mechanical principle that makes the tapered hinge technique far superior to the



This notch in this cherry tree is clearly cut well, as it wide and clean with no bypass. The rot in the center of the tree will weaken the hinge, but there is enough good wood on the tension (right) side to hold against the lean, especially with a retainer line well set. There is also good wood on the left (compression) side, but that is less important as it will do little to hold against the side lean. The glove is for perspective.



This bird's-eye view shot shows a reverse view of the tapered hinge with the widest part of the hinge to the left (tension) able to hold against the tree's lean to the right. The combination of a good tapered hinge and a good retainer line allowed the faller the confidence necessary to fall this tree without climbing, saving many man hours on the job.

adjusted gun technique. While the notch determines the direction of fall, the beefy side of the tapered hinge works to prevent

the weight of a side leaning tree from changing that direction. In trees with a heavy side lean, it may be necessary to

combine the tapered hinge with a slightly adjusted gun. This is far more accurate and reliable than the adjusted gun technique.

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This principle, when properly understood, can guide the arborist in a variety of situations.

When inspecting a side leaning tree or its notch prior to falling, any defect or decay on the compression side is far less reason for concern than decay in the tension side, where even a small imperfection can seriously undermine the strength of the holding wood. The arborist may have to take additional precautionary actions when the tension side of a hinge is compromised, which could include setting a retainer line or removing weight from the side of lean.

Even in trees that have little or no lean, the faller may choose to protect a house, fence or other property by using a slightly tapered hinge, which leaves more holding wood on the side of the hinge away from the property. This technique affords extra confidence in falling, especially when working with a tight landing zone or brittle



These photos show the hinge wood on a fairly large Mulberry. The compression side is to the left. This tree was a heavy front leaner with a good bit of side lean. The thin strip of holding wood on the compression side was left to keep the tree from twisting. The triangular shaped fibers on the right side of the hinge had the best holding ability against the trees lean to the left. This was a non-critical situation where very little property was at risk, allowing the faller to experiment with a fairly exotic form of the tapered hinge, which happened to work well.

wood that has relatively little holding strength.

When falling a tree that is slightly wider in diameter than the length of the saw's bar, the faller will often side cut, or "nip a corner" of the hinge to ensure that the hinge is

shorter than the bar. In critical situations it is of course better to carefully cut the hinge from both sides of the tree, but when the choice is made to nip a corner of the hinge, an understanding of the differences between the effects of tension and compression is helpful. Always nip the corner

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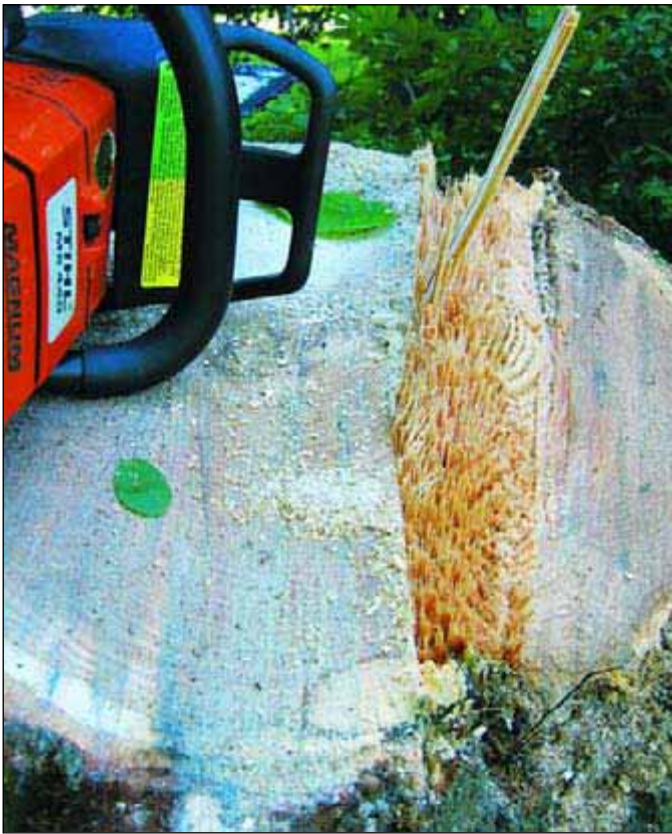
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The hinge on this 24-inch diameter, front-leaning red oak has a slight taper on the near side. The tree had no side lean. The slight taper was used as an added measure of protection to ensure clearing a house on the near side.

on the compression wood side, or when a straight tree is felled near to a house or other obstacle, nip the corner closest to threatened property. This added measure of protection gives the faller greater confidence.

The tapered hinge can also be very helpful when “turned on its side”² and used in rigging and removing limbs. When free-falling limbs, an arborist often needs to swing a limb horizontally to one side or the other to avoid an obstacle. He will find an open faced notch with a tapered hinge to be much stronger than a standard hinge, allowing the limb to swing farther to the side before failure.

This is especially apparent on light and medium sized limbs. On light limbs, the bottom half of the hinge can be removed entirely, leaving a small pie-shaped hinge on the tension side (which is the top) of the limb. The limb can then be pushed around

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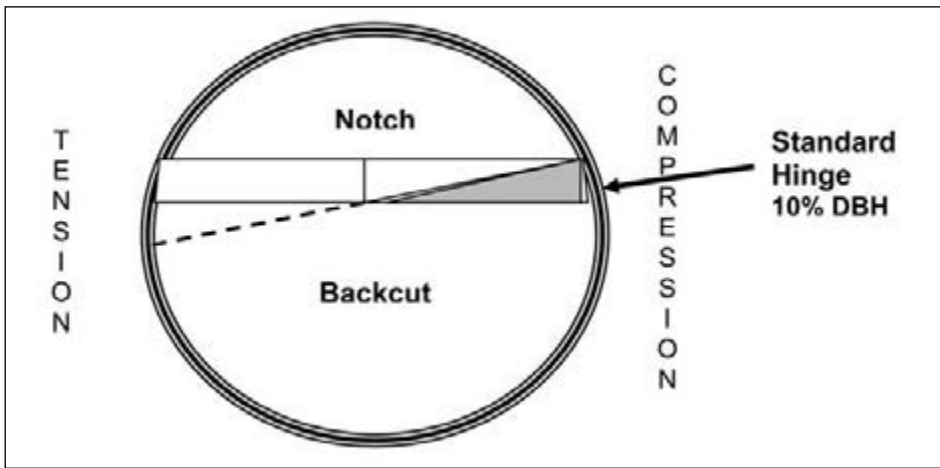


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The width of a standard hinge is approximately 10 percent of the tree's diameter at breast height (DBH). The tapered hinge removes about half of the hinge fibers on the compression side, shown in the shaded area, and leaves approximately that many additional fibers on the tension side, as outlined by the dotted line.

by hand. It is important, however, on heavy limbs, to leave some holding wood across the full length of the hinge. Otherwise, the weight can cause the limb to twist as it falls. The tapered hinge's holding ability in swinging light and medium limbs is sure to convince even the most skeptical arborist of its superiority.

This technique can also be used when rigging limbs into a lowering line. Swinging limbs to the side, rather than straight dropping, reduces shock loading by allowing the lowering line to slowly take the weight of the limb as it begins to fall. With good technique, the lowering line takes almost all the weight of the limb before tear-off, making for a very smooth action. The tapered hinge is also a crucial component in some advanced rigging techniques that are beyond the scope of this article.

It is also important to understand the difference between tension and compression while pruning trees. The wounds left by pruning cuts can cause significant decay, especially in larger cuts. Many arborists, when reducing limbs and leads, will hide their cuts by making them on the top side of the limbs. There is a trade-off here between aesthetics and structure. Though wounds left on the top of limbs are not visible from the ground, the resulting decay will be in the tension side of the limb, which will weaken the limb far more than if the decay were in the compression side. This is an important factor to keep in mind when working to prevent future storm damage.

Any hinge is only as good as the notch and back cut that define it. For example, a low back cut³ or bypass cut on the notch can cause any hinge, tapered or not, to seize or fail. It is therefore extremely

important that the faller understand and master basic falling techniques. The majority of falling problems are caused by an improper notch. It is therefore recommended that every tree faller learn the proper technique for cutting an open faced notch. The open faced notch is the preferred notch in the vast majority of falling situations, because amongst other benefits, it greatly reduces cutting errors, such as bypass cuts.

The tapered hinge is an extremely valuable technique that is simple to learn and adds to the arborist's bag of tricks. It can be used very effectively in both rigging and falling. However, a word of caution is in order. When learning the tapered hinge, the arborist is encouraged to experiment in non-critical situations. Start practicing by freefalling low limbs when no ground obstacles are at risk, and falling small trees to the side of their leans when hinge failure does not endanger property. Learn the capabilities and limits of the tapered hinge in different types of wood before use in critical situations.

The tapered hinge can be used in many, if not most, falling situations, making it very practical for arborists of all skill levels. The great value of this technique can only be understood after its application on the job. Those who learn and adopt this technique can look forward to a breakthrough in productivity, performance and confidence, and the joy that developing improved skills provides. Work safely.

1 From Web site www.forestapps.com/tips/sidelean/sidelean.htm

2 The author wishes to thank arborist Ken Casey for bringing the many merits of the tapered hinge to his attention.

3 The low back cut is not recommended for precision felling, however it is necessary when pushing or pulling trees from below their center of gravity.

Daniel Murphy is a writer, trainer and consultant to the tree care industry, and owner of Murphy's Tree Service, Wayne, Pa. Murphy is presenting "Tricks of the Trade" at the ISA Symposium on Aug. 10, 2004.



An abbreviated tapered hinge on this 8-inch dry maple lead was used to compensate for side lean. Holding wood on part of the compression side of the hinge has been completely removed. CAUTION: The abbreviated tapered hinge should be used only on small wood and light limbs as heavy side leans will cause the hinge to twist and fail.

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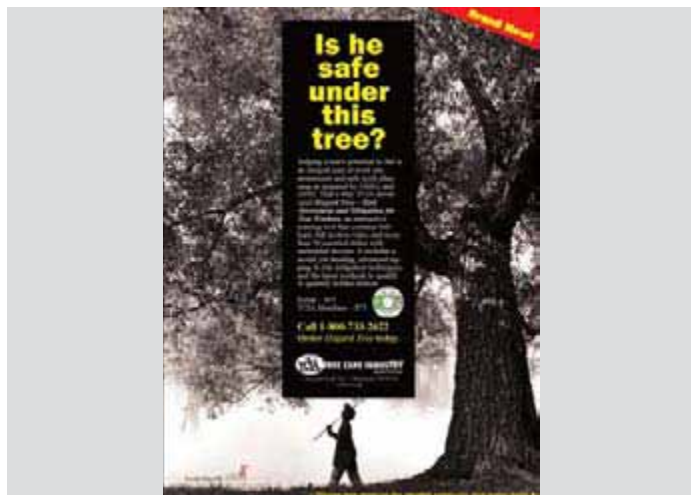
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This 2 video set is required for TCIA Electrical Hazards Awareness Program training. *Aerial Rescue* is a video covering rescue equipment, electrical hazard rescue, personal safety during aerial rescues and more. *Electrical Hazards* demonstrates the proper safety precautions arborists should be using according to OSHA 1910.269 and ANSI Z133.1 standards.

EHARK Electrical Hazards Video Set
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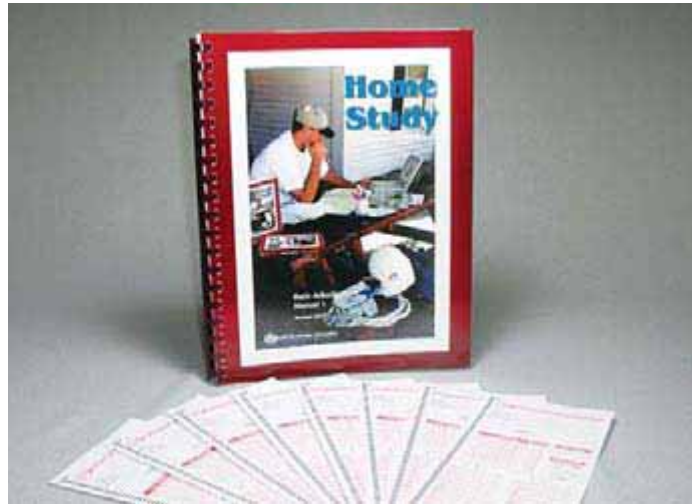
This 2 video set focuses on techniques and equipment that tree workers can apply in the field. The “rigging team” is made up of experts Don Blair, Ken Johnson and Robert Phillips. Includes *Basic Rigging*, *Technical Rigging* and workbook.

◀ **RIGSET** Rigging for Removal Video Set
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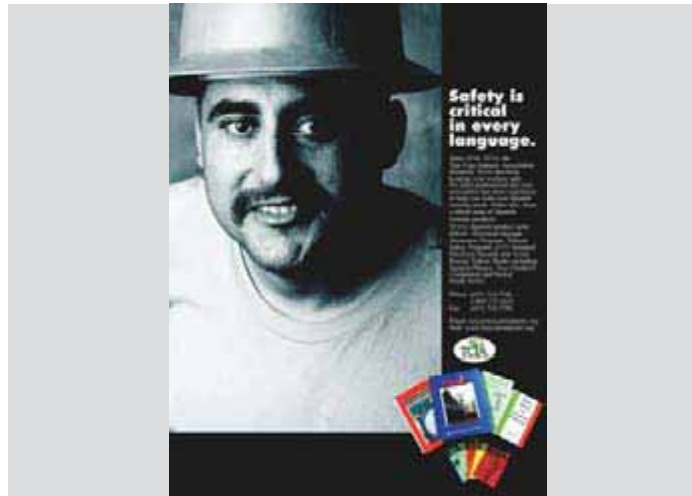
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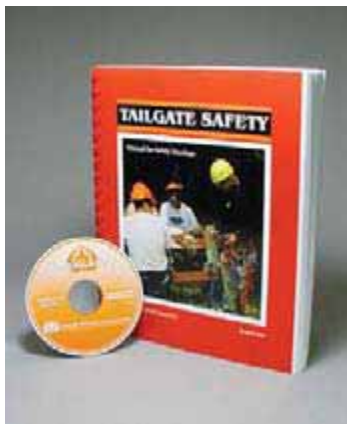
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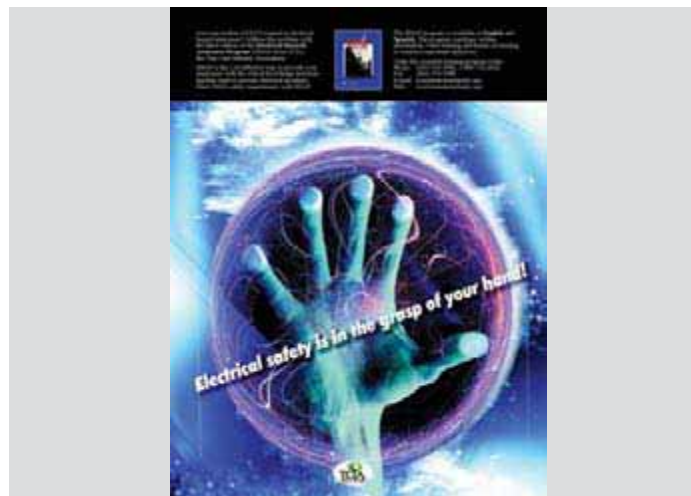


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This comprehensive program incorporates written exams, video instruction and hands-on training. Helps companies meet important OSHA safety compliance requirements, and makes necessary documentation quick and easy. Forms verify basic first-aid training, CPR training and other requirements. Certificate upon completion. Up to 8 ISA CEUs.

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TCIA Pocket Guides

OSHA's statistics underscore the seriousness of accidents in the green industry. TCIA made these booklets easy to comprehend, highly visual, easy to implement, and affordable. Five titles: *Safe Tree Felling*, *Preventing Falls*, *Preventing Struck-By's*, *Preventing Electrocutation*, and *Identifying Hazard Trees*. Also available in Spanish. Each guide is approx. 40 pages.

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BGW Basic Training for Ground Operations Set
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International tree climbing champs Ken Palmer and Rip Tompkins team up with veteran climbing instructor Robert Phillips to demonstrate the skills required to become a top-production tree climber. Five video set includes: *Getting Started*, *Rope Installation & Ascending*, *Climbing Spurs*, *Tying-In & Positioning* and *Working the Tree*. 8 ISA CEUs.

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Events & Seminars

July 16, 2004

2004 Conference on Woody Plants
 The Scott Arboretum, Swarthmore College
 Swarthmore, Pa.
 Contact: Kelly Ronafalvy (610) 328-8025
 Brochure: (610) 388-1000 Ext. 507

August 7-11, 2004

ISA Annual Conference & Trade Show
 Pittsburgh, Pa.
 Contact: Jessica Marx, (217) 355-9411, ext.24
jmarx@isa-arbor.com, www.isa-arbor.com

Sept. 15-17, 2004

Texans for Trees ISAT/TUFC Annual Convention
 Round Rock, Texas
 Contact: Mike Walterscheidt (512) 281-4833

September 22-23, 2004

Multi-State Plant Materials Conference
 Stillwater, Okla.
 Contact Mike Schnelle, (405) 744-7361 or
mas@okstate.edu

September 24-26, 2004

International Lawn, Garden & Power Equipment Expo
 Louisville, KY
 Contact: expo.mow.org

September 25-28, 2004

ISA Pacific Northwest Annual Training Conference
 Coeur d'Alene, Idaho
 Contact: (503) 874-8263 or www.pnwisa.org

October 19-20, 2004

ISA Illinois Chapter Annual Conference
 Holiday Inn
 Tinley Park, IL
 Contact: (877) 617-8887 or
www.illinoisarborist.org

October 20-21, 2004

Garden Expo
 Canada's Fall Buying Show for the Green Industry
 Toronto Congress Centre,
 Toronto, Canada
 Contact: Landscape Ontario Horticultural Trade Assoc.,
 (905) 875-1805; fax: (905) 875-3942;
showinfo@landscapeontario.com

October 28-30, 2004

TCI EXPO 2004
 Pre-conference workshops Oct. 27; EXPO Oct. 28-30
 Tree Care Industry Association
 COBO Conference/Exhibition Center
 Detroit, Mich.
 Contact: Carol Crossland, 1-800-733-2622, Ext. 106;
crossland@treecareindustry.org
 or www.treecareindustry.org

Oct. 29-31, 2004

New Jersey Shade Tree Fed. 79th Annual Meeting
 Hilton Philadelphia/Cherry Hill
 Cherry Hill, N.J.
 Contact: Bill Porter (732) 246-3210,
njshadetreefederation@worldnet.att.net

November 3, 2004

Tree Care Issues Workshop
 Stillwater, Okla.
 Contact Mike Schnelle, (405) 744-7361 or
mas@okstate.edu

January 11-13, 2005

Eastern Pennsylvania Turf Conference and Trade Show
 Valley Forge Convention Center
 King of Prussia, PA
 Contact Georgene Thompson: hone (717) 243-1349
 or georgenethompson@comcast.net

January 19-21, 2005

Kansas Arborists Association's (KAA) 50th annual
 shade tree conference
 Topeka, Kansas, .
 Contact: Dr. Charles Long
clong@tctelco.net or (785) 499-6670

January 27, 2005

Northeastern Pennsylvania Turf Conference & Trade
 Show
 The Woodlands Inn & Resort,
 Wilkes-Barre, PA
 Contact Georgene Thompson: home (717) 243-1349
 or georgenethompson@comcast.net

February 6-10, 2005

Winter Management Conference
 Tree Care Industry Association
 Los Cabos, Mexico
 Contact: Carol Crossland, 1-800-733-2622, Ext. 106;
crossland@treecareindustry.org
 or www.treecareindustry.org

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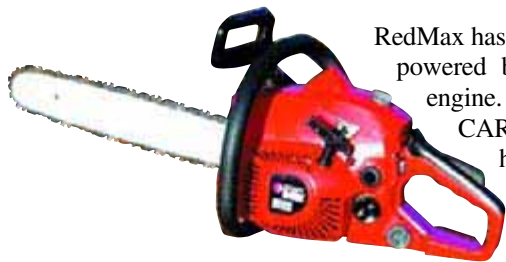
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RedMax Clean-Air GZ4000 Chain Saw



RedMax has introduced the GZ4000, the first chain saw powered by the company's popular strato-charged engine. This powerful saw meets 2005 EPA and CARB standards without the need for a hot, heavy catalytic muffler. The 40.1 cc engine, rated at 2.45 HP, has a maximum speed of 13,000 RPM. The new saw is also equipped with RedMax's dust-free system,

which prevents sawdust or other debris from clogging the engine intake and overheating the engine. With a choice of 14, 16 or 18 inch bar, the GZ4000 can take on the heaviest pruning or removal. Yet, at just 9.67 lb, the machine is light enough for comfortable operation in almost any position. The strato-charged engine introduces fresh air into the engine between the exhaust gases and the fresh charge of air/fuel mix. This reduces exhaust emissions without the added bulk a catalytic muffler, and the very hot exhaust gases it generates. The engine also uses less fuel than conventional RedMax engines. Contact RedMax, Komatsu Zenoah America Inc. at 1-800.291.8251, ext. 213, or visit www.redmax.com.

