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COVER PHOTO:
An arborist finishes a large maple before lunch, a feat made possible by his light-weight chain saw.
Accidents don’t just happen. They are caused by unsafe acts.

I would like to believe that nobody intentionally commits an unsafe act, but unsafe acts do occur.

As I write this editorial, I am sitting outside a courtroom waiting to testify as an expert witness in a tree care safety case. What happened? An inadequately trained treeworker committed an unsafe act and was severely injured.

His medical expenses were paid by workers comp and he collected a pay check every week as well. Still, he was convinced that there was a lot more money to be had.

According to the law, an employer cannot be sued if an accident victim collects workers comp. That doesn’t apply, however, to the manufacturer or supplier of any tools, materials or equipment that may have been involved in an accident. So, victims often sue the equipment manufacturer, the dealer and everyone else in the stream of commerce.

If the manufacturer loses, the cost of his insurance goes up. Manufacturers usually recover that cost by charging more for their product. Who pays? Everyone, including the employer who failed to provide adequate training.

Now we have come full circle. The cost of the equipment has increased, along with the employer’s insurance premium. A small investment in training at the outset could have avoided these cost increases.

Worst of all, someone was injured.

Worker safety has always been my primary concern. I will not accept an employer’s excuse that there is no time for training or that it is too costly. Make the time! It will pay for itself.

At the risk of using this column as a commercial, the National Arborist Association has all the safety training programs you need, plus a guideline for setting up and implementing a safety program.

In addition to the moral value of a safety program, federal law (OSHA) requires every employer to “provide a workplace free from recognized hazards.” Accordingly, you are required to have a safety training program.

Start right now. Get that safety program in place. Let’s make sure that everyone has a Merry Christmas and a healthy, Happy New Year. As for me, I hope that I never have to testify in court again.
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Please circle 55 on the Reader Service Card
By Peter Gerstenberger

A dozen chain saw manufacturers have the technology and capability to build durable, professional saws. Still, deciding which brand to buy is a personal matter. Arborists agree, however, on the criteria they use when choosing an individual saw or a chain saw manufacturer—namely, features, service and performance.

Parts & service

Say one of your enthusiastic tree climbers rips the pull rope out of his climbing saw. Then between the job and the shop, the rope and starter handle vanish. The dealer tells you he's going to have to order it directly from the manufacturer. As it turns out, the manufacturer's employees are on strike. It doesn't matter because the part is on back order anyway. So, for the next three weeks you have an oily paperweight.

The best saw in the world won't make money for you when it isn't running. If you rely on outside maintenance and parts suppliers, then it is more important to shop the dealers than to pick the "best" saw. Draw on the experiences of other arborists in your area to help you pick a dealer.

If you maintain your own saws, look for manufacturers with a stable product line so you can recycle parts.

Steve Mays, of Carroll Tree Service in Maryland, maintains 30-35 saws. "If my company were smaller and I had more control over the abuse my small saws take, I would buy more expensive, more durable saws," he says.

Takes a licking...

Taking a saw up a tree every day will quickly reveal its weakest parts. It is no surprise then that most owners rank durability ahead of all other criteria, including performance, handling and price.

Several owners we polled said they expect to get about a year and a half out of a climbing saw. For that year and a half, that saw has to work every day, and start reliably many times a day. After that, the saw is rebuilt, used for parts or tossed in the dumpster.

Simplicity is another important feature in a small saw. The most popular climbing saws have few exposed plastic or light al-
loy parts. In fact, because they have few parts at all, they are easy to take apart and put back together. Over half the saw owners surveyed did the bulk of their own saw maintenance.

How much should you spend on a climbing saw? There are two schools of thought. One says you pay a premium for an expensive import; the other says that dropped from a certain height, the high-priced saw breaks in as many pieces as the less expensive one.

According to a National Arborist Association survey, the high-priced climbing saws have a slight edge in the arborist market because owners are pretty much satisfied with their performance and durability.

Here are other features to consider. Most climbers prefer the balance of a top-handle saw, yet like their hands far enough apart to maintain good control. Look for a saw with the muffler mounted on the front or in a protected area on the side. Otherwise, climbers are going to have problems with burned pant legs or worse.

Finally, the on/off switch and choke should be protected but readily accessible. Turning the saw off accidentally in the middle of a cut can be irritating and dangerous.

Larger saws

As for ground saws, professionals opt for performance over durability. Owners look for cutting speed and a combination of features such as handle configuration and anti-vibration systems that cut down on operator fatigue. Carmen Denardo, supervisor at Ted Collins & Associates in Rochester, New York, likes the heated handle some large saws offer for cold weather.

A homeowner buying a chain saw looks at two features: the price tag and the guide bar length. Don't be like the homeowner!

Mike Cook, Alpine—the Care of Trees in Connecticut, advises choosing the bar length you need for the work, then matching it to a saw that can power it comfortably.

Bob Mead, owner of R.A. Mead Tree Experts in Maryland, cautions that cheap may be good, but good isn't always cheap. Ground saws get more use and less abuse than climbing saws. It makes sense, therefore, to spend a little extra for quality and performance. Then be sure to take care of the saw.

A climbing saw must start and operate reliably every day.

Safety features

The most important safety feature of any chain saw is the saw operator. Proper training and supervision on the part of the employer and attentiveness and caution on the part of the operator will prevent most saw accidents. Proper apparel and personal protection is important, too. (See article on chain saw safety.)

Certain design features of new chain saws help prevent saw kickback and operator injury.

A caution on kickback protective devices. The ANSI B175 standard for chain saw safety requires saws of 3.8 cubic inches and above to have at least one anti-kickback device. Saws under 3.8 cubic inches must have two. Kickback accounts for one-fifth of all saw injuries.

So-called low-kickback chain is now standard equipment on most off-the-shelf saws. Most saw owners who polled endorsed its use, especially on saws for inexperienced operators and climbers. For most arborists, the performance difference between low-kickback chain and semi-chisel or full-chisel chain is negligible. The latter two may be somewhat easier to sharpen in the field.

Owner opinion on chain brakes went to both extremes. Those who objected to them complained about chain brakes that engaged easily when they contacted brush or limbs. More than one person told us, "A chain brake saved me." Both groups make valid points—some brakes work better than others. Our advice? Test how the chain brake works before you buy a saw. Remember, don't let employees disconnect chain brakes or use them as parking brakes.

Arborists were unanimous in their contempt for so-called low-kickback saw bars. Non-reversible bars last half as long. The extra small radius tips, according to owners, wear out fast. In all, they are not practical options for a professional chain saw user.

Owners favored anti-vibration systems, especially in large saws because of their longer running times. Again, some work better than others.

Other features

Here are some practical features you shouldn't overlook. Are the oil and gas fill holes located so that the operator cannot help spilling oil or gas all over the motor housing? Can the operator remove and clean the air filter without disassembling most of the saw? Does the layout of controls make sense? Is the on/off switch protected from accidental shut-off? Do the weight and balance of the saw feel comfortable?

Some companies open dealerships to get saws and saw parts at cost. Thus, another factor guiding your purchase might be whether the saw manufacturer will give your firm a dealership. Some manufacturers are picky about who becomes a dealer because they want their dealers to sell a minimum number of saws while providing quality service.

Remember that when you buy a chain saw, you are not simply purchasing a machine; you are buying what that machine can do for you over time. As an astute business person, you must weigh factors like cost, durability, performance and ease of maintenance in deciding which manufacturer's saw can perform best for you.
Think Smart, Think Safety

By Soren Eriksson

Despite the many advancements in chain saw safety features in recent years, more than 35,000 chain saw-related accidents—many among skilled professionals—were reported in 1989, according to a report by the U.S. Consumer Product Safety Commission.

Nearly all of the accidents could have been avoided if the chain saw operators had observed smart safety practices.

For starters, select and use only chain saws boasting top-notch safety features. Saws should include features designed to reduce kickback, such as low-kickback chains, a chain brake designed to stop the chain should kickback occur, and a small-radius guide bar. Also, look for a high power-to-weight ratio and an anti-vibration system to reduce saw vibration in front and rear handles, especially if you’ll be doing a lot of cutting in one day. A powerful, lightweight saw with dampened vibration reduces operator fatigue, keeping you safer.

Select the proper saw for the task at hand. When climbing for tree trimming, choose a top-handled saw that offers good balance and the best safety features, including a chain brake. For cutting smaller limbs and branches, a lightweight, high-speed saw is recommended; saws running at 13,500 rpms are best suited for cutting smaller limbs quickly and efficiently.

Select a mid-sized saw for cutting large branches or bucking wood on the ground; one with a bar of approximately 16 to 20 inches offers maneuverability and a lighter weight, enabling you to get the most power out of the saw and reducing the risk of the bar tip coming in contact with adjacent logs or branches.

For cutting the bole of larger trees, select a larger saw with high torque and a bar running 24 to 32 inches. Some stump cutting calls for even longer bars, from 48-inch bars that can smoothly tackle trees with an 8-foot diameter to bars up to six feet in length for even larger trunks.

Husqvarna strongly recommends the use of protective headgear, legwear, footwear, eye and ear protection and gloves.

Inspect your chain saw before each use. Make sure the chain brake is clean and...
free of sawdust and dirt, that the brake band isn't worn, and that both the inertia and manual activation of the brake is in proper working condition. The chain should be sharpened and exhibit proper tension. Check the throttle safety lock, chain catcher pin, and all guards and handles.

When prepping the unit for operation, use only the correct fuel/oil mixture in the chain saw fuel tank. Fill the unit with fuel at least 30 feet from the job site to avoid any possibility of a spark igniting.

**Protective apparel**

Once your chain saw checks out, take a look at yourself. You should always wear protective clothing when operating a chain saw. While it is no replacement for safe equipment and proper technique, protective apparel can go a long way toward reducing the severity of accidents.

Husqvarna strongly recommends the use of protective headgear, legwear, footwear, eye and ear protection, and gloves.

**Headgear**

Always wear a protective hard hat or helmet. A helmet will protect you by helping to fend off falling limbs and branches. Arborists should use only headgear that complies with American National Standards Institute (ANSI) requirements; such equipment is readily available from servicing dealers and can be distinguished by a special sticker or stamp label in the cap. For maximum protection, you may prefer a protective hard hat with a visor and earmuffs for additional ear and face protection.

On-the-job, arborists should make eye protection a regular part of their attire, whether they are operating machinery or not. Eye protection can protect against branches snapping at eye level, as well as flying debris such as wood chips. While protective hard hats with screened visors shield the face, they do not offer complete eye protection; goggles or prescription safety glasses must also be used. Look for those that comply with ANSI Z87.1 standards for complete protection when operating chain saws and chippers.

**Hearing protection**

Those operating any type of outdoor power equipment should look to ear plugs or muffs to prevent hearing impairment caused by extended noise. Ear muffs, which can be freestanding or attached to a protective helmet, envelope the ear, offering additional protection from branches. Look for ear protection that offers a high noise reduction rating, preferably above 20dB. Ear muffs offering excellent noise reduction typically still permit the wearer to hear nearby conversation. For maximum protection, replace sealing cushions every two months.

**Gloves**

Work gloves or mitts reduce the chance of cutting and scratching hands when operating machinery and working around sticks and stems. Look for high-quality, rugged, flexible gloves, preferably leather-palmed. For extra protection, look for built-in chain saw protection for the left hand. Well-fitted or Velcro-adjustable wrist closures prevent splinters by keeping out wood chips.

**Protective legwear**

Husqvarna recommends protective legwear for anyone operating a chain saw. The two types of protective materials most commonly found in such legwear are...
Carefully plan your cutting job to avoid possible hazards such as dead limbs, electric lines, roads or other people. Evaluate wind direction and the lean of the tree.

Tear-resistant legwear can take the form of pants or chaps. Those who routinely operate a chain saw throughout the course of a day might find protective pants more convenient. Protective pants are normally cooler than chaps because there is no need to wear pants underneath.