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Monterey Weeder for strawberries, fruit



Many weed products exclude usage on fruit and nut trees. This leaves nothing to use on strawberries. Now Monterey Lawn and Garden Products has developed Strawberry and Fruit Tree Weeder. It is a 2 percent granular product based on the active ingredient Napropamide. It can be used on fruit and nut trees, strawberries, ornamentals, warm season turf, ground cover, and can also be used on dichondra lawns. Strawberry and Fruit Tree Weeder can be applied at any time of year but it's a pre-emergence herbicide, so it only controls weeds before they germinate and should give you a full season of weed control. Strawberry and Fruit Tree Weeder controls weeds including grasses, lambsquarters, pigweed and hard to control broadleaf weeds such as groundsel, fiddleneck, purslane, chickweed, sowthistle and many others. Contact Monterey at P.O. Box 35000, Fresno, CA 93745; (559) 499-2100; or via www.montereylawngarden.com.

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Pointer insecticide for ash borers



During the last three years, arborists in the Northeast and across the Midwest have demonstrated they can protect threatened hemlock, ash and birch trees from destructive pests with ArborSystems Pointer Insecticide. One application of Pointer using the Wedgle Direct-Inject Tree Treatment System provides season-long control of adelgids, borers, beetles and other tree pests. Dr. David Roberts of Michigan State University and Susan Shock of Shock Brothers Tree Care in Warren, Mich., have had recent success with Pointer in their fight against Emerald Ash Borer.

The Direct-Inject System injects chemicals directly into the active layer of the tree with no drilling, protecting tree vitality. Control is achieved in as little as five days and it takes less than five minutes to treat the average tree. Pointer Insecticide contains the same active ingredient as Merit and is packaged by ArborSystems for use with the Wedgle Direct-Inject System. Contact ArborSystems at 1-800-698-4641 or via www.arborsystems.com.

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Morbark chippers tout 2 knife drums

Morbark's hand-fed brush chippers, the heavy-duty 2070XL Twister and the compact, durable 2050 Clipper, are now built standard with two knife drums. Making two cuts per revolution instead of one, the additional knife drum translates into greater productivity and increased efficiency. The Twister is designed to accept a wide variety of gas or diesel engines, all equipped with a clutch, eliminating the need for



sliding clutch tables or over-center belt tighteners. In addition, the 2070XL is equipped with live hydraulics, allowing the hydraulic system to be operated without requiring the chipper to be engaged. The 2070XL's air impeller system directs a high volume of controlled airflow through the discharge chute, expelling both chips and light, leafy material with extreme effectiveness. The 2070XL Twister's a dual feed wheel system and the large, 16 inch by 10 inch feed-wheel opening increases the chipper's ability to process difficult limbs and brush. The Model 2050 Clipper, a compact, heavy-duty machine, offers a torsional axle for greater stability, wheels that are independent of each other for smoother towing, and a heavy-duty, tubular-steel welded frame for superior strength and durability. Because of its simplicity, the Clipper is a very low maintenance machine. Access to all parts for maintenance is extremely easy and very accessible, including access to the heavy duty, reinforced anvil. Contact Morbark at (989) 866-2381 or via www.morbark.com.

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NSW NETs for ornamentals



NSW, LLC is now offering its line of plant NET Bags in lengths up to 80 inches and widths expanding to 22 inches. The new size will fit containers as large as seven gallons, and accommodate ornamental trees and more mature houseplants. These larger proportioned NET Bags are strong, engineered for greater load bearing. The super-sized plastic mesh netting has a high tensile strength, but is pliable and easily conforms to plant contour. Heat-sealed NET Bags slip easily under the plant container and then pull gently up over the plant foliage to the top of the plant. NET Bags may be gathered and tied at the top, to form a carrying handle and facilitate easy loading and unloading of potted plants. Plant foliage is gently compressed and contained within the NET Bag, reducing damage during handling. Plants may be netted days before shipping. The mesh net design allows air and sunlight to reach the plant, preventing damage from the ethylene gas buildup that normally occurs with paper coverings. The open plastic mesh design allows plants to be

watered, inspected and fertilized. Contact NSW at 1-800-368-3610; e-mail netting@nswplastics.com or visit <http://www.nswplastics.co>.

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BC2000XL chips large loads

The Vermeer BC2000XL brush chipper's two 18-inch-diameter, spring-tensioned vertical feed rollers automatically control the feeding of material into the cutting chamber. The 20 inch by 24 inch feed opening and large rollers allow chipping of whole trees up to 20 inches in diameter.



That, along with Vermeer's SmartFeed material-feeding system, boost this machine's ability to chip forked or bent material. With three Caterpillar 3126B Tier II engine options of 200, 225 and 250 hp, it can be customized for specific needs. The BC2000XL also features the "Bottom Feed Stop Bar" system, located to make it possible for the operator's leg to strike the bar and shut off the feed either intentionally or automatically in an emergency situation. The SmartFeed material-feeding system monitors changes in engine RPM and automatically stops or reverses jammed feed rollers, and automatically cycles the material back and forth until the material is re-positioned. The model is available with an optional loader/grapple capable of lifting up to 3,000 pounds and rotates 220 degrees. Contact Vermeer at 1-888-837-6337 or via www.vermeer.com.

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Rayco dealers gather for training and fun

Rayco Manufacturing held its 2004 Dealer Meeting at its Wooster and Massillon, Ohio, manufacturing facilities April 21-23. Dealers from all over the United States and even Australia attended the event.

During the three days, dealer principals and their salesmen were provided the opportunity to view and demo Rayco stump cutters, compact crawlers and environmental equipment. They were also fed well, were quizzed on Rayco product information and had the chance to participate in a golf outing hosted at The Pines Golf Club in Orrville, Ohio. The weather held out for most of the golfers, and a good time was had by all.

An opening evening reception was kicked off by a sound and lighting show themed "Mission Possible." Designed to entertain, educate and motivate, as each Rayco territory manager explained their "Mission," dealers were asked to answer a question based on each topic. Those who answered correctly moved on to a Thursday evening showdown, during which they were quizzed on Rayco company and product knowledge with a chance to become Rayco "Mission Specialists."

During a tour of the new Massillon manufacturing facility, dealers had a first-hand look at the sub and final assembly areas, the powder coat paint line, parts department and shipping area. After being transported back to Wooster, the dealers were allowed to get hands-on experience with Rayco's full line of stump cutters, from handlebar units, to self-propelled, to tow-behind models. The dealers were even able to compare Rayco's stump cutters to competitor products that were available on-site for them to use. General consensus from the attendees was that this type of hands on training allowed each person to have time to retrain on each unit, as well as time on competitor units, making them better informed and prepared salesmen.

Friday's demo day provided dealers a



John Apple and Frank Labarbera of Westchester Tractor in Goldens Bridge, New York, evaluating the efficiency of the Rayco RG 1625A Super Junior self-propelled stump cutter.

chance to train on Rayco's growing line of compact crawlers, the C87 Series. This current series of units includes the C87L loader, C87D dozer and the C87FM forestry mower. The new dealers may have been a bit tentative upon entering the machines, but once in, they put the crawlers through their paces. As with Thursday's demo day, competitive models were available for product comparisons and evaluation.

Saturday, Rayco hosted its annual Customer Appreciation Day for Rayco of Ohio customers. Attended by more than 500 people, customers had a chance to view the new Massillon manufacturing facility. Breakfast was available for early arrivals, but the culinary highlight was the pig roast. Customers also had the opportunity to demo Rayco equipment.

Thursday evening's awards banquet was a showcase of Rayco's finest dealers. John Bowling, Rayco Manufacturing president, handed out awards that included: Most Improved Dealer 2003 - L.C. Whitford Equipment Company; Most Units Sold 2003 - Blade Equipment; Consistent Growth Award 2003 - Marriott Tree Service; Outstanding Dealership 2003 - Morpower Inc. and WesSpur L.L.C.

The highly anticipated showdown of mission specialists commenced with much



Scott Ferrie from Trenchers Plus of Burnsville, Minn., exiting the Rayco C87L compact crawler loader.

excitement for everyone watching and involved. It was a grueling competition, but the winning team of Steve Clelland and Phil Clelland, both of Rayco of Michigan, Jeremy Gosper of Marriott Tree Service, and Joe Deriscavage of Blade Equipment persevered and were presented with Rayco golf jackets. Also presented awards were the winners of the golf outing. The four-some, who won in a ferocious playoff, consisted of Rayco's own John Bowling, Scott Fahey of Trenchers Plus, Phil Clelland of Rayco of Michigan, and Bud Iverson of Nortrax, who served as team mascot. The golf team with the highest score received a consolation prize of a Three Stooges golf tie. This team included Andy McMurry of WesSpur, Galen Miller and Tony Schaffner of Rayco, and Bob Gleason of Direct Edge.

Bayer names Jeff Weld Programs Manager

Bayer Environmental Science recently named Jeff Weld programs manager. For the past year, Weld was business control manager for Bayer, based at company headquarters in Montvale, N.J. As program manager, Weld will be responsible for administering all Bayer formulator and distributor programs, as well as many end-user programs. Previously, Weld was a sales representative for the former Bayer Corp., covering pest control, golf and lawn and landscape products in New York state and the New York City metropolitan area for eight years. "I'm happy to be working



Jeff Weld


with Bayer rewards programs, which have major benefits to the end-users of our products," says Weld, who also owned a landscape business in southern New Jersey for 10 years. A native of Steubenville, Ohio, Weld graduated from Ohio State University with a bachelor's degree in horticulture. He is a licensed pesticide applicator in New Jersey and belongs to the New York Metropolitan Golf Course Superintendents Assn.

New EPA label rates for Dow's Vista Herbicide

The U.S. Environmental Protection Agency recently accepted a label update for the right-of-way maintenance product Vista herbicide from Dow AgroSciences LLC. The updated label includes a rate increase to 2 2/3 pints (42 fl. oz.) per acre per year and removes the annual broadcast treatment limitation of only one, allowing

crews to make multiple applications of Vista every year. This selective, post-emergence herbicide is now labeled for use on forestry plantations as well.

Research from Dow AgroSciences suggests the new label rate increases the ability of managers mixing Vista with products like Garlon and Tordon herbicides to improve control, even with applications that occur later in the season. "Our trials show that adding Vista herbicide to Garlon or Tordon noticeably increases the uptake of both products," says Ron Cornish, customer agronomist for Dow AgroSciences. "This translates to improved control. We have really noticed this on later-season applications to pine and some hard-to-control oak species like shingle oak.

To receive an updated label for Vista herbicide, contact the Dow at info@dow.com or 1-800-263-1196. The new label will soon also be available by visiting www.vegetationmgmt.com. 

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More itching over ivy photo, & some advice

I finally got around to reading the April issue of *Tree Care Industry*. As I was reading the uncredited poison ivy article on pages 58-59, my kids looked over my shoulder and asked why the picture with the article was of Virginia creeper. Granted, the right 60 percent of the picture IS poison ivy, but the left 40 percent (the part that is seen first) is of Virginia creeper. People have enough trouble telling the two apart without the added confusion of the picture.

Your advice is good but could have gone in more depth. All parts of the plant contain urushiol, not only the leaves. We have gotten allergic reactions in the winter from inadvertent contact with the bare stems and the roots. Your recommendation to "wash everything thoroughly after being outside" could have gone farther. Soap helps – detergent is better to get the oil off the skin. The washing should be part of a shower, not a bath so that the oil does not just get moved to another part of the body. Most recommendations include showering in cool water so that the pores do not open as much, letting the oil in. Using products like Oak-N-Ivy brand cleaner do a great job also. (We have no connection to the company but swear by the product. We

keep a bottle in each bathroom and wash thoroughly after every probable exposure. Living in the southern woods, we have many opportunities for contact. We rarely have outbreaks even though we are allergic. The product works great.)

David Henderson
Henderson Horticulture
Pinson, Ala.

Editor's note: You are the second to scold us for the lack of clarity on that picture – and we knew better going in! Thanks for helping keep us on course.

Just the facts please!

I have received your excellent publication, *Tree Care Industry*, for many years and typically find the articles very informative and helpful. I am somewhat disappointed in the Lana Robinson article titled "A growing concern: Invasive Non-Native Species" in the May 2004 issue.

The article perpetuates the emotional hysteria and lack of adherence to sound scientific practices. This is easily seen in the quote from Lee Gilman of the Tree Care Industry Association: "Pretty soon, if invasives aren't controlled, locally and on a worldwide basis, the spread will become ubiquitous." This unjustified gen-

eralization is not backed by science. I also take exception to the sentence that "There is some evidence that suggests invasives have smaller amounts of DNA than the non-invasives, which allows them to divide and multiply more quickly." I would love to see data that these are referring to. Does this also hold true for the native Southern hackberry, smilax and sweetgum that "invade" my pasture in an aggressive manner?

I fully appreciate that a few plants such as kudzu and cogongrass can be considered economic pests by the forestry industry. Rational pest exclusion policies to minimize/prevent economic harm are valid and justified.

Dr. James Robbins
Extension Specialist – Ornamentals
University of Arkansas Coop. Ext. Serv.

Call backs on photo credits

We failed to give proper credit for the photo that graced the cover of TCI's May 2004 issue. The photo of a crane being used in a tree planting project was provided to us by Dr. Jim McGraw, former professor of urban forestry at North Carolina State University. Having retired from the university, Dr. McGraw now owns and operates Tree Connections, a consulting service to the tree care industry, in Cary, N.C. The photo was taken from atop a three story parking garage. The tree was being planted on Glennwood Avenue in Raleigh, N.C.

Due to an editing error, the tree pictured on page 22 in TCI's June issue was incorrectly identified. It is actually a weeping cherry. Also, the photos used in the story "Pests on Ornamental Cherries," which began on page 22, were used courtesy of Bugwood Network and the USDA Forest Service. We regret the error and the omission of a proper photo credit.



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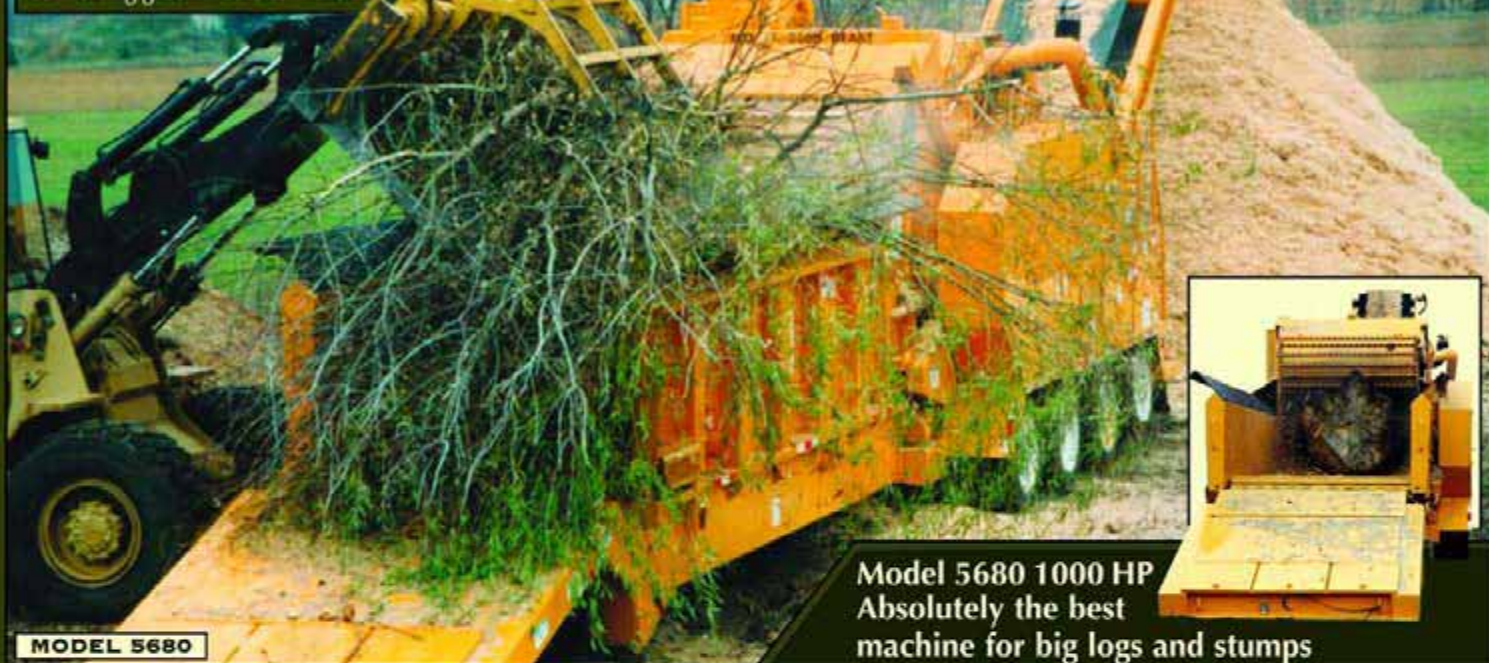
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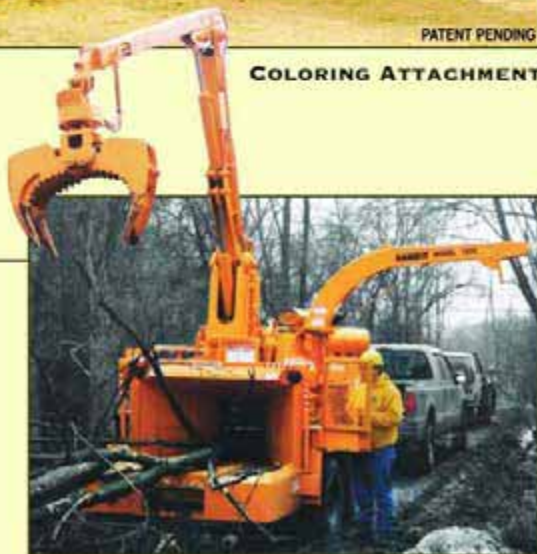
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Trash to Treasure – Recycling Tree Waste

Les Irvine uses a Fecon tub grinder along with a coloring unit to make enhanced mulch that he sells to customers throughout the Cincinnati area.