If using a saw intermittently, chaps equipped with quick release buckles might be more convenient as they can easily be taken off and put on over pants. Look for chaps that meet standards proposed by the American Pulp Wood Association. Those proposed regulations call for maximum front coverage and protection at least four inches back on the left seam of each leg, offering additional protection should a chain saw catch and twist the chaps. Some styles of chaps wrap around the left side of each leg to provide increased protection should a running chain pull material to the right. Winter and summer weight styles are available.

**Footwear**

Chain saw operators should wear light but sturdy rubber or leather boots. Select comfortable, quality boots offering solid support, steel toes and non-slip treads. Boots that feature special chain saw protection on the front and sides are also available. Winter liners add extra warmth during cold months.

**Other protective gear**

Avoid loose-fitting clothing that can get caught in machines, thickets or branches. We recommend well-ventilated jackets and shirts that allow you to move freely but that are not baggy. Make rain gear and a first aid kit part of your gear, also.

Quality protective apparel and accessories are available from outdoor power equipment servicing dealers and arborist supply houses.

**Safe starts**

Before pulling the starter cord, flip the chain saw to “on” and put the choke and throttle controls into the “start” position. (On some models the throttle and choke are combined in one control.)

The safest way to start a chain saw is with it sitting on the ground. Be sure that nothing is obstructing the guide bar and chain. With the chain brake engaged, grab the front handle firmly with your left hand. In order to make sure the saw sits securely, put your right foot in the rear handle. Pull slightly on the starter cord until you feel the starter mechanism catch and then pull sharply to start the saw. Once the engine ignites, push the choke in and pull the starter cord again. For warm starts, set the throttle at half open.

Another recommended way to start the chain saw is to lock the saw firmly between your legs, placing your left hand on the front handle, with the left wrist and elbow extended straight and locked. With the chain brake engaged, pull the starter cord sharply.
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Carefully plan your cutting job to avoid possible hazards, such as dead limbs, electric lines, roads or other people. Evaluate wind direction and the lean of the tree.

Work a safe distance from others, but never work alone. Make sure help is nearby in case of an accident.

When cutting, stand on firm, level ground to one side of the cut. Always hold the saw with both hands during operation. Maintain control when the engine is running by always keeping a firm grip on the saw with your right hand on the rear handle, your left hand on the front handle, and your thumbs and fingers encircling the handles. The same grip should be used whether you are right- or left-handed since this working position gives you more control in case of kickback.

When cutting a tree, always hold the saw close to your body for maximum control, and the saw body close to the tree trunk. Cutting should be done at full throttle to prevent the chain from grabbing as it begins to cut, causing kickback.

Sawing with the bottom edge of the guide bar is the most natural as the saw is easier to control, partly because the motion of the chain pulls the saw towards the tree trunk. Be particularly careful in situations where it is necessary to use the top edge of the guide bar; the motion of the chain can push you backwards and throw you off balance.

Never perform any service or maintenance on a running chain saw.

Protect against kickback

Protect yourself against chain saw kickback. Never modify or remove the chain brake on the chain saw; it is there to reduce the effect of kickback and prevent possible injury. If a boring or plunge cut is necessary, run the saw at full rpms and begin the cut with the bottom edge of the bar, not the tip; avoid cutting with the tip of the bar whenever possible. Always check for obstructions below and behind the log you are cutting.

Soren Eriksson is president of Soren Eriksson Training, Inc., a Summerville, S.C.-based consulting agency dedicated to the practices of chain saw safety and efficiency. Husqvarna Forest & Garden Co., Charlotte, N.C., a manufacturer of forest, lawn and garden power products for all applications, is a national sponsor of Eriksson’s programs.

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In addition, more than 10 preset programs are offered. All training is designed to improve safety, efficiency and equipment life. Participants learn directional felling methods; chain saw skills for felling, limbing and bucking; about innovations in protective equipment; how to maximize equipment potential; and maintenance techniques.

Widely regarded as the world’s leading forestry safety and efficiency expert, Eriksson has taught his techniques to more than 30,000 students. He is perhaps best known as the creator of “Game of Logging,” a professional logger training program emphasizing safety and efficiency which culminates each year in regional and national competitions.

For more information, contact Tim Ard, a forestry applications instructor with Husqvarna Forest & Garden Co. and an organizer for Eriksson’s training, at 9137 Ridge Road, Hiram, GA 30141. Phone: 404-943-4745.

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Lessons From My Son
What A 2-year-old Has Taught Me About Managing A Business

By Donald F. Blair

So much of success in life depends upon timing and preparedness. I held off having children for 20 years so that I'd have more time to devote to my business and sold the contracting division of the tree company so I'd have more time to devote to a family.

Now that I have arrived at a point in my life where I have a 2-year-old son, I realize that I missed the opportunity of my life by not having a child at the same time I built my business. Although I'm sure I wouldn't have had the patience nor the energy to do much of a job at either, if I'd done them at the same time, being a father would have made me a better business manager and provided me with some insights into human nature that I sorely needed 20 years ago.

Lesson 1
Mackenzie starts out each day with the same basic routine: He's wet, hungry and ready to get on with his day. Regardless of how fussy he is or how I feel when he starts the day for us, I'm slowly learning that his fussiness will pass more quickly if I don't play into it. As hard as it is not to appear perturbed about a wet bed and a wet boy who can put most kick boxers to shame, we are able to move through his wake-up tantrum faster if I'm calm and cheerful and strive to take his mind off his troubles.

Because we have been vigilant in trying to anticipate hazards (everything), patient in trying to explain them, and well-rehearsed in the fastest routes to the Emergency Room, Mackenzie has lived long enough to begin to put two years of training into practice. He expects to be buckled into his car seat, and will do it himself if we aren't fast enough. He leans over most foods and tests them with his tongue to see if they are hot. He's also learning to use the word "hot" as an excuse not to eat the things he doesn't like.

Lesson 2
Safety is a matter of training, anticipation and consistency. An apprentice tree worker has a lot in common with a toddler. Both are eager to please and explore and both are unaware of the dangers and possible consequences of "standing here or grabbing that."

My wife Patty and I are constantly saying (yelling) "Hot!" and "Fingers!" and my wife's favorite—"Dirty!" In spite of our best efforts and diligence, Mackenzie has still managed to brand himself with an iron, lose the tip of a finger in a car door (successfully reattached), gain an honorable mention in land diving (off a playground slide) and collect miscellaneous bruises and stitches.

Mackenzie likes to be near noisy equipment and expects to wear ear muffs if he is allowed to watch the equipment at all. Much like your employees, Mackenzie came into this world totally unaware of the dangers of daily life. Your employees, although they come to work aware of those things in life that are hot and dirty, may not be aware of chain saw kickback, proper lifting procedures and electrical hazards. Patty and I have learned to assume that under any given circumstance and condition, Mackenzie will figure out a way to put himself in harm's way. We have learned that we cannot expect Mackenzie to know what is hot, dirty, and "No, No, No!" unless we accept responsibility for setting the example and teaching him the proper way to perceive and avoid a hazard.

We know that we cannot assume Mackenzie can keep himself from getting hurt without training and supervision. So, why do we expect tree worker trainees to figure out the highly specialized processes of tree maintenance and task-related accident prevention without appropriate training and supervision?

Lesson 3
Mackenzie loves to read (actually to point to pictures of trucks and ask "Whaz-
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but when the little one comes to either Party or me with a book, we read it again and again.

Do you encourage your employees to learn more about their skills? Have you established a company reference library that your employees can go to and key out unfamiliar insects, diseases or tree species? Have you established a bulletin board for your employees to post their new discoveries on, just like we post Mackenzie’s etchings on the refrigerator?

### Lesson 4

At the time of the writing of this article, Mackenzie is about a week shy of two. Although he isn’t speaking full sentences, he has command of enough simple phrases to express most of his needs. Tantrums cover the rest. I think what surprises me most is the fact that he knows what he wants and can make decisions for himself. He likes trains and trucks. I can ask him if he wants to go see a choo-choo and he’ll say “Uhuh” and head for the car. Don’t try to bluff this kid. If you say choo-choo, be prepared to deliver.

Are your employees a part of the success of your company? Do you discuss plans with those most directly affected? I used to show our most challenging removals with the crew foreman before I tendered a final proposal. I’ve tried to live by the maxim: “Nothing is impossible for

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the man who doesn’t have to do it himself.” I didn’t buy a bucket truck until a key employee showed me how we could make it pay. I had no personal need for one, and if my employees weren’t going to make it pay, I had better uses for the money.

Lesson 5

Mackenzie has mastered a lot of skills and overcome a lot of fearful things in life in his few short months with us. He’s overcome the frustrations of falling down countless times while learning how to walk, he seems to love pools and—ever safety-conscious—insists on wearing a flotation device; he loves dogs, thunder, most people and likes to feed big geese at the city park. I think one reason why he faces life so squarely and free of so many of the fears common to little ones is the fact that my wife and I encourage him to explore and try new things and minimize his failures and commend his successes.

Mackenzie is learning that it’s okay to try something, okay not to always succeed and wonderful to master a new skill or overcome an old fear.

When Mackenzie counts to five or catches a ball or comes down a slide without killing himself, his eyes light up, his face beams and he laughs and gives himself a round of applause. We laugh and clap right along with him.

Do you balance your employees’ successes out with their human failings? This is probably the hardest lesson for me to master. Because of my upbringing, I have to admit that I don’t praise performance as often as I chastise tardiness, or carelessness. I was raised to expect perfection and to deplore anything less. Lately, I’ve had to come to grips with my own failings to the point that I’m reluctant to judge anyone for anything.

Still, a person who comes to work every day, keeps a sense of humor regardless of the circumstances and maintains a consistent output that balances safety and quality with production deserves praise and should be afforded the courtesy of a national treasure.

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Lesson 6
As much as I love my son, as bright as I think he is, I resist the urge to think of him as anything but your average, all-boy 2-year-old. I've made a lot of mistakes to this point, and I'm not comforted by the thought of all the mistakes I'll make in the future. We don't always get along. He doesn't always like my ideas of what he should eat, wear or play at, or when he should sleep. I'm not always thrilled by his tantrums or his editorializations on my precious slides with a marking pen, but he has tenure around the Blair household and neither Patty nor I can fire him. Good or bad, happy or fussy, wet or dry, he's ours until he packs up his car and drives away.

Like the passing of a thunderstorm that brings a beautiful rainbow, I've learned that even the worst of fits will pass and that before long Mackenzie will be smiling and laughing and wanting to know all about tractors for the jillionth time.

Your business is your baby. Some days it will be a joy and some days it will be a burden. Remember that insanity is hereditary—you get it from your children (and your employees). You can't fire your children and until you're set financially, you're stuck with your business.

All my life I've been cursed with love-hate relationships. I used to love the tree business one minute and be ready to torch everything the next. I've got a long, long way to go before I'm anywhere near where I want to be, but I can thank God for the best little employee a battered old Euc Man could ask for, and my wife, Patricia, for keeping me on the job long enough to get to the point that I could see things clearly enough to be able to write this column from my heart.

Personally, I see nothing wrong with treating your employees like a 2-year-old: Encourage their interest in their work, respond to their needs, train them and supervise them until you are sure that they know the things that can hurt them, be patient with their humanness and temper needed discipline with sincere love. I'll guarantee that not only will you have a happy toddler, but a better business.

Donald F. Blair, arborist, author and lecturer, owns and operates Sierra Moreno Mercantile in Big Pool, Maryland.
Z133 To Be Revised

By Brian Barnard

A revision of the tree care industry’s safety standard, ANSI Z133, is expected next fall, with specific changes in several areas. Since these changes may affect day-to-day field operations, tree companies should have a firm understanding of Z133 to ensure safe work and compliance with industry standards.