By Rick Howland

How you recycle tree waste will do one of three things for your business: save you money, make you money – or both.

It wasn't long ago that tree debris was a major headache. It had to be buried, burned or dumped out of sight. However, an unusual confluence of events turned a problem into an opportunity. First, governments decreed that stumps and limbs couldn't be buried or burned. Second, property owners decided mulching was more attractive than bare soils and easier than pulling weeds.

As good as that was for chipper-grinder manufacturers, it turned out to be great news for the arborist who was going to be saddled with disposal. Not only could he or she now find a way to reduce the volume and reduce or eliminate the costs associated with debris disposal, the enterprising

arborist now had something new to add to the repertoire over and above service – branded products for resale: a natural product they could make and sell.

In terms of productivity, on the top end, recycling machines can produce from a low of about 100 to a high of several hundred yards of material per hour, depending on the machine and the type of material being processed.

And there's a recycling niche for every business, from the small Ohio operator known for custom coloring to the large ones in the Midwest hauling cedar waste from Canada's lumber mills, to the businessman hauling material from Montana to make mulch for the East Coast – by rail.

Other than the cost of the machine and labor (and labor would show up as cost in disposal also), the beauty in the mulch business is that the feedstock is essentially free. But there are times when it is better than free; some arborists are finding that they can charge to take in tree waste that

they ultimately convert to high-margin mulch.

As good as all that gets, even mulch will generate a higher margin product if it's colored.

Mulching, then, means getting paid twice. Once to remove a tree (or take in someone else's waste) and again when it has been converted into a salable product.

The profile of the typical mulch magnate goes this way. After about a decade in the tree care business, owners find they need a grinder to further or more efficiently reduce waste, but they discover they are left with a salable product. The arborist begins to develop a market for mulch. A new profit center is born. In a brief time, that market develops substantially into retail, contract, landscape and commercial accounts. They also come to realize that other tree care and landscape pros need to rid themselves of wood waste, that municipalities will often contract – rather lucratively in some cases – for a few days

worth of waste reduction cum mulch making, and developers are in great need of the service, sometimes to make site mulch, sometimes to haul the raw material away. Opportunities are countless.

Though there's opportunity, most commercial tree care companies don't use their recycler machines to reduce pallets, railroad ties or houses, though there's a pretty good market for that. Much of that waste reduction finds its way to make fuel or low-grade mulch. Many landscapers who purchase a lot of mulch don't specify pallet mulch because it doesn't look as good as or as natural as tree mulch, and because it's dry, pallet mulch tends to float away in heavy rains.

When TCI caught up with him, Jerry Morey, president of Bandit Industries, had just returned from the Waste Expo in Texas, so, the subject was fresh in his mind. "Basically what tree guys faced first was buying recycling or waste reduction machines like ours to get rid of their green-waste disposal problem," he explains. "From what I saw at the Waste Expo, that's becoming big business."

"Grinders like the Beast Recycler grind up oversized pieces that won't go through a chipper. They'll also mix material from chippers and make shredded mulch which is more popular than chips in most areas. The key is making good-looking mulch. Chips are out of favor, and the size and color of the mulch varies based on your area," he adds. "In the East landscapers want fine mulch. In the Midwest they want coarse."

In terms of the bottom line, Morey says – and his numbers were echoed by most everyone we talked to in the business – one can take a machine like Bandit's Beast and for the cost of about \$3.50 per cubic yard convert a product with what he calls "negative value" into mulch that will generally (at least in the Midwest) wholesale at \$10-\$14 per yard. "Detroit gets about \$14-\$15 per yard, Grand Rapids, maybe because of competition, commands about \$11," according to Morey's figures. We pressed him on the \$3.50 figure and he says that



All Vermeer tub grinders are capable of handling raw material and secondary applications for regrinding to specific size. "The big thing to remember is that you're getting rid of an expense and also creating feedstock for your recycling business. We see it as grinding garbage into cash," says Chris Nichols at Vermeer.

INCLUDES the cost of the machine and to run it. He adds that specialty products like double-ground hardwoods can fetch far more than \$10 per yard.

Another phenomenon he reports is that the bigger mulch makers "... don't want to mess with retail." They'll sell it by the ton to resellers, including landscapers and home centers.

Morey is starting to see the market accelerate its demand for colored mulch. In



Morbark offers both tub and horizontal grinders, such as the one shown here. The trick is to "keep it busy and don't just run it once in a while," says Dan Brandon, marketing director at Morbark. "Look at the process as a profit center."

response, Bandit will announce a coloring attachment this year.

"Most people like the red stuff, but another opportunity is to take fairly white or green material and put in a golden color to look like somewhat like cypress," Morey says.

Again, that's regional, as is the cocoa-brown look. Some tree care pros let chips age and compost a bit to darken. That takes time and cuts a bit into the volume, but adding cocoa brown to make mulch look aged speeds up the process and the profit.

Morey champions the Beast Recycler as a cutter mill capable of cutting splitting and grinding actions or a combination of all three. The advantage is a custom mulch.

He tells the story of one skeptical customer who bought a machine only to find himself purchasing a second one within six months. That customer now does more than \$1 million a year in mulch alone. "It costs \$3.50 to make and \$14 to sell. If you take out all the overhead, including administrative costs, that's still \$10 a yard," he insists.

Bandit offers four models starting in the low six-figure range and topping out at over a half million dollars and a thousand horsepower.

Dan Brandon, marketing director at Morbark, says that someone considering a recycling machine needs to understand that there are two basic types, those that grind and those that chip. "Virtually all arborists have chippers. It's their bread-and-butter to be rid of limbs and takedowns, but there aren't many places to go with chips. Disposal problems result. Grinders, however, open up other opportunities, specifically a product to sell."



S&S Tree and Horticultural Specialist in South St Paul, Minn., uses a Rotochopper tub grinder to make and color mulch.

The different types of markets most common are landscape mulches; soil products and fuel, which Brandon says can get pretty sophisticated. "The guys who are successful are marketers who know how to sell their product to homeowners or to home centers, and who can make colored mulches or regular for a nice groundcover."

"Both do the same, but they do it differently," Brandon explains. "The tub feeds from the top, using gravity to bring material to the hammer mill along with rotation of the tub. Ground material passes through screens for sizing and discharges via augers to a conveyor belt. Horizontals do the same but feed via a chain belt to a feed

wheel to crush down and force material to the mill." In other words, horizontal is force-fed, tub is gravity fed, but both make the same products.

Because of the way they're built, tubs can throw or spray material, making them less attractive for populated areas. But tubs can be more productive than horizontals, especially since they'll accept stumps, as big as 13 feet across, Brandon says. They're great for land clearing. "Horizontals don't open that wide, but they work well in tight areas and are becoming more popular in town due to liability issues."

When it comes to grinders, there are really just two kinds – tub and horizontal.

Morbark offers both tubs and horizontals, starting with a 200 horsepower unit, towable with a 3/4-ton truck starting at \$100,000, and topping out at half million dollar tub and horizontal units, some capable of well in excess of 100 tons per hour, depending on material.

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“Screens determine the size of the end product the market wants. The bigger the screen hole, the larger the product and the faster production goes,” says Brandon, adding that many operators will grind twice, once to reduce the debris pile and again to regrind with a smaller screen for a final product.

For Chris Nichols at Vermeer, “The big thing to remember is that you’re getting rid of an expense and also creating feedstock for your recycling business. We see it as grinding garbage into cash.”

All of his tub grinders are capable of handling raw material and secondary applications for regrinding to specific size. Grinders open up a whole new world of business opportunities. “We’re finding tree people going into the grinding business, first to find a place for their waste and also to open up new job opportunities, like land clearing or site prep.

That’s because some jobs they wouldn’t bid before all of a sudden become efficient,” Nichols says.

Vermeer makes tubs from 400 horsepower to 1,000, ranging from \$225,000 to \$575,000, all of which are tow-behind. In the horizontal category, self-propelled or tow-behind are offered, some with both raw and re-grind capabilities. Prices range from just over \$200,000 to \$350,000, according to Nichols.

Another major player is Rotochopper, who referred *TCI* to Steve Sylvester at S&S Tree and Horticultural Specialist in South St Paul, Minn. The largest family-owned tree care company in the area and in business for 28 years (a TCIA member since ‘85), S&S is representative of businesses with what Steve describes as, “... a huge problem with what to do with wood debris from our chippers. We generate about 400 yards a day of chips and were paying

tens of thousands of dollars to care for product.”

“We looked at machines for colorizing. We now work with wholesale nurseries who like our product so well that after just two years we can’t make it fast enough,” says Sylvester.

S&S has developed a reputation for a certain quality of playground mulch. “In the mulch world it’s dependent on how thick mulch is and how many inches are needed to cushion a child’s fall,” says Sylvester. “Twelve inches is the rule of thumb. We learned how to make it with screening with the Rotochopper so that only 8 inches is needed instead of 12. That makes our mulch value oriented and very popular.”

Between offsetting disposal costs and the income it produces, S&S found their machine paid for itself the first year “plus

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a handsome profit. We're looking to buy a bigger one right now," he says.

Day to day, S&S provides the end user with colored 100 percent virgin mulch. "Very few suppliers can say that," Sylvester says. "Much of the colored mulch is construction debris or pallets. We have 100 percent virgin wood with no nails or particle board. Virgin wood is a huge deal with landscapers," he says.

The S&S advantage is that the company charges the same as pallet mulch makers. "We don't have to charge a premium because we already get paid to cut trees down, paid to remove them, paid to haul the material to my place and resell it.

Rotochopper offers five models and the capacity of regrinding and colorizing at the rate of 200 yards or more per hour; prices range from a low of \$95,000 to \$250,000.

Another manufacturer, Fecon, put us on

to Les Irvine who up to 10 years ago never planned to enter the mulch making business – much less start coloring the stuff. (Fecon makes horizontal grinders and shredders, coloring systems and the Bull Hog line of grinders for tractors and skid-steer-class equipment).

Nowadays, Irvine's doing mulch in a big way. Though not an arborist, his story is indicative of the opportunity open to thinking arborists. This year, his company will produce and ship 25,000 yards of color-enhanced mulch to customers throughout the Cincinnati area.

"Originally we were in the forklift business. Everywhere there is a forklift; there is a pallet. Customers mentioned that they had scrap piles of pallets building up. When I heard that a couple of times, I looked into it a little bit more," says Irvine.

His first purchase was a pallet chipper. As business grew, so did the mound of

shredded wood waste that Irvine was accumulating. He then began investigating ways to reprocess the wood in order to get rid of it – and got into the mulch making business.

After being processed through the Olathe Pallet Chipper, wood waste is double ground with a tub grinder, and then screened with a Fecon Satellite screen. Magnetic head pulleys on the tub grinder and stacking conveyors ensure the removal of nails.

"We were mixing the mulch with a high nitrogen compost and selling it as an industrial grade mulch. That was not as popular as the rich, plush bark mulches, and we started to see coloring going on throughout other parts of the country," continues Irvine, "so we started looking into it."

What he found was that color enhanced mulch was gaining in popularity, due mainly to it's ability to maintain

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a rich color much longer than traditional bark mulches.

Irvine opted for a Fecon Batch Mix coloring unit.

Ground material is loaded into the machine with the paddle wheels turning to fluidize the material. Then colorant is injected into the mixing chamber along

with water (a garden hose may be used provided the water pressure is at least 35 gpm). The wood, colorant and water mixture is then continuously turned by the paddle wheel for the duration of the cycle time. After the process is complete (typically five minutes, depending upon batch size and particle size range) the colored material is discharged from the machine and the process is repeated.

“It was an easy way to get into the business without having to invest in a big continuous feed machine,” says Irvine. “It does about 60 plus yards per hour – we dump about 5-6 yards in and it takes about five minutes a cycle – so it is a real cost efficient way for us to color it. It has served us well.”

The batch-to-batch consistency has been “pretty much exact,” says Irvine. “We watch the first couple of batches pretty closely to get the timers all set up, then it pretty much runs on autopilot. We don’t have to make a lot of adjustments after those initial adjustments.”

Speed and consistency are vital to keeping the production rate up – especially when you run a lean operation, like Irvine. “We can grind and color at the same time with two guys. Or, we can color and load a truck with one guy. One guy can handle it on his own. If we need to load a truck and continue to color, we can do that as well – so we have some flexibility.”

Color consistency is also vital given Irvine’s changing customer base. Initially the product was going to landscapers that were doing commercial work – big office buildings, banking institutions, stand alone buildings like McDonald’s and Burger King. “We’ve seen more residential work in the last year. Our landscapers might do a yard in a new neighborhood and the neighbors will say ‘Hey, where’d you get that?’ They love the fact that it holds its color so much longer than regular bark mulch. So the landscapers come back for more.”

When commenting on maintenance, Irvine says, “We’ve got it on the same kind of preventative maintenance program – checking the fluid levels, keeping the oil changed, that sort of thing – as we do with all of our other equipment. If the weather gets cold, you’ve got to drain the unit of water daily. We learned that the hard way.”

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A Future Forestry Products Arch is one way to get a log from a backyard to the sawmill.

There's More Than One Way to Move a Log

By David Rattigan

The scenario is a familiar one in the tree care industry. A tree has been felled in the backyard of a client's home. A fence with a small gate, and the client's lawn, separates the log from a grapple truck that awaits on the side of the road. Now, the chore is to get the logs from Point A to Point B, with minimal impact on the surroundings.

One method is to use your manpower,

having your crew cut the log into pieces and lug it out through the gate. Another method, gaining in popularity from those saving time, manpower and sore backs, is using a variety of equipment options to help lug heavy lumber with minimal impact to the surrounding environment.

Hydraulic-powered dangling grapples that attach to trailers, ATVs and other pieces of equipment offer one such option, as do other relatively new log-carrying devices that were originally manufactured with an eye toward the logging industry and the logging needs of farmers.

For seven years, Future Forestry Products Inc. of Willamina, Ore., has been producing log arches that differed from traditional models, since they are designed to work in tighter spaces with less impact on the environment – a concern in the forestry industry. About four years ago, the company began marketing to the tree care industry because of the need to navigate in the clients' backyard.

“Arborists were coming to forestry shows looking for something,” recalls President Mark Havel. Specifically, they were looking for many of the same things

that the forestry industry was looking for: a tool designed to remove the tree with minimal environmental impact, to save labor and time for their crews.

“The future of forestry is less invasive, less impact, selective harvests [rather than clear-cutting],” he notes. “In residential tree care, it’s the selective

harvesting of one tree.”

Another product seeking to capture a larger share of the tree care industry market is the Jonsered Iron Horse Tracked Transporter, a rubber-tracked, pedestrian-assisted skidder with a power winch and log cradle that can haul logs and wood. Its 42.5-inch width allows it to

work in tight quarters, and it was designed with small wood lot owners in mind.

“We started showing it to tree care guys and got positive feedback,” says David Tilton, proprietor of Tilton Equipment of Rye, N.H., distributor of Jonsered and other outdoor power equipment products.

Tree Utilization – Trunk to Profit

By Tim Ard

Driving through a large city a few months back, I was amazed when I watched trees along a major road being piled and burned. They were removed by excavation equipment to clear the way for new highway lanes. I have seen similar situations around new housing and building sites. Recently, I noticed log piles around several tree service yards and landfills. It made me think – loggers I work with would love to have some of these logs to haul to the mill.

I know many of these piles are just staging for a move to a landfill, burn pile or chipper for mulch products. But how many of them may be worth more than mulch?

Let me say that many trees are removed for reasons of disease or some insect/critter that you want to make sure does not spread to another area. So, take proper handling of these logs into consideration. More often, though, a tree is removed for building clearance, because it has been damaged in a storm or may simply have been stressed and died.

Then there is the process of tree

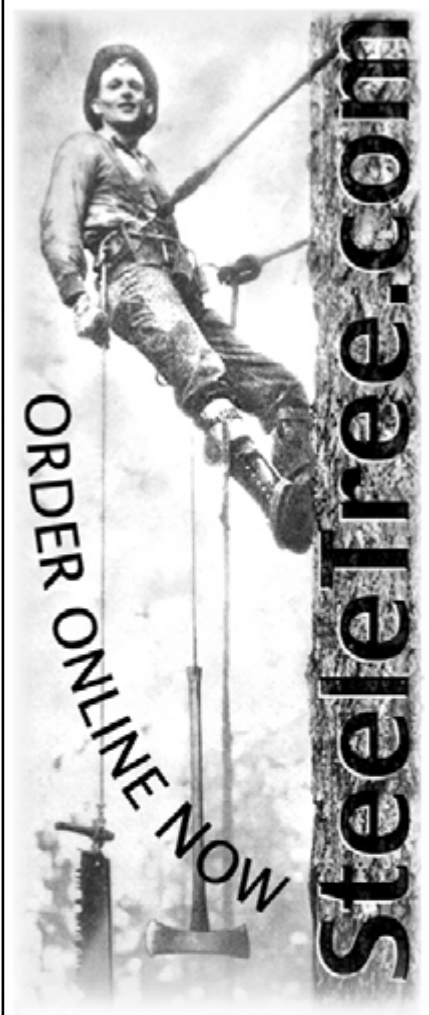
removal: limbs are removed and a length of trunk is left standing, later to be cut to firewood size or at least small enough to handle and haul to the pile. You name it – oak, cedar, hickory, walnut and pecan grow around home sites in every community. They are removed by tree services every day.

What if that trunk – or in more profitable terms, log – could be utilized and the profits used to support your business, profits that most tree services throw to the disposal pile. Let’s look at some of the alternatives.

Some common uses are mulch, ground cover, firewood, lumber and fence posts.


Market some of those logs to local mills. Certain wood types can bring wholesale prices of 50 cents to \$12 per board foot (one foot square by one inch thick). An 8-foot log may hold a couple of hundred board feet. Longer, larger, straight logs are generally most valuable. There are grading requirements, however, so you need to check with the mill for the specs before you try to roll up and cash in. Log lengths are critical and they must include trim measurements. Also mills often spe-

(Continued on page 38)



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Future Forestry Products has a line of six arches of varying sizes. The arch is wheeled over the log, its cable is slipped under the log, then “chokes” it and picks the log up with a winch “We redesigned it to be effective in carrying all wood, instead of dragging it along,” says Mark Havel.

Asplundh Tree Experts just purchased some units, he reports, and Tilton thinks there’s excellent potential in the tree care market with this product.

Novajack, a Canadian-based equipment manufacturer, is also finding some products developed for forestry being used in tree care, including its ATV Forestry Trailer and a Logging Arch.

Future Forestry Products has a line of six arches of varying sizes. The arch is wheeled over the log, its cable is slipped under the log, then “chokes” it and picks the log up with a winch. By using one or (in the case of longer logs) two arches, a tree care professional can pick up a tree that’s been felled in the backyard and

wheel it through a narrow gate.

“Log arches in other forms have been around for a couple of hundred years, but there have never been any with the geometry we use,” insists Havel. “We redesigned it to be effective in carrying all wood, instead of dragging it along.”