ANSI Z133 was developed 20 years ago by your peers, and is updated every five years, as required by ANSI. The Occupational Safety and Health Administration recognizes ANSI Z133 for safety enforcement in tree care.

ANSI Z133 is not an engineering standard, nor is it a how-to manual. It presents, as its title indicates, safety requirements for tree care operations. Over the past five years, the members of the Z133 committee have worked to keep the standard up to date with changes in safety requirements for tools, equipment and day-to-day tree care operations.

The ANSI Z133 committee meets regularly in Washington, D.C.

The American National Standards Institute is a standards coordinating center. It does not draft standards, but offers guidelines to industry representatives in writing standards.

Changes to look for

The National Arborist Association, an ANSI Z133 committee member, currently expects many changes in the 1993 edition. Each was initiated by a practicing arborist who expressed concerns to a Z133 committee member. That committee member, in turn, brought the comment to the attention of the entire committee. The end result is a workable safety standard.

The following changes are endorsed by the National Arborist Association Safety Committee and are expected to be adopted by the Z133 committee.

**Prusik knot**—The prusik knot will be recognized by the committee as a valid means of delayed climbing. Both the prusik knot and prusik loop will be defined in the revised standard. The prusik loop is commonly seen in the aerial rescue portion of jamboree events. It is made with a loop of rope approximately six feet long, wrapped around the standing rope and attached to the climber’s “D” rings.

For adequate friction, the prusik loop rope should be about half the diameter of the standing rope. Nine-millimeter kernmantle (mountaineering) rope is commonly used. Three-strand climbing rope is also used for prusiking, but works best when climbing a doubled standing rope.

Mountaineering rope does not meet ANSI requirements for size and strength—1/2-inch (12 mm) in diameter with a nominal breaking strength of 5400 pounds and working strength of 540 pounds. Nine-millimeter kernmantle rope has a breaking strength of 4400 pounds, which equates to a working strength of 440 pounds. However, when doubled in a prusik loop, its strength is also doubled.

Permitting 9-millimeter rope for prusiking is important and expected because in an aerial rescue situation, only one end of the climber’s standing rope may reach the ground. Thus, a 1/2-inch three-strand prusik loop would be too large to provide adequate fall protection for the rescuer.

In addition to permitting the prusik loop, Z133 will mention the use of mechanical ascenders for climbing.

**Dates**—An ANSI standard commonly refers to other ANSI standards. For example, ANSI Z133 states that head protection shall conform with ANSI Z89.1-1986. All references to publication dates of other standards will remain. The significance is that updates of the 11 ANSI standards referenced in Z133 cannot readily be monitored. The ANSI Z133 standard will reflect the requirements of those standards available at the time of the revision.

**Aerial rescue**—In emergencies, the importance of a rescuer’s safety cannot be overlooked. However, Z133 will ease safety requirements in emergency situations, allowing any practical method of rescuing a victim from a tree.

**Placards**—To look professional, many tree companies routinely paint equipment. Great idea. But to reinforce manufacturers’ safety instructions, Z133 will specify that all placards and warnings must be maintained on equipment. Does your chipper currently have proper warning signs for safe use? Call the manufacturer for replacement stickers.

**Instruction**—When you purchase a piece of equipment, the manufacturer advises you to review the safety instructions with the user. Z133 will now require employers to make sure manufacturer’s instructions are available to users of equipment. The person in the field is the one who needs safety information.

**Cranes**—Using cranes for large or difficult tree removal is a long-standing practice. So is riding the load line. Although
practical, riding the load line is prohibited in the 1988 Z133 standard unless the climber is independently tied in to the boom. The 1993 edition will permit riding a load line as long as the crane is not lifting a load. The climber must wear an approved rope or lanyard attached to the load line. Independently attaching oneself to the boom to ride a crane is still permissible.

**Ropes and tools—**Z133-1988 states: “The safety line or climbing rope shall never be used for any purpose but climbing.” A climber who has raised a chain saw or other tool from the ground to his position in the tree by using his climbing rope is violating the standard. The 1993 version will ease this requirement, allowing tools only to be raised or lowered on a climbing line. Never use your climbing line to lower limbs!

**Tree inspection—**Trees have fallen with climbers tied in, resulting in severe injuries and death. The Z133 committee will strengthen the language about inspecting trees prior to climbing. Always check trees for rot or other related hazards. Keep in mind that a tree that is being removed must support not only your weight, but also the strain of removing and lowering limbs.

**Ballistic leg protection—**Chaps, ballistic leggings or similar leg protection was introduced to the industry several years ago. Many potentially severe chain saw cuts to the legs have been avoided with their use. The 1993 edition of Z133 will recommend the use of ballistic leg protection when using a chain saw on the ground for operations such as tree felling, limbing and bucking.

**Lifting—**Appendix A of Z133 offers seven general safety procedures for lifting. The 1993 edition also will encourage the use of a second worker to lift heavy items, and the use of back support belts.

**Rubber gloves—**Z133 has always pointed out that footwear with electric-resistant soles and lineman’s overshoes must not be considered as adequate protection against electric shock. The standard will add that rubber gloves with or without leather or other coverings shall not be considered as a measure of safety from electrical hazards.

Wearing rubber gloves could present a false sense of security for the climber working near electrical hazards. It is more appropriate to promote electrical hazard avoidance.

**Chain saws—**Under the current standard, chain saws weighing more than 15 pounds used in a tree must be supported by a separate line secured to the tree, not the climber. This will be increased to 25 pounds, allowing large saws to be attached to the climber’s belt with a lanyard.

**ANSI Z133 is not an engineering standard, nor is it a how-to manual. It presents safety requirements for tree care operations.**
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According to a report released by Burson-Marsteller/Washington, 75% of congressional offices polled said they pay a great deal of attention to letters from constituents. The report shows that elected officials pay far less attention to print media, broadcast media, position papers or issue advertisements.

“If a person sits down and takes the time to write a personal letter, you know that person represents between 20 and 300 (people) who feel the same way,” a congressional staff member said.

To write an effective letter to elected officials, be brief, be specific, be informed, and use personal experiences to illustrate your point. State your purpose in the first paragraph. If you are writing to express feelings about a specific piece of legislation, identify it correctly. Address only one issue in the letter, and keep the letter on one page.

Finally, thank them for taking time to review your position.

Excerpted from the Government Affairs Section of the American Society of Association Executives, Government Relations newsletter.

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TREE CARE INDUSTRY - NOVEMBER 1992
California Adopts Tree Pruning Bill

California Governor Pete Wilson recently signed into law an educational bill to promote proper tree pruning in the state. Under the new legislation, the California Department of Forestry and Fire Protection will furnish state agencies with copies of pruning standards published by the National Arborist Association, Western Chapter of the International Society of Arboriculture, and the California Department of Parks and Recreation.

According to results of a 1988 urban forestry survey, 5.9 million street trees are managed by California cities. The survey was prepared by Plant Science and Research for the California Department of Forestry and Fire Protection Urban Forestry Program. Despite the large number of trees under municipal care, many communities do not have tree ordinances specifying proper tree pruning.

Mark Porter, a commercial arborist in Riverside, spearheaded grass-roots efforts to get the legislation passed.

The NAA will provide free copies of its pruning standards to Jim Geiger, of the California Department of Forestry. Geiger will distribute standards to public agencies throughout the state.
By Dennis Beam III

The 1990s will be remembered as the decade of conservation and political correctness. New symbols are embossed on everything from milk cartons to laundry detergent to aid Americans in their recycling movement. As concerns about global warming and landfill overcrowding have escalated, the recycling movement has begun to draw attention to organic waste, and not just disposable man-made products. In many areas, landfills are closing the gates to yard waste, wood chips and leaves. Not only is burning these products not allowed, due to local law and political correctness, throwing them away is also prohibited. To compound this problem, tree care is becoming more fashionable due to environmental concerns and the attributes of healthy trees rather than removal and unchecked pruning.

Once considered a benign waste, wood chips soon entered the spotlight. The problem with chip disposal was to become more than a nuisance. It became an expensive byproduct of the tree care industry.

The current procedure for dealing with chip disposal is expensive and time-consuming. In areas with disposal problems, chips are stockpiled and then reground in a tub grinder or similar recycler. The result is a more marketable and environmentally friendly chip—but at a prohibitive cost. The process requires manpower to handle the chips several times, expensive equipment, increased fuel consumption and time. After processing, the chip was becoming an expensive byproduct and often still unmarketable due to cost and transportation.

In trying to find better ways to process the chip, it soon became apparent that a one-step operation was needed. In order to reduce the “value” of the chips, ways to cut both manpower and equipment costs would have to be found.

In late 1988, John Eglin of Nelson Tree Service, Dayton, Ohio, began experimenting with combining a chipper and a grinder. Using an old Wook/Chuck, farm equipment and his free time, Eglin soon turned his farm into a chip research facility. I was soon enlisted to help in the project and the long road to a chipper/grinder was underway. To simplify development, off-the-shelf Wood/Chuck components were used whenever possible on the grinder head. Fred Nance of Exact Fabrication was also instrumental in the initial prototype as well as production.

The parameters of the design were simple: a machine that would chip wood, grind it to a marketable consistency, process small-diameter material, pulverize the leaves and needles, create uniform chip consistency, and be mobile enough to tow behind tree care equipment. After more than two years of trial and error, prototypes were ready to field test. In an effort to test the concept in a variety of venues as well as expose the concept to a variety of markets, Nelson purchased pre-production units and placed them in Phoenix and Detroit. Davey Tree also lent itself to pre-production testing in Ohio.

The data gained from the early units was instrumental in the final design. Wood/Chuck, convinced the unit was perfected, officially began production in September. The chipper was designated “Ecochip” due to its ecological and economical attributes.

The concept was simple but the fine-tuning of the components had taken almost three years. The final product is simply a 12-inch Wood/Chuck drum head coupled with a flail-type grinder head. The Wood/Chuck head is not modified from standard heads and operates exactly as it does on a regular chipper. The Wood/Chuck head is connected to the Ecochip
Wood/Chuck’s Ecochip, shown in center of page, combines chipping and grinding in one compact unit. Photo at top left shows the chipper drum; the grinding head is shown at top right. Output of the Ecochip is shown at far left of bottom photo, and compared with the output of a conventional drum chipper.
head by a short transition chute. This chute is instrumental in the operation of the unit and reflects a large portion of the research time spent on the chipper. The transition chute feeds the chips to the Ecochip head which regrounds chips and pulverizes leaves, needles and palm.

The design of the head produces a uniform chip without the use of screens. Mulch is then discharged out of the discharge chute and will completely fill a tree care truck. Both heads are driven by an 1120 powerband using the grinder shaft as the common pulley to minimize side load. Blowers from both heads propel the mulch as well as dry the chute. The components of the Ecochip head, except for the housing and blades, are standard Wood/Chuck parts, including the bearings.

The design is simple and proves to be user-friendly to those accustomed to drum chippers. From an operational standpoint, the chipper processes wood as fast as a standard drum chipper, but produces a high-quality mulch. As with other drum chippers, the Ecochip will handle wood up to six inches in diameter, but also does exceptionally well with small, leafy and even dead material. Operational costs are held to a minimum due to the absence of hydraulics.

The unit was designed to be durable, simple to operate and easy to maintain. All service areas are easily accessible. Both heads use the same non-greasable bearing, are driven by the same size belt and are easily adjusted or removed for service. The Ecochip comes with a torsion-type axle, electric brakes and safety breakaway switch. It meets all applicable Department of Transportation, Occupational Safety and Health Administration and ANSI requirements.

Reports from users
For Keith Pauling, tree trimming foreman for Arizona Public Service, the Ecochip chipper is a money saver. His trimming crews spent 600 hours driving to and from the dump between January and the end of May, which Pauling estimates cost about $40,000 in wages. Crews are now running two of the Wood/Chuck chippers and early indications are that crews will be able to cut their dumping in half.