The hand-operated Junior Arch (\$430) can carry a log with a 16-inch diameter weighing 1,000 pounds. The bigger the model, the larger the diameter of the log each can carry. Models include a winch-line operated Fetching Arch (\$1,575), and models for an ATV (\$1,475), snow machine (\$1,525), tractor (\$2,425), and the Hugo (\$3,200), for large backyard trees. The arches can be used in tandem with

Tree Utilization – Trunk to Profit

(Continued from page 37)

cialize in a few wood types, so ask questions. The logs must also be free from metal objects. Most mills have detection equipment, but they are likely to outright reject a log that has a fence hanging on it. Plan your log lengths around these issues.

A sawmill can turn those logs into hundreds of useful lumber dimensions. Some mills utilize smaller-diameter softwood and hardwood logs to make flakes used in OSB plywood.

There may be small mill operations in your area that have markets for specialty wood types for furniture or crafts. One such sawmill I spoke with a couple years ago was selling scrap exotic hardwood pieces at auction to the tune of \$3,000 per month. Some portable sawmills work on a share of the materials. You may be able to have some of your logs milled into boards for your building projects on a half basis. They will process your logs for half of the materials produced. Turn them into paneling, flooring, storage buildings, barns, workbenches and other wood products that you may be able to use around your facilities.

Next time you saw through that tree trunk ... think about it! It may not be worth your time if you don’t have a mill close to you. On the other hand, it’s definitely worth your time researching mill sites and wood markets if you have a “pile.”

Valuable trees can be found almost anywhere

Valuable trees can be found in many homeowners’ back and front yards. These are nice straight and tall oaks, walnuts, etc. (even cedars, pines, poplars, sycamore, elm, cherry, pecans and other special trees that may have been planted by the family years ago and are now being replaced).

The grading or manner in which to maximize the value of the trees is directly related to the mill’s markets. The mill can tell the tree service what they need in diameter, length etc. and preferred species for a sale of lumber they may be trying to fill. You would be surprised to find out sometimes how close to major metro areas these mills are.

For the tree service, the only suggestion is to find a mill or portable saw mill operation, ask questions and find out the tree types and sizes that the mill has a market for. (It may take building that relationship to make it profitable.)

Then fill the need from the pile.

Tim Ard is president of Forest Applications Training Inc. and co-author of The Forest Applications Training eBook: A Complete Guide to Chain Saw Safety and Directional Felling, available via www.treecareindustry.org or by calling 1-800-733-2622.

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other arches to act as a tag axle, carrying the end of a longer log, explains Havel, "No matter how big it is."

The Jonsered Iron Horse Tracked Transporter (\$10,995) is a pedestrian-assisted skidder with a power winch and log cradle. Its load capacity is 1,000 pounds and, using a log sulky (load capacity: 1,100 pounds), it too can suspend a

long log and remove it from a backyard with minimal impact.

"Using the sulky, there'll be no drag marks at all," Tilton says. "You can walk across a pristine lawn, and never even know that you did anything."

It also comes with an articulating timber trailer that is just under 48-inches wide,

with a telescoping length from almost 9 feet to 12.5 feet, with a 2,000-pound load capacity.

"It's maneuverable into hard-to-access areas, and can take away logs and branches without tearing up the customer's lawn," Tilton notes. "It can get into places where big trucks can't go."

Doyle Weil, proprietor of A Cut Above Tree Service in Decatur, Ind., purchased the Fetching Arch two and a half years ago. He liked it so much that six months later he purchased the Junior Arch and the Hugo Arch.

"The biggest thing for me is that I'm a small operation, with a three person crew," he says. "We wanted a way to have a low impact in yards."

Using a skidder to haul out logs worked in dry weather, but it made an impact when the weather got wet and the ground was soft. By using a four-wheeler or lawnmower to pull a Fetching Arch, Weil's crew found that it could haul logs as long as 12 to 16 feet. Once, using a Hugo Arch for the front and Fetching Arch for the back of the log, they hauled out a 38-foot pine.

"If impact is not a big deal, we use a big machine, but we're looking at it in a low-impact scenario," Weil says. "Also, we're sometimes in tight areas where big equipment can't maneuver. This small equipment can do most of the same things, and even more. He looks at this equipment in the same way he compares a bucket truck to a climber.

"A bucket truck can do a lot of things, but a climber can also do a lot of things. And a bucket truck is limited by its height, while a climber is only limited by his rope. We all tend to get into routines, and begin to assume that the only way to do something is the way the people before us did it. That's just not true. This way it's done efficiently and safely."

Weil particularly likes the versatility and portability of the Junior Arch, which weighs about 55 pounds and can go into

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the back of his chip truck without much effort. He can also get the Junior and Fetch models in and out of backyard gates that might be too narrow for other equipment. While he finds the Hugo to be the least versatile of the three arches, he has used it to take out a tree from a spot that would have been difficult to reach with a stump grinder. The area was tiered, and the stump was three feet higher than the Hugo's tires, in a spot where, in Weil's words, "I could have spent half the day setting up boards and ramps" in order to use the stump grinder. Instead, he used the winch to pull it out.

"In 15 minutes, using the Hugo, we pulled it out," he recalls. "Sometimes you have to use your imagination."

Bill Lindloff, a logging instructor who teaches chainsaw techniques and runs "Game of Logging" in Endicott, N.Y., uses the Novajack ATV Forestry Trailer for tree removals. With an adjustable wheelbase, it can go into tight spots and be towed by an ATV. Using a portable hand-cranked winch, Lindloff can carry out logs up to 16 feet long.

"You can roll the log right onto the trailer, and carry it out," he says. "Where I work, the houses are pretty close together. Otherwise, you can't get much in between them, so this comes in pretty handy."

"I can take a large quantity of wood in one trip, with no skidder involved," says Lindloff, who will sometimes remove the large logs first, then attach the removable box to his trailer, bring in a chipper, and clean up the rest of the wood right at the job site. "I can take it right down the road." The trailer can carry 3,500 pounds off-road, 1,500 on road. Cost, he says, is \$2,995 (\$1,995 without the dumping box).

Weil stresses the benefits in removing the hard work and drudgery of cutting and moving logs. "We could spend a lot of time cutting a 3-foot oak into 1-foot lengths, so that the weight is around 500 pounds. Now, we can get the arch and winch it up and tie on some safety

chains, and remove it in a half hour, as opposed to cutting it up and getting it out with a skid steer in two or three hours. Plus, we'll have something that might be marketable for its timber value instead of just its firewood value.

"We aren't getting any younger," Weil says. "We've got to use our strongest muscle, and that's our mind, not our back."

Dave Rattigan is a freelance writer from Peabody, Mass.





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TREE CARE INDUSTRY – JULY 2004

41

Join us for TCI EXPO pre-conference workshops

TCI EXPO attendees are invited to some of the best, most intensive workshops available this year. On Wednesday, Oct. 27 – the day before the trade show opens – pesticide applicators and consultants looking to expand their business will find two workshops they won't want to miss.

Pre-Conference Workshops

9 a.m.-4 p.m.

Steps to Success as a Consulting Arborist – Scott Cullen

Consulting can add a profit center to your business and can have ancillary benefits to other tree care/landscape services that you offer. In this intensive, six-hour workshop you will be introduced to how you can set up a consulting business and begin to market your services, how you go about

TCI EXPO
Experience the World's Largest Tree Care Trade Show

establishing rates and fees, and the areas of specialization that exist within arboricultural consulting. ISA CEUs available.

1p.m.-5 p.m.

The EAB Tour: A Hands-On Experience in Diagnosis & Treatment – Dr. Dave Smitley

The Emerald Ash Borer, an exotic pest of ash, was first detected in Michigan in 2002, but was probably present for years before that. Just recently it has been detected in several Indiana locations. Considering the insect's devastating effect on infested trees, ash's importance and pre-

dominance in the landscape and the tree species' vast range, we could be headed for another disaster like the Dutch elm disease epidemic. The key to saving individual trees is prompt, accurate diagnosis and evaluation followed by prompt, effective treatment. Dr. Smitley, faculty entomologist at Michigan State University, will take you on a narrated bus tour to several research sites in the greater Detroit area where you will disembark for up-close study. Please register early because space will be limited, and remember to dress for the weather. ISA CEUs available. Pesticide applicator credits available in select states.

Enrollment is limited for both sessions, so early registration is encouraged. Registration Fee: \$95 before Sept. 24. See the August-October *Tree Care Industry* magazines for registration cost and details.



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By Peter Gerstenberger

Is S.H.A.R.P. right for you?

Should your company be seeking, rather than trying to avoid, an OSHA visit? Over the years and through various administrations, the Occupational Safety & Health Administration has acquired the image of aggressor and even adversary among many small business owners and managers. Although OSHA's mission of protecting workers hasn't changed, many of its tactics have changed. Today, the small employer should consider OSHA as an ally and look for ways of leveraging the agency's resources to the company's advantage.

Is SHARP right for you? One such agency resource is called SHARP. OSHA's Safety and Health Achievement Recognition Program recognizes small employers who operate an exemplary safety and health management system. Acceptance into SHARP by OSHA is an achievement of status that will single you out among your business peers as a model for worksite safety and health. If you already have a good safety program and record, there is still benefit to be derived from this program. SHARP recognition will make your work site exempt from programmed inspections during the period that your SHARP certification is valid.

How you can participate

To participate in SHARP, you must:

- ▶ Request a consultation visit that involves a complete hazard identification survey;
- ▶ Involve employees in the consultation process;
- ▶ Correct all hazards identified by the consultant;
- ▶ Implement and maintain a safety and health management system that, at a minimum, addresses OSHA's 1989 Safety and Health Program Management Guidelines – TCIA's Model Company Safety Program can help you clear this hurdle easily;
- ▶ Lower your company's Lost-Workday Injury and Illness rate (LWDII) and Total Recordable Case Rate (TRCR) below the national average; and
- ▶ Agree to notify your state Consultation Project Office prior to making any changes in the working conditions or introducing new hazards into the workplace.

Rewards & benefits

The obvious, most important benefit that would hopefully accrue to the company participating in SHARP is a safer workplace for its employees. But benefits extend beyond that to special recognition and even special treatment.

After you satisfy all SHARP requirements, the Consultation Project Manager in your state may recommend your worksite



for final SHARP approval and certification. The state and OSHA will formally recognize your worksite at a SHARP awards ceremony. As a certified SHARP site, you will be granted a one year exemption from OSHA's scheduled inspections for the first year of your SHARP participation. After one year of certification, you may request renewal for one or two years, provided that you:

- ▶ Apply for renewal during the last quarter of the exemption period;
- ▶ Allow a full service comprehensive visit to ensure that your exemplary safety and health management system has been effectively maintained or improved;
- ▶ Continue to meet all eligibility criteria and program requirements; and
- ▶ Agree, if requesting a two-year renewal, to conduct an interim-year self-evaluation and to submit a written report to your state Consultation Program Manager that is based on the elements of the 1989 Safety and Health Program Management Guidelines (available online at <http://www.osha.gov>) and includes OSHA's required (if you have more than 10 employees) injury and illness logs.

An inspection exemption begins to sound even more lucrative when one considers that as part of its Strategic Management Plan for fiscal 2003-2008, OSHA has determined that it must place special emphasis on intervention in the landscaping and tree care trades. In other words, if the company doesn't seek out OSHA, it is likely that OSHA will be seeking the company!

Already SHARP?

At the time of this writing, TCIA's staff was not aware of any tree care companies involved with the SHARP program. If your firm has been through SHARP, please contact Peter Gerstenberger: peter@treecareindustry.org.

Peter Gerstenberger is TCIA's Senior Advisor for Safety, Compliance & Standards.

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Dr. Alex Shigo on Tree Biology

Distinguishing Between Young vs. Mature Trees

Regarding Dr. Alex Shigo's answer in the latest (June 2004) issue of *TCI* magazine, on the subject of root pruning young vs. mature trees: I agree that root pruning of mature trees is best avoided, if possible. Still, I get this question regularly from listeners to my radio shows. Is there an easy, consumer-friendly answer to the question, "What is the difference between a young tree (when root pruning can safely be accomplished), versus a mature tree?" Is it age? Tree size? Trunk diameter? Dynamic mass? I ask this 'cuz I know that if I tell a caller that it's OK to root prune a young tree (with cause, of course), I will get the question, "What's a young tree?"

Thanks for your help, and thanks for forwarding this to Dr. Alex Shigo!

**Fred Hoffman, Producer/host, "KFBK Garden Show": Board member, California Association of Nurseries and Garden Centers
Sacramento, Calif.**

See combined answer to both questions ...

Maple Appears to be Dying from Girdling Root

I requested a local tree service company to come out and try to diagnose an ailing maple tree in the backyard. It seems that for the past year or so (when its bad appearance first caught attention) the limbs on one side have been dropping leaves and dying back.

The tree service representative came over and dug around the base of the trunk and said, "Ah-ha! There's your problem – a girdling root!"

"Well, can you fix it?" I asked.

And he said, "No. This tree is probably too mature and there are liability issues. We could try fertilizers."

After questioning him further, he went back out into his truck and pulled out a magazine, *Tree Care Industry*, and pointed

out an article by Dr. Alex Shigo. I ran inside to jot down your e-mail address.

I've friends with trees that other service companies have done root work for and their trees look fine. My tree isn't 100 years old, which is what I'd call "mature." It's only about 20 years old and has been a good twin to the other maple in my backyard, until recently. Please define "mature" so that I'll know the "expiration date" on my trees before I go off and waste the time of another tree company coming out to tell me they can't help me.

What am I suppose to do? Let my maple die? Any expert advice would be appreciated.

**Jeff Harris
(Concerned Maple Owner)**

A Trees, like all multi-celled organisms, start life as a single cell. As the tree grows or increases in total mass, the ratio of living cells in the wood to

total mass begins to change. A young tree has a very high amount of living cells in the wood. Every place there can be a living cell there is one. As growth goes on and the ratio of living to total mass continues, there comes a time when the number of living cells in the wood reaches a point where the amount of living cells can maintain the tree for growth, maintenance, exudates, reproduction and storage. Maturity is the time when the ratio of living to total mass can maintain all functions of the tree. (Sorry if I get more simple – the thread breaks.)

Would you go to a person to get help for a personal medical problem if you knew the person flunked human biology or knew nothing about it? The person would never be a doctor because human biology is a prerequisite taught in pre-med classes. Think about this and then you will understand where I am coming from.

This relates more to the second question. I would never dare to answer a question about the age of a tree I have never seen. However, if a qualified arborist who understands tree biology and the biology of the trees in your area is asked, the answer should be fast and simple.

Every species and individual maple has different rates of aging. Aging is also regulated by many other factors, including past treatments.

Every point given here begs for more details. If you want or need them, you will find them in my books and CDs. Connect with nature. Touch trees.

Dr. Alex Shigo

Each month in the pages of TCI magazine, Dr. Alex Shigo will discuss your questions on trees and their associates. He will not discuss any consulting-type questions. Base your treatments on understanding rather than myths. Send your questions for Dr. Shigo to Tree Care Industry, 3 Perimeter Rd, Unit 1, Manchester, NH 03103. E-mail staruk@treecareindustry.org, or fax: (603) 314-5386.



Benchmarking Safety: TCIA Member Injury/Illness Data for '03

As an industry, we have lacked an accurate, comprehensive picture of the work-related injuries and illnesses that are occurring. Now, thanks to the efforts of the TCIA Safety Committee and many TCIA member companies that have participated, the TCIA injury/illness survey may finally provide us with data to help improve worker safety and lower accidents. Now, even if your firm is not a member of TCIA, you may participate in this important initiative to improve tree worker safety and reduce accidents among professional arborists.

For several years, the Safety Committee's attempts at data gathering focused on some of the largest repositories of data, such as the Census Bureau, Bureau of Labor Statistics and/or OSHA, or the insurance industry. These efforts proved fruitless for providing exactly what we wanted. The Department of Labor (BLS, OSHA) groups our industry with the landscape industry for purposes of lowering the accident and fatality rate. According to a resource at BLS, tree care-specific data is not, and cannot be, shared.

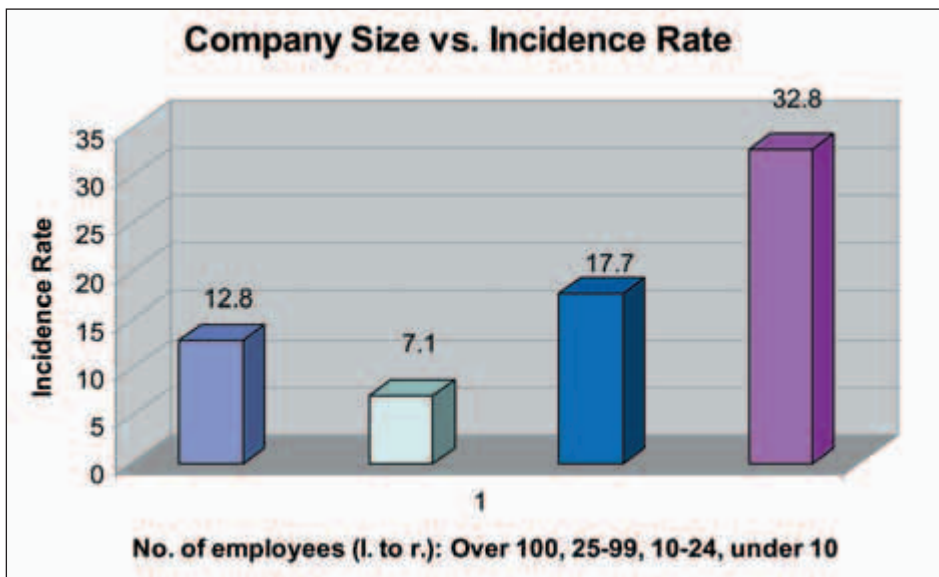


Table 1

They consider the sample small enough as to be unreliable. Thus, we could not obtain our lost work day illness & injury rate (LWDII)

or any comparable statistic, much less any information of how the statistic may be affected by company size, years in the business, or other factors.

In 2000 the Safety Committee created an "accident survey" and in 2001 TCIA began collecting member information. Thus far, TCIA has amassed data representing more than 6 million man-hours for tree care company operations in 2003. With the collection efforts ongoing, TCIA staff and volunteers have begun to analyze the results. The Safety Committee will also be considering ways to improve the quality and quantity of information available through the survey for next year.

What can we learn from the data collected? Looking strictly at the overall data on the incidence of all reported injuries as well as lost-time injuries, there seems to be a fairly significant difference between companies of different size, as Table 1 indicates. Obviously, our first task is to explain this apparent difference. The next step is to find ways of helping smaller companies to emulate whatever it is the larger companies may be doing to achieve the lower numbers.

If you are not a member of TCIA and would like to participate in this effort, or if your firm is a TCIA member and has not yet sent in its 2003 Survey, there is still time. Submitting data electronically is preferred because it saves on clerical time; e-mail peter@treecareindustry.org to receive an electronic survey form. If you do not have e-mail access, you may call TCIA at 1-800-733-2622 to receive a faxed form that you may either fax or mail back.

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91 FORD F800: 7.8L diesel, 215 hp, Allison 4 spd auto, 34,700 lb GVW, with **6½ ton IMT 8025 knuckleboom**, picks 2,900 lb at 25½ ft max side reach, 14 ft wood flatbed. **\$22,500.**

6278



98 INT 4700: DT466E, 210 hp, 6 spd +lo, 33,000 lb GVW, with **14 ton TEREX TC2863 crane**, 73 ft hook height, cap alert / shutdown, 18 ft wood flatbed. **\$46,900.**

6289



90 FORD LT8000: 7.8L diesel, 240 hp, 8 spd +lo, +lo/lo, 50,000 lb GVW, with **12½ NATIONAL 500B crane**, 66 ft hook ht, cap alert, 18 ft steel flatbed. **\$39,500.**

6245



93 MACK RB690S: EM7-300, 300 hp, ext range 6 spd, 56,380 lb GVW, with **27½ ton PIONEER 4000 crane**, 148 ft hook ht, cap alert / shutdown, 2 man pin-on basket, 18 ft wood flat. **\$79,500.**

5933



87 FORD F800: 7.8L diesel, 210 hp, Allison 4 spd auto, 30,000 lb GVW, **5 ton IMT 6420 knuckleboom**, picks 3,100 lb at 20 ft max reach, 12 ft flatbed w/ stake sides. **\$21,900.**

6255



94 INT 4900: DT466, 195 hp, 6 spd +lo, 33,000 lb GVW, with **3½ ton AUTOCRANE A50 crane**, picks 1,250 lb at 32 ft max reach, 18 ft steel flatbed w/ stake sides, lift gate. **\$34,500.**

6228



95 MACK RD690S: EM7-300, 300 hp, 7 spd, 73,280 lb GVW, **12 ton HIAB 250-3 knuckleboom**, picks 2,090 lb at 50 ft max reach, 20'6" steel flatbed. **\$64,900.**

6244



97 INT 4700: DT466, 190 hp, 5 spd + 2 spd rear, 33,000 lb GVW, with **14 ton TEREX TC2863 crane**, 113 ft hook ht, cap alert, 19 ft wood flatbed. **\$49,500.**

6252



88 FORD F900: 7.8L diesel, 13 spd, 48,000 lb GVW, with **12½ ton JLG 1250BT crane**, 77 ft hook ht, 20 ft steel flatbed. **\$34,500.**

6262



94 FORD LNT8000: 8.3L Cummins, 275 hp, 8 spd +lo +lo/lo, 56,000 lb GVW, **15 ton TEREX TC3067 crane**, 117 ft hook ht, cap alert / shutdown, 20 ft steel flatbed. **\$49,500.**

6156



2000 VOLVO WG64: Cummins ISM-305Y, 305hp, engine brake, 10 spd auto shift, 52,250 lb GVW, **20 ft wood flatbed w/18" steel sides**. **\$39,500.**

6219



92 MACK RB690S: EM7-300, 300 hp, 8 speed +lo, with **8 ton NATIONAL N-95 knuckleboom**, picks 1,850 lb at 39 ft max reach, 20 ft wood flatbed. **\$39,500.**

6039



87 FORD F800: 429 gas engine, 5 speed + 2 speed rear, 31,000 lb GVW, **66 ft ALTEC AM900 bucket**, joystick controls, 14 ft steel flatbed. **\$29,500.**

5912



94 GMC TOPKICK: CAT 3116, 215 hp, Allison 5 spd auto, 31,000 lb GVW, **50 ft ALTEC AA600L bucket**, end hung 2 man basket, 15 ft utility body. **\$26,500.**

6212



93 GMC TOPKICK: CAT 3126, 215 hp, Allison 5 spd auto, 33,000 lb GVW, with **50 ft ALTEC LR111-50 bucket**, joystick controls, 14 ft utility body. **\$29,500.**

6024



97 FORD LNT8000: Cummins 8.3L, 275 hp, 9 spd, 58,000 lb GVW, with **22 ton MANITEX 2284 crane**, capacity alert, 119 ft hook ht, 20 ft steel flatbed. **\$84,500.**

6177



87 FORD F900: 7.8L diesel, 210 hp, 10 spd, 46,000 lb GVW, with **NATIONAL 656B-NY crane**, 87 ft hook ht, 20 ft wood flat. **\$29,500.**

6118



92 MACK DM690SX: EM7-300 diesel, 300 hp, 7 spd, 70,300 lb GVW, with **6 ton PALFINGER PK14080 knuckleboom**, 27'11" max reach, radio ctrls, 14ft dump body w/24" sides. **\$39,500.**

6150



97 FORD LT9000: CAT 3306, 300 hp, 8 spd +lo, +lo/lo, 58,000 lb GVW, **27½ ton PIONEER 4000 crane**, 148 ft hook ht, 360° full cap operation, roofers pkg, 18 ft wood flatbed. **\$89,500.**

6094



97 PETERBILT 330: 8.3L Cummins, 250 hp, 9 speed, with **14 ton MANITEX 1461 crane**, 111 ft hook ht, 18 ft wood flatbed. **\$64,500.**

6037



97 GMC TOPKICK: CAT 3116, 275 hp, 8 spd +lo, +lo/lo, 56,000 lb GVW, with **22 ton MANITEX 5084 crane**, 140 ft hook ht, 20 ft steel flatbed. **\$79,500.**

6045



99 FORD F800: Cummins 5.9L, 215 hp, 6 spd, 33,000 lb GVW, with **67 ft ALTEC AM900 bucket**, 2 man bucket, 16 ft steel flatbed, **27K miles**. **\$69,500.**

5699



97 FORD LT8000: 8.3L Cummins, 275 hp, 8 speed +lo +lo/lo, 58,000 lb GVW, with **PIONEER 2000 crane**, 124 ft total hook ht. **\$69,500.**

5769



98 FORD FT9000: 8.3L Cummins, 225 hp, 8 speed +lo, +lo/lo, 52,000 lb GVW, with **18 ton MANITEX 1870 CRANE**, 80 ft hook height, 20 ft steel flatbed. **\$65,900.**



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Pricing Large Maintenance & On-Site Maintenance Projects

The market isn't stupid. If you're willing to under-price work, the market will give you plenty of it.

By Jim Huston

Knowing your costs and using accurate cost estimating methods is critical for successfully bidding large commercial maintenance projects. Too often, contractors use formulas and methods that are archaic and inflexible. These methods often contain false mathematical assumptions, which cost the contractor jobs and money. Today's competitive market requires estimating methods that calculate costs accurately and can adapt to new market strategies.

How it works

George and his partner Bill had a thriving, full-service maintenance business that specialized in the municipal market. Multi-year contract options were common. Many projects reached annual amounts of \$500,000 plus. Crews were on the same site five days a week. When bidding a job, George and Bill would get into one of their pickup trucks together and drive the site.

The rule was that neither would say a word, unless they had a question about the site, until they were ready to make their "guesstimate." They'd then go back and forth trying to decide how many full-time laborers they'd need on the job. It was all very subjective, but their combined 40 years of experience usually got them close. Once the number of full-time laborers was decided, equipment, materials, subcontractor costs, margins and markups were then



Large maintenance jobs that bill out a minimum of 40 hours per week pose particular challenges – and opportunities – for the seasoned estimator who knows his or her numbers.

applied to the bid. George and Bill wanted to break into the commercial maintenance market, and knew they needed a more accurate and flexible method to calculate their costs and for pricing their jobs.

Bob, on the other hand, had started his company in the mid-1980s while going to college. He specialized in residential lawn maintenance work. His sales in 1990 were a little over \$200,000. He also wanted to break into the commercial, full-service maintenance market. His method of estimating was similar to what George and Bill used, but on a smaller scale.

Bob would look at a site and "guesstimate" the amount of time his crew would be at the residence, and then multiply the amount of time by his hourly rate. For instance, a two-man crew on site for 30 minutes would bill out at \$25 (.5 crew hours x \$50/crew hour). Bob was smart enough to realize he needed more accurate methods for bidding the larger commercial work.

The challenge and the opportunity

Large maintenance jobs that bill out a minimum of 40 hours per week pose particular challenges (and opportunities) for the seasoned estimator who knows his or her numbers. The 40-hour-per-week minimum is significant because it opens the possibility to on-site maintenance, where a designated one-man crew can be on site five days a week. Substantial savings in drive-time labor and the crew pickup truck costs may be possible, along with increased productivity. On-site maintenance also offers some significant marketing advantages through increased customer satisfaction. Many customers like the idea of a full-time, designated "gardener" on their site.

Small residential jobs, where the crew visits 10-15 sites per day, and even some small commercial maintenance projects, can be bid effectively using a crew-hour maintenance package approach (i.e., \$90/crew hour for a three-man crew).

J. R. Huston Enterprises, Inc. Unit Price List

JCN: Mowing-2

Job Description: Large Commercial Maintenance Job

Bid #	Bid Description	Type Code	Qty	Unit	Unit Price	Set	Total Price	Labor Hrs	Labor	Equipment	Material	Subcontract	Total Cost
1	Spring Cleanup	Cleanup	1.0	LS	\$6,312.90		\$6,312.90	170.0	\$2,862.86	\$1,260.00	\$538.75	\$0.00	\$4,661.61
2	Mowing, 72"	Mow	40.0	Each	\$2,466.93		\$98,677.33	3,520.0	\$55,369.60	\$12,320.00	\$0.00	\$0.00	\$67,689.60
3	Mowing, 72"	Mow	2,080.0	AC	\$36.34		\$75,580.27	2,288.0	\$35,990.24	\$18,304.00	\$0.00	\$0.00	\$54,294.24
4	Mowing, 48"	Mow	40.0	Each	\$380.36		\$15,214.22	502.9	\$7,909.94	\$2,765.71	\$0.00	\$0.00	\$10,675.66
5	Mowing, 21" Push Mower	Mow	40.0	Each	\$1,143.08		\$45,723.02	1,664.0	\$26,174.72	\$4,992.00	\$0.00	\$0.00	\$31,166.72
6	Mowing, 21" Push Mower	Mow	189.0	AC	\$241.80		\$45,701.04	1,663.2	\$26,162.14	\$4,989.60	\$0.00	\$0.00	\$31,151.74
7	Edging	Maint	40.0	Each	\$142.88		\$5,715.38	208.0	\$3,271.84	\$624.00	\$0.00	\$0.00	\$3,895.84
8	Back-Pack Blower	Maint	40.0	Each	\$549.56		\$21,982.22	800.0	\$12,584.00	\$2,400.00	\$0.00	\$0.00	\$14,984.00
9	Weeding	Maint	40.0	Each	\$1,255.51		\$50,220.44	2,080.0	\$32,718.40	\$0.00	\$0.00	\$0.00	\$32,718.40
10	General Cleanup	Maint	40.0	Each	\$24.14		\$965.78	40.0	\$629.20	\$0.00	\$0.00	\$0.00	\$629.20
11	Redwood Mulch	Mulch	300.0	CY	\$53.39		\$16,018.43	360.0	\$5,238.09	\$1,200.00	\$5,818.50	\$0.00	\$12,256.59
12	Fertilizer	Fertilizer	7,600.0	LB	\$0.32		\$5,623.08	35.2	\$775.10	\$281.60	\$3,792.80	\$0.00	\$4,849.57
13	Fall Cleanup	Cleanup	1.0	LS	\$8,644.59		\$8,644.59	238.0	\$4,008.00	\$1,536.00	\$808.13	\$0.00	\$6,352.13
14	General Conditions	GC	1.0	LS	\$45,283.11		\$45,283.11	400.0	\$11,954.80	\$26,400.00	\$0.00	\$0.00	\$38,354.80
							\$441,661.82	13,969.3	\$225,648.94	\$77,072.91	\$10,958.18	\$0.00	\$313,680.10

A typical large commercial maintenance job unit price list.

However, jobs billing \$500 to \$1,000 per month and more require more accurate bidding methods.

The method

When bidding large maintenance projects, you should first decide if the site possibly qualifies for a designated full time on-site crew throughout the season. To do so, the customer must agree with the concept, but there are important logistical hurdles to cover. Where will equipment and materials be stored? Will the crew have a secure office? How will the crew communicate with the main office? Will a pickup truck be needed on site 40 hours per week or will a less costly utility cart be sufficient? Each of these questions and their answers can affect the costs involved on such a project and, consequently, the final price to the customer.

Production costs

Once the on-site maintenance question is effectively addressed, the project should be broken down into its phases (i.e., spring cleanup, mulching, fertilizations, pesticide applications, mowing, fall cleanup, shrub and tree pruning, etc.). These phases are then broken down into their on-site production cost components: materials, labor with burden,

equipment and subcontractor costs.

Mowing areas should be measured and the hours for each mower used on the job should be calculated based on its hourly production rate. Hours of use for trimmers, edgers, blowers, etc. should likewise be calculated. These hours, and the accompanying labor hours, should then be multiplied by their respective cost per hour and crew average wage rates.

General condition costs

Your general conditions, which contain the same four cost components identified in production costs, are then added either to each phase or as a lump sum item on the bid. Estimated material costs are included at cost. Estimated labor hours are multiplied by the crew average wage or by a specific rate for supervisors, crew leaders, etc. Equipment hours are multiplied by the predetermined cost per hour for the respective pieces of equipment. Subcontractor costs are included at cost.

Your general conditions should contain such things as drive time, load/unload time, the crew pickup or utility cart, supervisory time, administration time for the crew leader, dump fees, time to pick up materials, etc. I define general conditions in great detail. As a benchmark, general condition costs usually comprise 8 percent to 15 per-

cent of the final price of a maintenance project. Labor hours in general conditions usually comprise 15 percent to 25 percent of the total labor in the bid.

Breaking out general conditions this way provides the estimator with a checklist of ratios and percentages that can be used to compare to industry benchmark standards. However, the key issue is not whether an item is in production costs or general condition costs but whether it's included in the bid at all.

On-site maintenance impacts general condition costs in at least two important areas. First, drive time is usually significantly reduced. Drive time usually comprises 10 to 15 percent of the total paid hours per day for a normal maintenance route. On-site projects, where the crew reports to the site, can reduce drive time significantly. Overtime is often eliminated and/or the crew can spend more time on site. Replacing a crew pickup truck with a utility cart or reducing the time it spends on site can also reduce costs. The savings can then be passed on to the customer, thus making your bid more competitive. Or you can maintain your price and increase your net profit margin on the job.

Margins and markups

Margins and markups are then added to

J. R. Huston Enterprises, Inc.

Bid Worksheet Detail

JCN: Mowing-2

Job Description: Large Commercial Maintenance Job

Assembly	MLESN Code	Detail Description	Qty Unit	PLES Code	Remarks	Unit Cost	Warr %	Qty 1 /Mhr	MHRS	Cost (\$)
Bid Item:	Spring Cleanup		1.0000 LS		Type: Cleanup					
CLEANUP, SPRING, COMMERCIAL	L	LABOR, 4 MEN	140.0000 HR	MM	MAINT CREW (4 MEN)	\$10.00		1.000	140.00	\$2,202.20
	E	CREW TRUCK	40.0000 HR	103	TRUCK, PICKUP-1 TON	\$10.00		1.000	40.00	\$400.00
	M	DUMP FEES	1.0000 LS			\$500.00				\$538.75
	E	STREET CLEANING	12.0000 HR	129	STREET SWEEPER	\$35.00		1.000	12.00	\$420.00
	E	DUMPTRUCK	20.0000 HR	106	DUMPTRUCK, 5 CY	\$20.00		1.000	20.00	\$400.00
	L	LOAD/UNLOAD TIME	10.0000 HR	MM	MAINT CREW (4 MEN)	\$10.00		1.000	10.00	\$157.30
	L	DRIVE TIME	10.0000 HR	MM	MAINT CREW (4 MEN)	\$10.00		1.000	10.00	\$157.30
	L	SUPERVISOR'S TIME	10.0000 HR	S	SUPERVISOR STEP #1	\$22.00		1.000	10.00	\$346.06
	E	SUPERVISOR'S TRUCK	10.0000 HR	100	TRUCK, MINI PICKUP	\$4.00		1.000	10.00	\$40.00
								Bid Item Subtotal:	252.00	\$4,661.61
								Bid Item Unit Price:		\$6,312.90

Large commercial maintenance job: bid worksheet detail.

the production and general condition costs. Sales tax is added to materials (in some states, it's added to all costs). Labor burden (e.g., FICA, FUTA, SUTA, workers' compensation, general liability and medical insurance for field labor, field labor vacations, sick pay and holidays) is added to labor.

G&A overhead is then applied to the bid using the G&A overhead per hour (OPH) method. Your G&A OPH will usually range from under \$4 per billable field-labor hour to over \$12. Extremely large commercial and municipal maintenance companies that operate in the field 12 months a year realize a very low OPH. Smaller companies that operate in the field 8 to 10 months a year have a much higher OPH. To calculate the amount of G&A overhead to allocate to a job, simply multiply the number of labor hours in a bid by the OPH for your company.

Remember two important caveats regarding your G&A OPH: First, for your OPH to be accurate, your projected G&A overhead costs and billable field-labor hours need to be within 15 percent of what they really are, or will be at the end of the

year. This is why you should monitor these costs and hours throughout the year to ensure their accuracy.

Second, indirect G&A overhead costs should not include field equipment or field labor burden costs. Otherwise, you'll overstate your OPH. You'll also run into other more significant field cost problems down the line.

Once you allocate indirect G&A overhead costs to the bid, you've calculated the break-even point (BEP) for the job. This is the dollar amount that equals all your costs, both field and office, for the job. Next you add a contingency factor to your BEP, if desired. The contingency factor is a subjective amount you may or may not add to a bid to absorb some risks about which you're uncertain.

Your net profit margin is then added to the bid. This amount usually ranges from 8 percent to 15 percent. However, it's the sum total of net profit, G&A overhead recovery, and the contingency factor that provides the estimator with a very useful tool or benchmark standard. The sum of these three numbers determines the gross

profit margin (GPM) on the bid. Put another way, $GPM = Price - total\ direct\ costs$.

The GPM on large commercial and residential maintenance projects usually falls in the 30 percent to 40 percent range. However, I've seen it drop to the low 20s in extremely competitive markets. I've also seen it climb to the high 30s or low 40s in some markets on occasion.

Negotiated work usually has a GPM that's five percent to 10 percent higher than competitively bid jobs. Estimators need to keep this in mind when bidding. Otherwise, they might leave money on the bid table. Because negotiated work has the highest profit margins and usually comprises the least amount of risk for the contractor, it should be a contractor's goal to obtain as much negotiated work as possible, especially multi-year contracts.

Common mistakes

The above method for bidding large maintenance projects is detailed and requires the estimator to know production rates, equipment costs and more. In essence, it requires the estimator to do his

or her homework. Some consider it too complex and detailed. I'd agree, if the contractor could bid work faster and make plenty of money on the bottom line without going to all this trouble. However, as markets tighten and/or as bottom lines erode, more thorough cost analysis and bidding methods are required.

Many contractors use quick, simplistic methods that contain erroneous mathematical assumptions and fatal flaws. One mistake is including field equipment costs in indirect general and administrative overhead. These costs are then allocated to bids on a percentage basis, or they're put onto jobs using a per-hour method similar to the OPH method described previously.

Both are inaccurate, because field equipment costs are evenly spread on jobs. Jobs requiring very little equipment are bid with the same amount of equipment costs as jobs that are very equipment intense. Consequently, labor intense jobs are bid too high and equipment intense ones too low. The contractor can't be competitive on labor intense jobs, while he wins the equipment intense ones because he's underpriced them.

A second common mistake occurs when the contractor bids jobs using a flat rate (i.e., \$25, \$30 or \$35 per man-hour). Essentially this method makes a similar mistake as the one above. Labor intense work is overpriced while equipment intense work is underpriced. Why charge the same \$35 per hour for an \$8-an-hour laborer pulling weeds as you would for your \$14-an-hour crew leader mowing grass with a 72-inch ride-on mower that costs you \$9 to operate? It's not mathematically accurate. Your costs and prices for a bid should accurately reflect true costs and reality.

Back to the future (where are they now?)