Pauling reports that the public is more willing to accept the chips for use as mulch. Even palm fronds, which formerly created very stringy chips, make good mulch. The utility is looking into making mulch available at a central location.

Nelson Tree crews, working for Detroit Edison, also have been field testing the new chippers, with similar results. Crews are able to get twice as much on a load. "Our people love them," claims Herb Dotsen of Nelson Tree.

Are there any drawbacks with the new machine? Pauling feels it is a bit noisier. It uses a little more fuel and creates a little more dust than a conventional drum chipper. He feels, however, that the benefits of the Ecochip chipper outweigh these minor inconveniences.

Many attributes
The attributes of the Ecochip are many. It is an innovative concept based on proven components. It replaces the need to handle chips several times, therefore saving labor costs. It replaces expensive re-
In trying to find better ways to process the chip, it soon became apparent that a one-step operation was needed.

grinding operations, saving equipment and fuel costs. It is of a size which can be easily towed by most tree care vehicles and operated by personnel already trained in drum chipper operation. Not only will it save operation costs but trucking costs as well.

The chip dimensions allow more chipping between dumps and provide the operator with a desirable chip that can be left with the homeowner.

At best, the operator of an Ecochip has a marketable chip that can increase the profit line of the tree care or line clearing operations. At worst, the payload between dumps is greatly increased and the end product is the same as grinding operations at a fraction of the cost.

The Ecochip has proven itself in field studies and is showing that the need to conserve resources may be a profitable repercussion to the tree care and line clearing industry. As landscaping and other markets for chips become more numerous, so will the profits of those with a more desirable chip. The current environmental laws concerning waste are likely to become more stringent. The Ecochip offers a solution to the chip handling problem and does it with a simple, one-step drum chipper-based product.

Dennis Beam III is vice president of Operations at Wood/Chuck Chipper Corp., Shelby, N.C.

Peter Gerstenberger also contributed to this article.
Man has learned to distribute electrical power across hundreds of miles and to pump oil and gas in underground pipelines. Still, keeping rights-of-way clear is a serious and expensive problem. A growing number of major energy producers, therefore, have turned to a new, more cost-effective solution to right-of-way tree trimming—the Aerial Solution.

Aerial Solutions, Inc., a Louisiana-based company, is the outgrowth of years of research and development in aerial tree trimming. Joe Hartung and William Cox obtained the patent and perfected the design of the aerial power saw, which uses 10, 24-inch circular blades driven by a series of V-belts. It is powered by an enclosed two-stroke gasoline engine attached to the top of the lower cutting boom. The hinged upper boom is attached to a specially designed sling below the helicopter. A quick release safety hook allows the boom to be dropped in an emergency. Power to the saw is controlled from a throttle switch in the cockpit.

To take off, the pilot flies the arc of the boom, lifting the entire trimming unit with the cutting portion of the boom suspended 90 feet below.

Major power generating and pipeline corporations across the United States have used the Aerial Solutions alternative to tree trimming since 1985. The aerial power saw offers an immediate solution to the following classic ground trimming problems:

1. Inaccessibility due to terrain or a remote location;
2. Land owner problems, including damage to property from heavy equipment getting through the right-of-way;
3. Heavy equipment damage to the right-of-way itself; and,
4. Job completion time; side trimming is a slow and tedious process.

Advantages

While Aerial Solutions does not feel it will replace conventional tree trimming methods, the aerial power saw is hard to beat from a standpoint of time and money.

One clear advantage is that precise trimming begins at the top of the tree and continues to the bottom, providing total side trimming. Conventional mechanical tree trimming devices are restricted by their boom height, leaving a canopy on taller trees. Tree climbers selectively trim trees; this is both expensive and time-consuming.

Also, productivity is increased. The aerial power saw is trimming 90% of the time while running, unlike ground crews, who spend a lot of time relocating.

A third advantage is that the cost of side trimming with the aerial power saw is relatively easy to estimate, as many major companies have discovered. Aerial side trimming is charged by the hour when it is actually trimming or reaching a job. Aerial trimming averages 10 to 12 miles per week or better, trimming both sides of the right-of-way.

Limitations

It is important to put the capabilities of the aerial power saw into perspective. While this proven method of side trim-
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**Commonly Asked Questions**

Aerial Solutions has operated its innovative side trimming business since February 1985, and has logged thousands of accident-free hours. After thorough evaluation, the Federal Aviation Administration has certified the aerial power saw under a normal category swing-mode operation. This federal approval, as well as reasonable premiums for $10 million of insurance coverage, was earned only through safe operation of the aerial power saw.

Nonetheless, major clients like Chevron Pipe Line Company, Gulf States Utilities Company, Appalachian Power Company and others initially had many questions, as do most when introduced to the aerial power saw.

Some of the most commonly asked questions are as follows:

Q: How dangerous is the operation of the saw?
A: Both the FAA and the insurance industry constantly monitor Aerial Solution's operation. The company's track record indicates that inherent danger and exposure are manageable.

Q: How well can the saw be controlled?
A: The ability to control the saw safely and accurately is one of the major concerns of FAA certification. Proof of precision in controlling the saw is demonstrated by the pilot's routine ability to smoothly lower the cutting unit into its cradle at the landing area without endangering the ground person.

Q: Does it tear off limbs? What about cutting hardwood?
A: The saw cuts cleanly and rapidly, or will not cut at all. The stiffness of hardwood actually makes it easier to cut than pine in some instances. The unit cuts 8- to 10-inch hardwood with no problem. An occasional 12-inch limb can be trimmed by cutting it from both sides. An entire tree of 10- to 12-inch limbs is best cut using conventional methods.

Q: How do you determine the right-of-way?
A: From the air, the original tree line is relatively easy to spot. The pilot can use the power cross bars on utility lines to set an imaginary line. After the first cut, the crew checks with the inspector to be sure they are cutting on the correct line. With thousands of hours of trimming, there has not been a problem determining the edge of the right-of-way.