George and Bill never made the adjustments in their estimating methods. Consequently, they weren't successful entering the commercial maintenance mar-

ket. They're still battling it out in the extremely competitive municipal maintenance market. They've consistently lost market share because they failed to develop the tools and methods to accurately adjust their bidding, according to new production methods and costs.

Bob, on the other hand, made the adjustments, and has made a complete shift from residential to full-service commercial maintenance work. His company is very profitable and his annual revenue is well over \$2 million (and climbing). On-site maintenance comprises much of his work, while the balance consists of a mix of regular weekly visits and installation extras for his existing client base. The future is very bright for Bob, even though he's in a very competitive market. This contractor has developed flexible estimating tools and methods, which allow him to accurately calculate a job's true costs in any situation.


Summary

Bidding large maintenance projects requires special estimating skills, methods and tools. The contractor bidding such work often uses inflexible, antiquated

methods, which simply do not calculate job costs accurately. These methods contain faulty mathematical assumptions, which can do a contractor much harm. Many a "good old boy" contractor has been done in by "bad old boy" arithmetic in his estimating system.

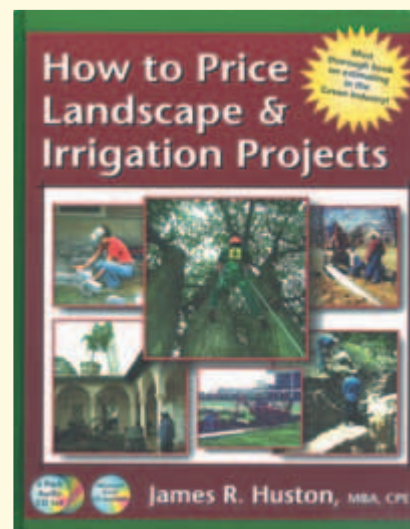
On the other hand, many aggressive young contractors, armed with flexible yet accurate estimating methods, are grabbing market share. They're very profitable because they have the tools to bid jobs, and to adapt to virtually any production method or market. They know their costs and they know their markets. And that's a recipe for success.

Note:

The costs used in our scenarios are for illustration purposes only. Your costs will vary from the ones used in these examples. The key is for you to build a typical one-day scenario for the different crew, materials and equipment mixes you use. Round up these rates as appropriate. If your costing structure is accurate, the rates you calculate should be very close to your current ones and to those generally seen in your market. 

This article was adapted from chapter 26 of James Huston's new book and audio book, *How to Price Landscape & Irrigation Projects*, which covers equipment costing and pricing in more depth.

The author is president of J.R. Huston Enterprises Inc., which specializes in construction and services management consulting to the Green Industry. Mr. Huston is a member of the American Society of Professional Estimators and he is one of only two Certified Professional Landscape Estimators in the world. For further information on the products and services offered by J.R. Huston Enterprises, call 1-800-451-5588, e-mail jrhei@jrhuston.biz, or visit www.jrhuston.biz. To order a copy of the book, call 1-800-733-2622.



Be a Good Neighbor – Your Business May Depend On It

By Keith Regan

“Good fences make good neighbors”

– Robert Frost

*“A good neighbor smiles at you over
the back fence, but doesn’t climb over it”*

– Arthur Baer

If only it were that simple. In fact, running a tree business of almost any size is bound to bring you into conflict with your neighbors. Unless you’re fortunate enough to live miles from your nearest neighbor, chances are you’ll have to learn to get along.

A recent situation in Boston suburb of Ashland, Mass., highlighted, in the extreme, what can happen when conflicts with neighbors spin out of control. In the end, the longtime owner of a local tree company found himself arrested and jailed after allegedly threatening his neighbor, who had complained about the ongoing operation of the tree service from a residential neighborhood. The business owner continued to defend his right to exist, saying he’d been there long before most of his neighbors.

But even in less dramatic situations, tensions can run high when neighbors start complaining about loud trucks, early morning hours, stored firewood or other byproducts, and visible heavy equipment. The situation can be especially dicey when the tree company took root long before the neighbors began to sprout.

There are ways to deal with even the prickliest of neighbors that can result in long-term harmony. As an elected planning official, I’ve found myself in the middle of many of these kinds of disputes.



Run a “lean” operation. This might mean selling off logs and woodchips from the jobsite, rather than bringing them back to the yard. Added benefit: This not only cleans up the yard, it will make you more efficient and more profitable in the long-run.

“Do not ignore complaints. If you don’t address their concerns, your neighbors will turn to someone who can. That might be a city official. In this litigious day and age, it also might very well be a lawyer.”

I think I’ve found some good rules of thumb for defusing the situations quickly, without damage to one’s business reputation.

One recent example highlighted the wrong way to approach the situation. The business owner essentially dug in his heels and declared that he wasn’t going to change a thing, that it was economically impossible for him to

survive any other way.

A dozen or so letters of complaint later, he found himself served with a cease and desist order and hauled before the local Planning Board to set things right. He’s probably already spent thousands on legal fees to do what could have been accomplished with a simple handshake.

Here are some tips, taken from the front

line of neighbor versus neighbor disputes, on what to do if your neighbor starts complaining that your trucks start too early or your firewood pile is too unsightly.

Do Not:

Ignore complaints. If you don't address their concerns, your neighbors will turn to someone who can. That might be a city official. In this litigious day and age, it also might very well be a lawyer. It's always better to deal with things face-to-face because you have more control over the situation.

Make promises you can't keep. Don't say, for instance, that you'll only operate equipment between 9 a.m. and 5 p.m. if you start each day at 7:30. And don't promise to move 100 cords of firewood off your property by the weekend. Be realistic when making compromises.

Fly off the handle. Or make it personal. Or make threats. All can create more legal hot water than you need. See the Ashland example as a reminder of where threats can land you.

Instead, here's what you should do:

Learn your rights – and responsibilities. Spend some time finding out what your property is zoned and what that zoning gives you the rights to do. The local zoning enforcement officer or building inspector should be able to answer your questions. Also check with local officials to see if there is a noise ordinance that limits the hours you can run trucks and other equipment.

Offer to make some changes. If your neighbors think you are working with them in good faith, they're far less likely to seek other recourse. That pile of stumps an eyesore? Agree to rent a tub grinder for a day and get rid of them. Offer to plant hedges or other screens – on your property or theirs. Noise an issue? Agree to start trucks as late as possible in the morning.

Run a "lean" operation. In manufacturing, "lean" operation means handling

things only at the moment you absolutely need to. In the arboriculture field, that might mean selling off logs and woodchips from the jobsite, rather than bringing them back to the yard. Added benefit: This not only cleans up the yard, it will make you more efficient and more profitable in the long-run.

Try to see it through their eyes. Ask your neighbor to show you exactly what irks them. If it's the view from the deck, then ask to see it for yourself.

Keep your employees in line. No burning rubber after receiving their checks on Friday afternoons. No using the bushes as a bathroom. No tossing coffee cups out the window.

Be a good neighbor in the larger sense. Being a good "corporate neighbor" might mean offering to use your bucket truck to help string banners for town events or change light bulbs at the little league field. Or donate a tree on Arbor Day. These

actions won't excuse you from neighborly conflicts, but they will go a long way to getting you the benefit of the doubt.

Consider the alternatives. Most communities have at least some land set aside for just the use you are pursuing. If it's in the budget, see if you can lease or rent a garage or even part of a parking lot to store the largest of your equipment.

These conflicts are becoming more common in many communities as the housing boom suddenly turns sleepy suburbs into booming bedroom towns. Most are resolved amicably.

But proceeding with a cool head and arming yourself with information can be the difference between appearing on the 6 o'clock news and living happily ever after.

Keith Regan is a freelance writer, a former Massachusetts Certified Arborist and chairman of the Planning Board in Grafton, Mass.



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BARK BEETLE

Infestation Reaching Epidemic Proportions in the Southwest

Drought stressed trees in the Southwest have become easy targets for bark beetle infestation, including this section of Horsethief Basin in Prescott National Park, Arizona. Photo courtesy of Tom DeGomez.

By Brenda Carol

Years of persistent drought throughout the Southwestern United States has placed much of the region's forests under extreme duress, opening the door for a widespread invasion of bark beetles. These beetles have already wiped out millions of acres of trees and will surely threaten millions of additional acres of trees for years to come.

The problem is not isolated to the forest. Homeowners with vested interests in urban landscapes have also been hit with devastating bark beetle attacks. And, this situation will likely continue to deteriorate at least for the foreseeable future, according to almost everyone with an opinion on the subject.

"We've never seen a situation like this," worries Tom DeGomez, state forest health specialist for the University of Arizona. "Our trees are extremely stressed, and we don't see any relief in sight. Even the precipitation we got over the spring months will not likely make a significant difference in the overall picture. Once you have a tree that is stressed, everything about it becomes weaker, including the root system. It becomes much less efficient at taking up water and nutrients even if they're available. It's a perfect setup for a bark beetle attack, or any other insect problem for that matter."

The drought throughout most of the Southwest is forecast to persist or intensify through July of this year, according to the National Weather Service's Climate Prediction Center. Preliminary data shows

that the Southwest recorded the warmest temperatures in March over 110 years of record keeping. Although early April brought some relief to parts of New Mexico from record precipitation and heavy snows in the mountains of Wyoming and Colorado, it was not enough to provide any significant overall drought improvement in the region.

In California, the northern part of the state scored a normal snow pack over the winter, but southern California's precipitation fell far short of what was desperately needed to restore soil moisture to a region that is still reeling from several years of below normal precipitation and last year's devastating wildfires. At best, it's a dismal situation persisting across dozens of southwestern state borders and impacting millions of acres of forest, as well as count-

less small plots of cherished urban landscape. At worst, some say it might be an environmental catastrophe of proportion modern-day environmentalists and urban dwellers have yet to see.

That bark beetle attack is already in full swing across millions of forested acres. In Arizona, tree mortality in the state's forests has grown exponentially from an estimated 50,000 acres in 2001 to more than a million acres in 2003. Other southwestern states have similar stories to tell. In Colorado Springs, Colo., City Forester Jim McGannon reports the city has lost more than 1,100 large spruce trees to the spruce Ips (*Ips hunterii*) beetle, and an ever increasing number of the city's American and Siberian elms are in extreme danger of being taken out by elm bark beetle populations and secondary problems with Dutch elm disease.



About the size of a pencil eraser, bark beetles tunnel through the outer bark layer and feed on the cambium, interfering with the flow of nutrients and water throughout the tree's vascular system until the entire system is compromised.

"Everything is under extreme stress," McGannon notes. "It's hard to say exactly when this problem started, but I think we're entering our seventh or eighth year of drought, depending on how you define it. We're at least in our sixth year, and we expect to have several more years of below normal precipitation. This situation has created epidemic infestations of bark beetles throughout the entire area."

A number of different species of bark beetles are present in the Southwest, and the composition of the population is dependent on several factors including the type of trees present in the region. In general, however, any given species of bark beetle behaves in a similar fashion and inflicts similar damage on trees that it attacks.

About the size of a pencil eraser, they tunnel through the outer bark layer and feed on the cambium, interfering with the flow of nutrients and water throughout the tree's vascular system until the entire system is compromised. Once established in a tree, bark beetles release pheromones to attract even more bark beetles, and the infestation typically worsens if nothing is done to prevent it. By that point, it is often too late anyway.

They also vector various diseases, which further contribute to the demise of a tree. Secondary problems such as blue stain fungus and Dutch elm disease are just as serious, if not more so, that the original

physical damage inflicted to the tree.

"Bark beetles have always been present in Southwest forest ecosystems, but in the past, the populations have been relatively



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Bark beetle damage seen this past spring near Sedona, Ariz.

low,” says DeGomez. “What we’re seeing now is an explosion in numbers due to the extreme drought conditions across extremely vast geographic areas.”

Bark beetles have been an important part of the forest’s ecosystem in the past, serving as an equalizer of sorts, taking out the weaker trees and generally bypassing the healthier ones. However, the “survival of the fittest” has taken on a whole new meaning in recent years as even the fittest trees of the forest and the urban landscape have come under increasing pressure.

“We’re seeing more and more problems with trees in homeowners’ landscapes,” explains Carol Sutherland, entomologist with New Mexico State University’s Cooperative Extension Service in Las Cruces, N.M. “This problem has definitely moved far beyond the forest. Bark beetles will initially attack stressed trees, but after a certain point the populations become so massive that they begin attacking healthy trees. They are very capable of killing healthy trees if nothing is done to prevent it.”

In the forest, most experts agree that there is precious little that can be done – at least at this late date – to stem the tide of devastation. “This is drought-driven,” DeGomez stresses. “Obviously, we can’t irrigate the forests or even apply pesticides on a broad enough scale to make a difference. All we can do is hope for rain.”

What could have been done in the forests to mitigate the current disastrous situation is another matter for debate and one the urban landowner might well take to heart. “Hundreds of years of suppressing fires in our national forests have led to a situation where our forests are overly dense with trees,” DeGomez says. “When you look at this situation from an ecological standpoint, it may not be all doom and gloom. This is probably nature’s way of thinning the forests to a reasonable, self-preserving level of plant density and returning the forest to a composition of plant species that more accurately depicts pre-settlement conditions.”

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For the average homeowner, however, what is ecologically sound in the forest is not necessarily ecologically or aesthetically desirable on private property. "Bark beetles have had a tremendous negative impact on property values in many areas of New Mexico," Sutherland says. "You can just imagine what it must be like to buy a piece of land with beautiful pinyon pines, build a home and then wake up somewhere down the line and slowly realize that your view of the forest has disappeared and it isn't going to come back any time soon. That's the situation we're facing in a lot of areas of New Mexico, and one that we're trying very hard to combat."

Unlike the forest, the urban landscape still has legitimate options that landowners and city officials can employ to mitigate the damage bark beetles may inflict. Largely, however, it's a preventative tack that must be taken instead of a "wait and see" approach. Once a tree is infested, the odds of saving it diminish rapidly.

"The key to saving a tree is reducing stress," Sutherland says. "That starts with water. If a landowner has the access to water and can afford it, then water is an excellent strategy to try to save a tree. Unfortunately, a lot of landowners don't realize this until it's too late. By the time the tree is showing physical symptoms of stress, it's often a matter of too little, too late."

It's a sentiment echoed all too often. In San Diego, Calif., Alden Pedersen with Western Tree Service agrees that water is the first line of defense in a homeowner's struggle to save trees. "Water is the single most important factor that landowners in this area can use to protect their trees," he says. "Unfortunately, many of them don't realize that they even need to be concerned about their trees – particularly their pine trees. They usually understand the importance of watering grass and other ornamentals in the yard, but assume that pine trees don't need any care because they don't get any supplemental water in the forest. Education is one of our biggest challenges. People just don't realize how important it is to relieve stress on a tree so



The spruce beetle, shown here, is one of a number of different species of bark beetles present in the Southwest. Photo by David McComb, USDA Forest Service.

that it can thrive and resist not only bark beetles, but a whole score of other insect and disease problems."

It's not only a matter of watering, but a matter of watering properly. According to Bill McDavid, owner of Cococino Pest Control in Flagstaff, Ariz. "We really try to stress to our clients that it's extremely important to monitor soil moisture and water heavily at the drip line when that moisture level falls below what the tree needs," he explains. "The key to protecting a tree from bark beetle infestations begins with adequate moisture in the root zone, and it's imperative that landowners know exactly what that means and how to accomplish it. You can't just go out there and throw a hose down under the canopy close to the trunk for a few minutes and

expect that to do the trick."

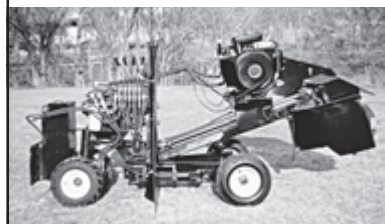
Various states have consumer-oriented publications to help educate landowners on the do's and don'ts of home tree watering.

Pruning is another cultural practice that can greatly reduce stress and help a tree better protect itself against bark beetle infestations. Fortunately, it is one cultural practice that landowners readily accept. Thinning a stand of trees, however, is often a different story.

"No one wants to cut their trees down," Sutherland says. "One of the problems with bark beetles is that the damage is often done before it becomes visually apparent, and often it's hard to talk someone into cutting a tree down until it appears completely dead. Unfortunately, leaving an infested, diseased and dying tree in the landscape just intensifies the pressure on the other existing healthy trees that are present. It's better to take them out sooner, rather than later, so that the others have a chance of surviving."

Most species are not easily detected unless bark is removed from an infested tree. They are not normally seen flying or crawling on branches or the outside of the trunk. Quite frequently, the first sign of obvious infestation is a change in foliage color from deep green to a yellowish-green that progresses to sorrel to red and finally to rusty brown. By the time the change of color has progressed to a point of being noticeable for most landowners, the bark

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Cal-OSHA Condones Crane Use in Tree Removals

On April 15, California's Occupational Safety and Health Standards Board accepted a proposed emergency regulation that allows cranes to be used in tree removal operations, and specifically condones the practice of hoisting the climber on the crane load line. The Division of Occupational Safety and Health initiated the request for the Board to adopt amendments to Section 3427 of the General Industry Safety Orders. The emergency regulation went into effect April 29 and stays in effect for at least 120 days, and may be renewed thereafter.

TCIA staff and volunteers played an important role in the process. In late March, at the invitation of TCIA, some key Cal-OSHA personnel attended TCI EXPO Spring in Sacramento. There they heard an excellent presentation on crane safe work practices in arboriculture. George Hauptman, the Cal-OSHA senior safety engineer responsible for drafting the emergency regulation, gained insight by talking extensively with Steve Chisholm, TCIA Safety Committee chairman, and Peter Gerstenberger, TCIA senior advisor for safety compliance & standards.

The epidemic bark beetle infestation and recent wild land fires that ravaged southern California counties were the impetus for the regulation. These natural calamities caused extensive damage to countless thousands of trees, necessitating their removal for purposes of public safety. These trees and their branches are subject to falling, in some cases close to nearby residential and commercial areas, waterways or near high voltage power lines. The damaged condition of these trees presents an immediate hazard not only to the public in nearby areas, but to workers responsible for clearing and removing the trees. The removal of bark beetle and fire damaged trees is also essential before the full restoration of damaged telephone lines, cable and low and high voltage electrical lines can be achieved. Further, it is also necessary to remove these damaged trees as soon as possible to minimize the extent and amount of dry and dead wood that could serve as fuel in the upcoming fire season. Last year's Southern California fires covered over half a million acres, destroyed approximately 2,300 structures, caused billions of dollars in damage, and

resulted in 16 fatalities.

In order to ensure that the safest feasible methods are always used to access trees, Cal-OSHA felt it was necessary to clarify that the use of cranes, under certain circumstances and with specific safeguards in place, is lawful when this practice constitutes the safest method for elevating employees to conduct tree removal operations. Currently, provisions in the General Industry Safety Orders (GISO), Article 98, Section 4995 prohibit employees from riding on a crane hook for access to any work location. However, Section 4990 specifically states that the requirements contained in Article 98 do not take precedence over vertical standards "of a specific nature." Title 8, § 3427 is a vertical industry standard for tree maintenance and removal work, so the proposed provisions within § 3427 pre-empt the other aforementioned regulations, permitting the limited use of cranes for the purpose of accessing trees, provided the conditions prescribed in the proposed standard are met.

The amendments to § 3427 are proposed to permit a qualified tree worker to enter a tree suspended by the closed safety type hook of a crane when a tree cannot be safely accessed by conventional methods permitted in existing standards.

Federal OSHA's general industry standards contained in 29 Code of Federal Regulations (CFR), Part 1910, and construction-related standards contained in the 29 CFR, Part 1926, forbid the lifting of personnel other than in a man-basket. However, the practice of hoisting a tree worker is permitted in the national consensus standard, ANSI Z133.1-2000, entitled "Pruning, Repairing, Maintaining and Removing Trees, and Cutting Brush – Safety Requirements." However, this work practice is not addressed in California's standards in GISO, Article 12, "Tree Work, Maintenance and Removal." Therefore, in order to permit this practice when it is unsafe to access trees using conventional methods (climbing or aerial device), the amendments to Section 3427 were necessary.

The text of the regulatory change to §3427 have been posted on TCIA's Web site, under "Laws & Standards."

beetle attack has already been underway for a considerable time, and the tree is probably beyond salvage. Other signs of infestation include pitch tubes or globules of pitch on the trunk, or frass (wood dust) in bark crevices or at the base of the tree.

From a chemical standpoint, there are a few options for arborists and landowners to choose from to protect high-value trees in the urban landscape. Most, however, employ a preventative strategy and must be implemented before a problem becomes apparent. To date, the two most successful preventative treatments are carbaryl and permethrin. Both require applications to the outer surface of the tree's bark before an infestation occurs because neither chemical is systemic. There are also major differences in the formulations of both products that are available "over-the-counter" at large discount home supply stores versus what is available to licensed, commercial pest control companies. While that is a widely recognized and accepted fact among professionals in the commercial tree industry, it is often a poorly misunderstood differentiation among average homeowners.

"One of the challenges the industry, as well as the university faces, is educating the consumer about what approach will work and what doesn't have much of a chance," NMSU's Sutherland says. "Sadly enough, one of our problems in New Mexico has been the occasional scam artist that has taken advantage of the homeowner who doesn't know any better. One of our priorities here at the university is to educate the public so they don't fall victim to those sorts of scams. It's very important to use a licensed, qualified professional to make tree care recommendations, and we advocate that every chance we get."

In addition to preventative measures, there is an ongoing debate on whether or not chemical injections can be used "after the fact" to save a tree already infested with bark beetles. While some U.S. Forest Service personnel and most university researchers discourage the practice, there is some dissent among commercial tree care professionals.

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"Imagine what it must be like to buy a piece of land with beautiful pinyon pines, build a home and then wake up somewhere down the line and slowly realize that your view of the forest has disappeared and it isn't going to come back any time soon. That's the situation we're facing in a lot of areas of New Mexico," says Carol Sutherland.

"I think that as long as the sap is still flowing you have a shot at saving the tree – even if it is already infested with bark beetles," McDavid says. "I've injected trees that fit that 'doomed' scenario and I've been able to save them. I usually back it up with protective applications on the trunk of the tree and branches that are bigger in diameter than four inches. It's worked fine

as long as I made the initial injection before the sap quit flowing. The most important thing is to keep the water flowing and the sap moving throughout the tree."

For the most part, saving a given tree from mortality due to a bark beetle infestation is primarily about relieving stress. Convincing or educating a landowner

exactly what that entails is a multi-faceted endeavor at its most simplistic.

"There is so much misinformation out there," McDavid says. "It gets frustrating trying to combat it. It's a continual process trying to educate our clients about what they really should be doing."

Further west, in San Diego's embattled urban forests, Pedersen agrees. "A lot of people that we deal with just don't understand even the simple steps they need to take to protect their trees," he says. "Right now, the big buzz around this area is everyone trying to figure out if we should buy more fire trucks or more water bombers to deal with the fires that might reoccur."

Education is undoubtedly one of the keys to better consumer preparedness and preventative maintenance of the urban landscape. Although the universities and various government agencies have long been the lead contacts as it pertains to public education, that role is being relegated increasingly to the resources and creativity of private industry.

"It doesn't take much to put yourself out there as a credible source of valuable information," says Betsy Shea, president of Shea-Campbell & Associates, an advertising/marketing agency in Carmel Valley, Calif. "Don't wait for someone else to take the reins. Do it yourself. Write a press release, or commission someone to do it for you. Offer yourself up for an interview with the local paper or the local radio station as an expert on the situation. Anything you can do to get your story out there as accurately and as widely broadcast as possible in your local area will not only help address the situation, but might also help you bring in more business."

Considering the current epidemic of bark beetle infestations and the havoc they are wreaking, soliciting new business should be one of the easier tasks on an arborist's agenda.

Brenda Carol is a freelance writer living in Carmel, Calif.



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10 Simple Ways to Avoid Expensive Electrical Repairs to Your Equipment

By Nik Staley

You can protect yourself from expensive repairs to the electrical equipment your tree company owns. As technicians, we have compiled a useful list for you covering some common mistakes. We will also let you know a few ways to examine or repair the equipment without involving a technician or equipment dealer.

The first thing is a problem that we are confronted with repeatedly – power washing. One reason why power washing is so harmful to your equipment is that the water can be forced into wire casings or other sealed compartments, which causes corrosion or a short-circuit.

Another reason why power washing is harmful is that most cleaning solvents contain chemicals that are themselves corrosive. These chemicals can cause malfunctions or a complete failure of components. No chemicals of any kind should be used to clean the machine. A rinsing with water only will usually suffice for day-to-day usage. Most equipment used in this industry is sealed well enough to endure rain or normal water pressure for



Corrosion can exist where it is not visible – inside the wire casing. Learning how to operate a volt/ohm meter can help you detect this type of wire corrosion easily.

washing the machine after use. Washing the equipment of dirt and debris after each use is a good habit, but power washing hinders more than it helps. It is also a good habit to take care not to purposely wet the electronics, though some exposure to moisture is unavoidable and accounted for during product development.

2. Battery terminals must be free of corrosion. Issues involving a lack of voltage include, but are not limited to, loss of programming and equipment failing to start. Most frequently, this can be solved by taking the positive and negative (ground) cables off from the battery and removing any corrosion from both of them. The posts of the battery can be coated with a conductive silicone to protect them from corrosion in the future. If the terminals are corroded, the circuit's voltage can drop. Battery corrosion can also cause the charging system

to function improperly. By cleaning the terminals and replacing battery/cables as necessary, electricity is allowed to flow freely to and from the battery.

3. Another cause for loss of certain functions or power is corroded wires and



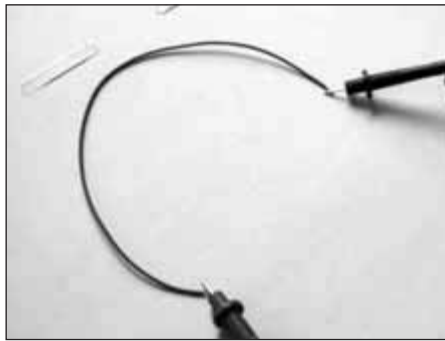
Bad battery – If the terminals are corroded, the circuit's voltage can drop and the charging system may not function properly.



Good battery – Take the positive and negative (ground) cables off the battery and remove any corrosion from both of them.

connectors. All connectors should be checked regularly for rust or a green-colored substance, which signifies a bad connection. As with battery terminals, corrosion can cause the circuitry to be overworked or cease functioning. If corrosion is found, wires and connectors should be replaced immediately and installed properly. Like rust on a vehicle, corrosion is something that every piece of machinery is plagued with at one time or another. Whether or not corrosion will cause you grief is determined by whether you repair it or ignore it. If the wire is not repaired, eventually it or the connector will no longer allow electricity to flow through it and cause it to break off completely.

4. Corrosion can also appear where it is not visible – inside the wire casing. Learning how to operate a volt/ohm meter can help you detect this type of wire corrosion easily. The continuity function of a meter is the ideal tool for this job. Most



For a contact check to work properly, both leads must be on exposed/bare sections of the wire.

brands of meters are labeled either with the word “continuity” or by the symbol that represents it, which resembles an arrow attached to a plus sign.

Before servicing or testing the electrical system, disconnect the battery to avoid injury and the possibility of a false positive. After disconnecting the battery and setting the ohm meter to continuity

mode, place one of the leads on the end of the wire to be checked, then place the other lead on the opposite end of the wire. For this function to work properly, both leads must be on exposed/bare sections of the wire. If the wire being checked has no breaks in it, the meter will beep for the duration the leads are receiving a signal from each other. If the meter is silent, then that particular wire has a broken spot inside the casing that is causing the connection to fail. The wire must be replaced

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in this situation.

5. Fuses protect the electronics of your valuable machines from shorts. When a positive wire touches any location that is grounded, there is usually a fuse in place to prevent permanent damage to circuitry. Instead of replacing a blown fuse, some operators have been known to try bypassing the fuse to keep the machine in

operation. **Under no circumstances should this be done.** If the fuse is bypassed and another short occurs, irreversible damage is the likely result. At that point, a cheap fuse replacement becomes a very expensive repair bill.

6. Safety features also serve the purpose of protection, except they protect the operator instead of the electronics. These safety features should not be bypassed to save time, or for any other reason. Unless all safety features are functioning properly, the machine should be shut down immediately and repaired. It is never worth risking bodily harm or death to save a few moments of work.

7. Taping spliced wires together is not adequate covering. Repairs to wires or connectors should be soldered and covered with shrink tube instead of simply twisting the wires together and applying tape to them. By using solder you are guaranteed that the electrical current will flow through the splice. Shrink tubing preserves the integrity of the wire. If tape is used, moisture will gather at the splice point and create corrosion.

8. An important part of owning or operating your equipment is to read all the manuals and literature provided by the manufacturer. The manual usually contains insights regarding how you should maintain the equipment. It may also include a reference guide for self-help on diagnosing common problem areas. Proper maintenance of the machine can prolong the useful life of the equipment substantially.

9. If any welding to the machine is required, then the battery must be disconnected. It might be necessary at times to weld points of the frame or other junctions that break, usually from towing or hauling. A welder works by melting metal with large amounts of electricity. By disconnecting the battery you reduce the risk of surging the battery and other electrical components. If the battery is not disconnected, the best-case scenario would be that some fuses will need replacing. Worst case, circuits might be overloaded or the battery could explode and severely injure



Fuseable link – When a positive wire touches any location that is grounded, there is usually a fuse in place to prevent permanent damage to circuitry.

Instead of replacing a blown fuse, some operators have been known to try bypassing the fuse to keep the machine in operation. Under no circumstances should this be done. If the fuse is bypassed and another short occurs, irreversible damage is the likely result. At that point, a cheap fuse replacement becomes a very expensive repair bill.

anybody nearby.

10. Although a lot of programmable calibrations can be locked to prevent operators from changing settings, if locking the settings is not practical a copy of correct programming should be stored in a safe location. A self-prepared wiring diagram or schematic, along with a maintenance schedule, might be useful for

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Chetins Aydinoglu — Chetin's Chipping, Lagovista, Texas

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Ed Langel — Affordable Tree Service, Fort Pierce, Florida

"I have been very happy with Zenith blades, they are reasonably priced, with excellent quality and prompt delivery. I have used other blades, but none as good as Zenith."

Mike Hrycak — Green Mansion Tree, Syosset, New York

Vermeer

Model Number	Part No.	Knife Description & Size	SALE Price
BC1000	KCH20109	Double Edge 9" x 4-1/2" x 5/8"	\$27.66
BC1220-BC1250	KCH20002	Single Edge 8" x 3-1/2" x 3/8"	\$16.75
BC1400	KCH20110	Double Edge 8" x 5" x 5/8"	\$28.40
BC1800-BC2000	KCH20103	Double Edge 10" x 5-1/2" x 5/8"	\$33.12

Morbark

Model Number	Part No.	Knife Description & Size	SALE Price
100, 200, 290	KCH10001	Double Edge 7-1/4" x 4" x 3/8"	\$17.20
10, 13, 17, 2050	KCH40001	Double Edge 10-1/2" x 5" x 1/2"	\$24.50

Brush Bandit

Model Number	Part No.	Knife Description & Size	SALE Price
Model 90	KCH10002	Double Edge 5-3/32" x 4" x 3/8"	\$14.95
Model 90XP, 280XP	KCH10004	Double Edge 5-3/32" x 4" x 1/2"	\$18.36
Model 100XP-250XP	KCH10003	Double Edge 7-1/4" x 4" x 1/2"	\$16.32
Model 250XP, 254XP after '01	KCH10101	Double Edge 7-1/4" x 4-1/2" x 1/2" ...	\$21.56
Model 1890 Intimidator	KCH20103	Double Edge 10" x 5-1/2" x 5/8"	\$33.12
Model 1290 Drum	KCH30001	Single Edge 12" x 3" x 3/8"	\$16.40
Model 1690 Drum	KCH30002	Single Edge 16" x 3" x 3/8"	\$18.60

Asplundh

Model Number	Part No.	Knife Description & Size	SALE Price
Timberwolf	KCH10001	Double Edge 7-1/4" x 4" x 3/8"	\$17.20
12" Drum	KCH30001	Single Edge 12" x 3" x 3/8"	\$16.40
16" Drum	KCH30002	Single Edge 16" x 3" x 3/8"	\$18.60

Mitts & Merrill

Model Number	Part No.	Knife Description & Size	SALE Price
Drum Style	KCH60001	Double Edge 4-1/4" x 2-3/8" x 1/2"	\$9.20

*To receive this special pricing, you must use this code: 7394

Most Brush Chipper Knives on sale. Call if your model is not shown.

Offer ends July 31, 2004



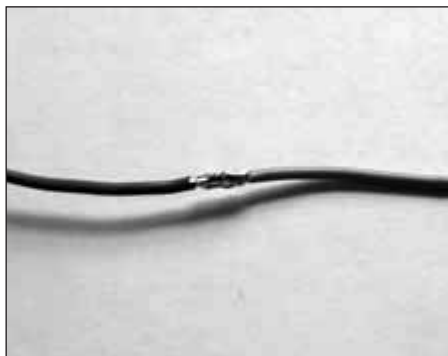
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catastrophe situations as well. All documentation should be kept up to date and in a secure location. With a schematic it might be possible for someone with soldering or electrical experience to repair missing or damaged components. Having a maintenance schedule will allow you to keep track of things such as oil changes and battery replacement. Any adjustments to the equipment should also be documented, should a technician or dealer ever be required to service the equipment in the future.

By following these 10 guidelines you will definitely prolong the life of your equipment, avoid some costly repair fees and decrease the likelihood of an injury – or worse. The most important things are to properly maintain the machine and avoid excessive exposure to moisture. Your equipment can give you many years of successful operation or it can force you into early retirement. All operators should



Soldered connection – Taping spliced wires together is not adequate covering. Repairs to wires or connectors should be soldered and covered with shrink tube instead of simply twisting the wires together and applying tape to them.

know how to handle the most common elements of repair, as well as how to safely operate the machinery. Proper maintenance and cleaning is not separate from operation of the equipment, but should rather be a part of it. As you learn more about operating the machine you should also learn the

items that can wear out or have the possibility of being damaged. Soon you will also be able to heighten your awareness of what is considered normal day-to-day operation and what could be a malfunction. Knowledge of how the machine works will help you to identify the components and behavior associated with wear on electrical and mechanical components of your equipment.

The best operators are those who can operate the equipment safely, as well as troubleshoot or repair common problems. The ability to repair your own equipment is invaluable when you are faced with thousands of dollars worth of labor or parts for dealer servicing. With proper maintenance, operation and some basic electrical skills, many repairs are avoidable – or at least do-it-yourself.

Nik Staley is a technician with Electronic Solutions, LLC. in Harrison, Mich.. ⬆

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Tree care company in lower Westchester seeking operations and sales manager. Candidate must be a certified arborist and have at least 5 years' experience in the tree care industry. Salary and benefits based on experience. Please fax resume to: (914) 834-5867 or e-mail to kate@moriartytree.com

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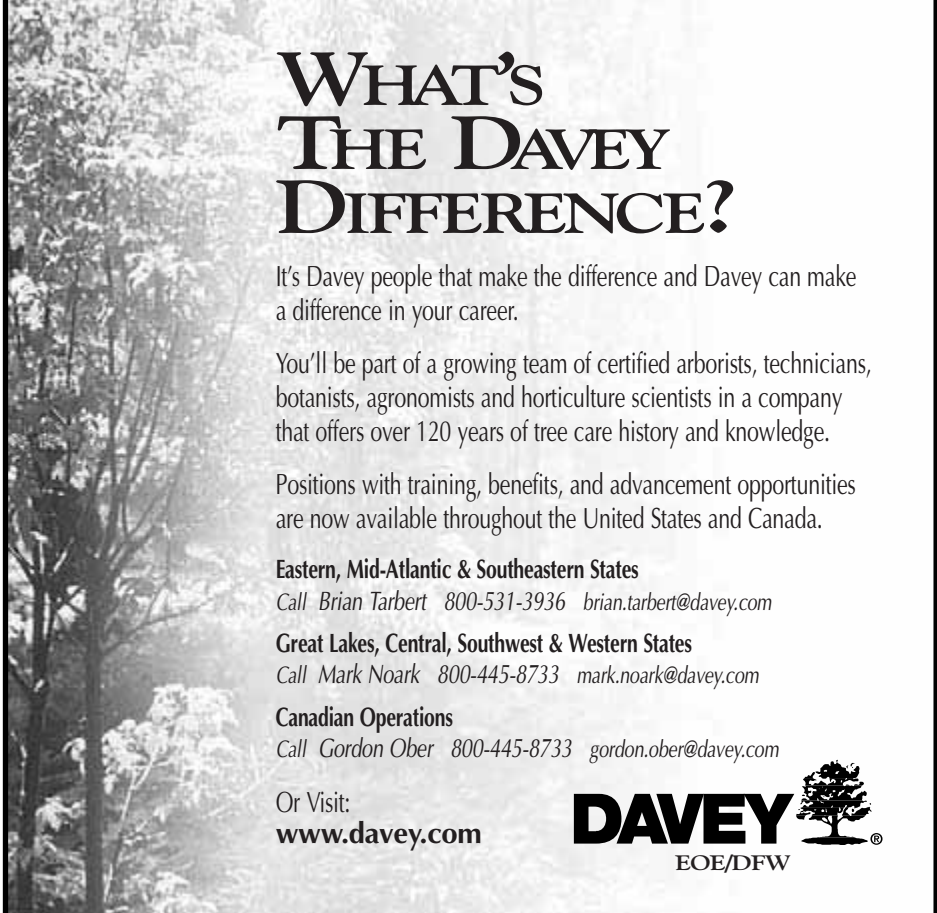
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A bachelor's degree in arboriculture, forestry, horticulture, or a related field

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Strong communication skills, especially in technical writing

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Interested parties should forward a resume, dossier or C.V. directly to ISA at the following address: International Society of Arboriculture, Attn: Sharon Lilly, P.O. Box 3129, Champaign, IL 61826-3129.

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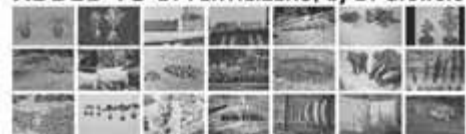
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Techniques and Tips from an Old Faller

By Marshall Adams

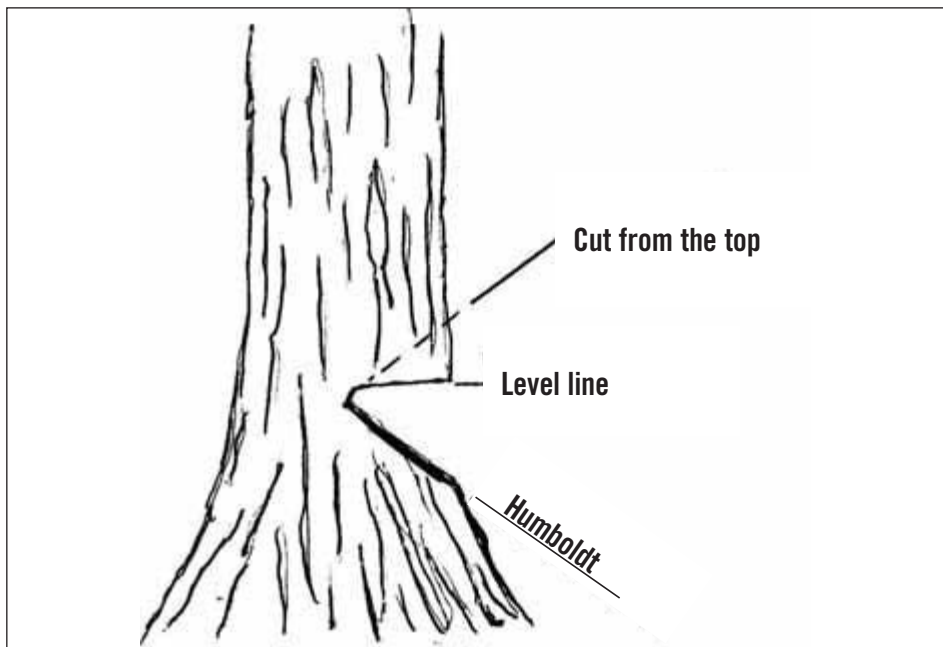
I am wondering what I could teach a bunch of hot-rod young climbers who are faster than I am and understand techniques I never used. If *TCI* magazine required a resume to write for the magazine mine would look like this:

“Took my first timber falling job during the summer of 67 at age 17 – father, uncles, and grandfather were all fallers. I established myself as a man who cared about saving timber and moved quickly from second-growth trees to the big trees and into the high country. At age 19 and for the next 15 years I worked as a faller in the finest old-growth forests in southwest Washington, cutting trees that often produced more than 30,000 board feet each.

What I brought from logging to my current business, which is shared with a partner now, is a great understanding of how trees react to things we do to them, considering factors such as lean, wind, species, site conditions and decay. I should title the remainder of the article, “At the Stump – From an Old Faller.”

I have never had a serious accident related to residential tree care or removal, and my insurance company loves me. I have made a good deal of money when I could fall the same tree a competitor would bid to remove in sections. This is not a recommendation for young tree workers to cut every tree at the stump, but it does make a difference when you know the tree will hold, and when you are confident the tree will go where you want it to go.

In some situations the dent a large tree will make is acceptable. Picture such a tree: 42-inch Douglas fir standing 60 feet inside a fenced yard. You stick the nail of a spring loaded logging tape into the bark, near the center of the tree, and walk 90 degrees away from the tree and out through a gate in the cedar fence. You stop at 66 feet, pull



With a Humboldt, you complete the face with a cut down from the top also. Remember that the face, from top to bottom, must be wide and offer plenty of room as the tree falls before its direction is influenced by the massive pressure of wood to wood when face meets stump. Illustration by Marshall Adams.

out your Suunto Clinometer and measure the tree's total height. It is 185 feet.

You set the tape-nail again and measure out to another fence. The total distance from the standing tree to the second fence is 197 feet. The tree will fit, but you will have to fall it through a narrow gate. If you are confident and can make the shot, you will be on the next job two hours ahead of schedule.

You walk back to the tree and, leaning with your back against the tree, you look to the furthest target you can see. You are looking out through the gate – not standing at the side of the tree, but with your back against the center of the tree looking toward the target. This is a must to eliminate angles. Your target is a wheelbarrow in a neighboring yard, and it is 100 yards away. You have nearly eliminated the triangle that results from using sights when the sight on your chain saw will be more than 27 inches to one side from the center of this tree.

You predetermine how deep your face

will be, and set your dogs there as you start the first cut. There are factors involved in this decision and I will discuss some of them later.

You kneel behind the saw, watching the sight, and when you are “perfectly” on the wheelbarrow you stop the cut and turn your motor off. While the motor is still you back away, further from the sight, and look again. The sight is still on the wheelbarrow.

You complete the face, being careful not to cut even a fraction past your first cut. That would change everything. You have chosen a Humboldt because it is natural for you, and you complete the face with a cut down from the top also. Remember that the face, from top to bottom, must be wide and offer plenty of room as the tree falls before its direction is influenced by the massive pressure of wood to wood when face meets stump.

You can also prevent a tree with a long sweep in the stem from turning over in thin air by making the face wide from top to

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These old cedar stumps show the irregular design that some stumps have. It's easy to see how you would never want to end your cut in one of those Vs. Sometimes the irregular areas on the outside surface of a tree go completely to the center of the tree, and when the tree would begin to fall there would not be sufficient holding wood to keep the tree falling the way you aimed it.

bottom. If accuracy is “really” important, you do not cut the face to meet at a perfect apex, but make your second cut to be a couple of inches higher or lower, depending on the type of second cut you prefer, Humboldt or from the top, and then you break the face out with an axe. This creates a wider hinge, vertically, and holds the tree longer before the hinge wood breaks.

With the face removed from the tree, you catch yourself wondering if you are as good as you think, so you bring out two of the spring-loaded logging tapes and stick the nail of each tape at each apex of the face. You walk out to the gate, 60 feet, and bring the tapes together. They are exact and you are right in the middle of the opened gate. You are ready to fall the tree, but only

because you have already checked the tree for side-lean. A typical tall evergreen will swing to half the amount of the side lean – if you chose the right place for the holding wood, and hold the right amount.

This tree is standing perfectly straight, however, and a piece of your nylon string is still hanging from your pocket. The other end is tied to a 3-ounce round fishing sinker, and you used the string (like a plumb line) to determine the lean of the tree. A straight axe handle will work also.

You carefully examine your escape route. When this tree starts to go you are not going to stay at the stump and steer it. You are going to get away from the stump and let it fall where you aimed it. It takes

confidence to do that. Your desire is to hang at the stump until the last second, and attempt to steer the tree by cutting more wood on one side or the other as the tree is falling, but you have aimed this tree exactly where you want it.

You have a 36-inch bar on the saw, and will not be able to see it on the far side of the tree, so you wrap around the back of the tree and stop cutting when you are about 6 inches from the face. Then you remove the saw and go to the other side of the tree. Once you have brought the cut up to 3 inches, with about a foot of the bar buried, you go back to the other side, and this time watch your sight. You set your saw in, with the dogs into the bark, and finish the back cut. When your sight is on the gate, you have three inches of wood straight across the stump.

You have a wedge, of course. It is a safety measure and you always have it handy. In this story you are certain the tree leans in the right direction, but as you cut deeper into the back you set the sharp edge of the wedge so it is barely hanging in the back of the cut. It is drooping down by several degrees, and if the tree is going the way you want it the wedge will droop farther. If the tree begins to set back you will see the wedge straightening up. This trick is a lifesaver and will allow you to catch a tree every time before it sets back.

As your sight approaches the gate the big tree begins to tip. The thick part of your wedge begins to drop, you hear wood breaking at the hinge, and you move away from the tree. It is frightening to leave it now. What if you want to cut more on one side or the other? But you have taken all the precautions and the tree is aimed properly. Trust your judgment and get away from the tree.

You instinctively look up; maybe to ask God to guide this tree, but you are also making sure there are no limbs coming back. You checked this tree for stump rot, side lean and even the shape of the stump. You purposely stopped your first cut in the widest part of the tree when you were removing the face, absolutely not in a “V”

Points to Remember When Dropping Trees ...

Pay attention, every time, to where a tree hits in relation to where you aimed it. If you understand the rules of falling trees accurately you will do it well and with confidence.

Most saws are “sighted-in” when the bar is held in the up position while tightening the bar nuts. It makes a difference.

Be very careful when trusting another person to watch the holding wood on the far side of a tree. It is never an insult to step around

the tree and check the cut yourself. If your helper is daydreaming and you cut the far corner off, you are in big trouble – and you will probably smash the neighbor's house.

If a standing tree has side lean, you should be on the side with the tree leaning away from you as you make the back cut on the stump. If you do it that way, you watch the important holding wood and you are not under the lean of the tree.

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“For just a few seconds the top looks like a time-lapsed picture, as the clouds seem to be moving and then the tree is down. The earth trembles as the big Douglas fir lands squarely in the center of the opening.”

or a narrow place – never there.

With six of the lowest limbs removed, leaving a clean stem up to about 70 feet, you watch in awe as the hinge breaks and the powerful fall of this tree cannot be stopped. For just a few seconds the top looks like a time-lapsed picture, as the clouds seem to be moving and then the tree is down. The earth trembles as the big Douglas fir lands squarely in the center of the opening.

You have made the shot and it is a rich experience. The limbs and the entire top of the tree are outside the fence where the chipper and truck can get to them easily.

You must respect the power of nature's influence when cutting trees at the stump. Wind can come unexpectedly; the strength of wood can be compromised by decay and shape. If you have a “flat” spot on the tree, where it is uncharacteristically not round, you will not have strong wood to hold the hinge. You may want to reconsider which way you fall the tree, or how deep into the tree your first cut will be.

I have cut several thousand trees in my lifetime, but the best advice I have is to begin every job with prayer. Discuss your strategy, discuss safety – and do not take chances.

God bless you, and be safe out there.

Marshall Adams is the co-owner of Habitat Development Corporation in Woodland, Wash.



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TCIA Accreditation Improves Business

By Robert Rouse, TCIA Director of Accreditation

If only I had a dollar for every time the phone has rung here at TCIA with questions from tree care company owners frantically asking for help!

And what are those questions? Take your pick:

How do I find a good manager so I can take a vacation?

How do I get my employees to care about my business?

How do I retain customers?

How do I reduce the number of call-backs?

How do I retain employees?

How do I find a crew leader who can do the paperwork so I can go home and see my kid's little league game?

How do I hire a good salesperson who won't leave and steal my clients?

How do I run a business on Saturdays during busy season without being there?

How do I stop chasing my tail?

I've had it. Forget about the kids, how do I sell my business now?

Each question is important; each is placed by a frantic or at least an over-tired, over-worked owner; and, many owners think their question is somehow new or unique.

These are old questions the tree care industry has been trying to answer for some time. Tree care companies who have solved these questions have not only sur-



More than 600 volunteers at 1998 National Day of Service at Arlington National Cemetery.

Call to Day of Service

Arrangements are well underway for the first TCIA National Day of Service in more than six years. Past participants will relate that this day carries a special, long-remembered meaning for all. The site will be Belle Isle, a city park of 989 acres on the Detroit River.

The park has a storied history, but today its grounds are badly in need of arboricultural renovation. In 1883, Detroit secured

the services of Frederick Law Olmsted to design the green spaces for the island. After Olmsted's design was completed, buildings were added. The most famous structures are the Aquarium and Horticulture Building and the Belle Isle Casino, designed by Albert Kahn in 1908. Once said to be the finest casino in the United States, ornate towers frame the building's four corners, and verandas provide picnickers with shelter. A beautiful public park of memorials, fountains, athletic fields, manmade lagoons, and dramatic buildings, Belle Isle is a green oasis near the city's center.

With your assistance and expertise, visitors to the park on Sunday, Oct. 31, 2004, will witness the best examples of resource stewardship and environmentalism as arborists from TCIA member companies care for the trees on this historic property.

Don't miss out on being a part of one of the largest gatherings of working arborists in the United States this year! Please call 1-800-733-2622 for sign-up information.



Reporter is the monthly news letter of the Tree Care Industry Association. TCIA members can access the complete publication at www.treecareindustry.org.

vived the latest economic downturn, but are thriving. They are providing great career opportunities and quality of life for owners, managers and workers, They are poised to prosper even more as the economy improves.

Businesses who have not or cannot answer these questions eventually go away, get bought by larger companies for their client list, or are being run by an over-tired, over-worked owner.

These questions are not unique, and – not only that – they are in fact only one bigger question: How do I continue to professionalize my business?

Professional businesses have systems in place that ultimately let employees have ownership and investment in the company. This in turn allows all employees, including the owner(s), to have more profit, a better quality of life and yes, not only make it to that little league game, but maybe even be the coach! TCIA Accreditation is your first stop along this path.

Here are some specific examples of the program:

TCIA Accreditation helps you set up policies and procedures, such as consumer complaint resolutions procedures to help avoid costly call backs. Best of all, the procedure can be used by employees – instead of you – to eliminate call backs.

TCIA Accreditation requires, as well as helps you follow, industry standards for safety and tree care maintenance operations. This helps improve your operations by streamlining communication between sales, office, crew and client to help reduce call backs.

TCIA Accreditation will be marketed as the ultimate tree care industry credential. It will give potential clients a way to identify your company as the one that provides high quality service in your local area. It will demonstrate to existing clients that they made the right choice.

How has TCIA Accreditation already helped companies in the Accreditation program? Just check this out:

A company found out an employee didn't understand an important change in safety standards despite being trained

Revised ANSI A300 Standard ... just approved!

The A300 committee has put the finishing touches on a revised fertilization standard – ANSI A300 (Part 2) - 2004 Fertilization. This part of the A300 standards applies to all fertilization operations.

Order your free copy today!

For members who are interested, this new standard is available free upon request from TCIA. This offer is made only to member companies in good standing, limit one standard per company. Additional copies may be ordered for the special member price of \$15, plus shipping and handling. This is a limited-time benefit of membership. The offer expires Aug. 1, 2004. Call 1-800-733-2622 for your free copy of the revised Fertilization standard.


about it.

A company found out that their state DOT plans to add more CMV requirements in 2005. Finding this out now helps the company avoid costly tickets and loss of vehicle/work time later.

A company in a different state found a DOT compliance change that is actually less stringent for them, saving them time

and money.

One company found a way to streamline specification writing on estimates and work orders to reduce crew confusion and call-backs.

All companies involved have reported that just thinking about and adjusting their systems for TCIA Accreditation is going to save them time in the long run. 



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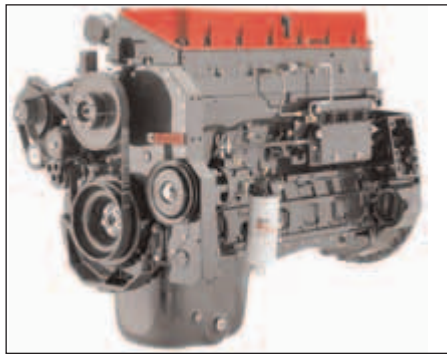
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Cummins receives EPA nod for off-highway emissions

Cummins Inc. recently had the first of its off-highway engines slated for the January 2005 emission standards certified by the Environmental Protection Agency (EPA) as compliant to the Tier 3 standards for Oxides of Nitrogen (NOx) and Particulate Matter (PM.) Cummins is the first manufacturer to receive a Tier 3 Certificate of Conformity from the EPA.

"With the EPA certification of the QSM off-highway engine, Cummins continues its commitment to clean air," said Bharat Vedak, Cummins vice president - Industrial Customer Engineering.

"Our Tier 3 engines will have an in-cylinder solution that reduces NOx by 40 percent without the use of expensive external hardware," said Vedak. "With the certification of the QSM completed early, our development will focus on further improvements in fuel economy and reliability to exceed our commitments to customers."



Cummins QSM 11

The certified and compliant Cummins QSM11 Tier 3 will go into production in July, 2004. The 11 liter six cylinder is rated from 290-400 hp and utilizes the CELECT™ fuel system with advanced electronic controls.

Emerald ash borer spreading in Indiana

Emerald ash borer, an exotic beetle that already has infested or killed more than 6 million ash trees in Michigan, has been found in LaGrange County, the sec-

ond northern Indiana county to report an infestation.

State wildlife officials are surveying the site to assess the infestation. "We're looking at what we're going to be doing in terms of LaGrange County," says Russ Grunden, an Indiana Department of Natural Resources spokesman.

The ash borer was first found in April in Steuben County. In May, two more infestations were found about a half mile from the original site. The state began removing about 423 trees in a half-mile radius to halt the beetles' spread.

But Larry Axlen, an urban forest health specialist for the DNR's Division of Forestry, said the tree cutting in LaGrange County probably will not take place until fall or winter. "Now we run the risk of having too many adults emerge," Axlen said.

The ash borer was first detected in Michigan in July 2002 and in Ohio in February 2003, according to the U.S. Department of Agriculture. Scientists say the beetles probably were introduced into the United States from Asia five or 10 years earlier.

Grunden said the new infestation in LaGrange County does not come as a surprise. Seven crews will be traveling throughout northern Indiana searching for signs of the emerald ash borer beetle this summer. Grunden said the DNR expects to find more infestations.

"It's a matter of keeping it from getting as widespread as it turned out to be in Michigan. The problem in Michigan is they were well into it before they even realized what was happening because that was the first place. We've been able to learn lessons from them," he said. "We hope we'll be able to keep it from being as devastating a problem in northern Indiana as it has been in Michigan."

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A Visit With the Oldest Tree on Earth

By Martin Schmiede

Methuselah, the oldest tree on earth, is 4,900 years old and is located in the Sierra Nevada White Mountain region in California at an elevation of 11,000 feet above sea level.

This bristlecone pine grows in arid, dolomitic limestone soil. The amount of growth is one inch in diameter in 140 years. The rainfall here is 2 inches per year. The pine needles stay on for 40 to 50 years before they fall off and are replaced by new needles. The tree needs all the sunlight it can get and cannot tolerate any shade. On the wind side the needles don't grow any longer than 1 inch; on the lee side they grow a little longer.

Bristlecone pines are easily identifiable, as they grow with five needles to each fascicle. I am amazed that we have two superlative trees so close to one another. The bristlecone pine grows only 200 miles from the tallest trees in the world. Redwood trees growing in the Sequoia Valley, also in California, are as large as 300 feet high and 19 feet in diameter.

Dr. Edmund Schulman from the California Institute of Technology established, with his increment sample testing of the bristlecone pine, the radio carbon technique. This led to new, more accurate understanding of glacial episodes, desert conditions, volcanic eruptions and the like in the American Northwest over the past 5,000 years. Science has established that trees have been on this earth long before mankind developed. They have enriched



Martin Schmiede poses next to the oldest tree in existence, the bristlecone pine (pinus longaeva).

human and animal lives tremendously by providing food, oxygen, shelter, fuel, shade and medication, and it is conceivable that if they would vanish, we would vanish right along with them.

If you should ever spend a little time in San Francisco, you can find the Ancient Bristlecone Pine Forest by taking Highway 168 east from Fresno. There are no guardrails and your car will eventually, through serpentine steep mountain roads, bring you up to the 200-acre Ancient Bristlecone Pine Forest at an elevation of 11,000 feet. After you inspect the bristlecone pines you will see what mountain climbers risk their lives for – the most breathtaking panoramic view I have experienced. At sunset you see colors that you have imagined but never

seen, from azure blue into magenta hues and then changing into lavender, and then you witness a pale gold transforming the firmament. If the Metropolitan Opera has intrigued you with 100 feet of magic illumination, you should see the hundreds of miles of magical display of the heavens shifting from an earthly quality to something so grandiose and overpowering, touching our hearts with awe and solemn admiration.

It was a great privilege for me to touch base with a tree I have so long tried to visit. Joyce Kilmer ended the poem *Trees* with: "Poems are made by fools like me, but only God can make a tree."

Martin Schmiede is founder of Schmiede Tree Expert Co. in Scotch Plains, N.J. ⤴

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