Q: Are tree limbs flying everywhere as you cut?
A: The aerial power saw cuts so rapidly and cleanly that the limbs rarely have a chance to break. Instead, they fall straight down, assisted by the blast from the rotors.

Q: Have you had to drop the saw yet?
A: In several years of operation, Aerial Solutions has had to drop the saw twice. Both times, problems were indicated with the helicopter, not the saw, and the emergency release did just what it was designed to do: It lost the saw and saved the helicopter.

For further information, contact Aerial Solutions, 4411 Chuck Yeager Avenue, Baton Rouge, LA 70807. Phone: 504-356-4481.
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Saving Your Back

Arborists perform physically demanding tasks, from lifting logs and dragging brush, to raking debris and running chain saws. Each can cause back injury if not done properly.

Industry safety experts estimate that the indirect costs of a back injury—lost time and productivity—are five times as expensive as the direct cost. In fact, back injury is the leading cause of lost time in the tree care industry, according to the safety experts.

Pulling, twisting, and slipping are the most common causes of back injuries. Lifting objects improperly can also hurt the back. Lifting with the back and not the legs, lifting from an awkward position, or trying to move material that is too large for one person can lead to injury and lost time.

Most back injuries, and all the discomfort and lost productivity that go with them, are preventable. Arborists can keep their backs healthy with exercise, by knowing how the back works, and by using simple lifting techniques.

The National Arborist Association produced its Back Injury Prevention Program to help prevent new and recurring injuries, and to reduce lost-time due to injury. The program’s objectives are two-fold: to provide continuous training for all employees to raise their awareness of how the back can be injured, and to establish specific steps employees can take to detect and eliminate conditions that could cause or contribute to back injury.

The program contains a training manual; a video program; two prevention posters—one on stretches and exercises and one on proper lifting techniques; two prevention truck decals—one on stretches and exercises and one on proper lifting techniques.


The program can be used for base training for all current employees; annual refresher training for all employees; indoctrination training for new hires; and remedial training for employees who injure their backs.

National Arborist Association member firms may receive one free program on request. Program components may be purchased individually or as a set. For more information on NAA’s Back Injury Prevention program, call 1-800-733-2622.
When you climb on our orange ropes, you’re recognized as a professional who’s serious about safety. The instant success of Braided Safety Blue High-Vee demonstrates that clearly identified climbing ropes promote safety in the tree. Now, New England Ropes introduces a high visibility version of our famous Safety Blue three-strand rope and, for those who prefer a 12-strand rope, our completely redesigned TreeLine with a new abrasion resistant finish and optional fleck pattern.

New England Ropes is committed to making the best climbing ropes possible. That’s why when your safety is on the line, New England Ropes comes through with flying colors.

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January 7-8
ISA/Illinois Chapter Meeting
Holiday Inn Conference Hotel
Decatur, Ill.
Contact: Mike Dirksen, 217-789-2250

January 14-15
Carolinna Shade Tree Workshop
Co-sponsored by the Carolina Arborist Committee and Southern Chapter ISA
Charlotte, N.C.
Contact: Don McSween, 704-336-4262

January 14-16
Mid-America Horticultural Trade Show
Hyatt Regency
Chicago, Ill.
Contact: Donn Sanford, 708-526-2010

January 17-19
Empire State Tree Conference
Holiday Inn
Suffern, N.Y.
Contact: 518-783-1322

January 27-29
Annual Conference and Trade Show
Wyoming Groundskeepers and Growers Association
Casper Events Center
Casper, Wy.
Contact: Bruce Potter, 307-637-7060;
Chuck Kostboth, 307-265-1870

February 9-13
NAA Annual Meeting
Don Cesar Resort Hotel
St. Petersburg, Fla.
Contact: NAA, 800-733-2622

Plastic Composites Corporation has produced more fiberglass booms and buckets than ANY other company. We have been the primary original equipment manufacturer of Hi-Ranger glass components over the last three decades. Now we are in a position where we can deal directly with the rebuilding and user industry for replacement parts and repairs to fit the Hi Ranger* and other aerial lifts.

When you buy from PCC, you get OEM quality at the best price available.

Please call to discuss your needs for glass or liners to fit Hi-Ranger* and other aerial lifts. We have the product, the price and the service team to meet your needs.
1986 Ford; V8; 5.2; 8,000 Mi.; w/NATIONAL 455 Crane; 8 Ton Cap.; 25' + 29' Jib = 94' Hook Height; Very Clean ................ $39,500

1988 Bucyrus Erie HYD. Crane 45C; 28 Ton Cap.; 88' Boom; 20' Jib; 106' Hook Height; Gas Up & Down Clean ................ $29,500

1984 Ford; V8; 5.2; w/PITMAN HL 960; 9 Ton Cap.; 60' Hook Height ................... $120,000

1984 Ford; V8; 5.2; w/PITMAN 4.65; 8 Ton Cap.; 65' Hook Height .................. $29,000

1978 Mack Tandem; 6.75 Diesel; 5+2 Spd.; w/PITMAN 6.5 Ton Crane; 41' Hook Height ........ $15,000

1980 Ford; V8; 5 Spd.; w/RO, 5 Ton Crane & Dump Body ............................... $7,000

1976 INT'L; V8; 5+2; w/1968 Bucyrus Erie 45; 10 Ton Cap.; 85' Boom; 20' Jib; 94' Hook Height ................ $29,500

1987 Ford; 7.8 Diesel; 5+2; w/RO, TC115/11 Ton Cap.; 65' Boom + 20' Jib + 88' Hook Height .......... $48,500

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1973 Ford L9000; CAT Diesel; Auto. HOLIDAY 3 Section Digger Derrick; 44' Hook Height .................. $9,000

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1990 Int'l. Model 4700; DTA860 Diesel; 5+2 Spd.; w/JLG 800BT 8 Ton Crane; 65' Boom + 20' Jib = 94' Hook Height $39,500

1984 CHEVROLET SUBURBAN; V8 Auto.; CD, w/FAIRMOUNT Rail Gear; (2) Crane Dumps w/FAIRMOUNT 2545 Rail Gear $13,000 Ea.

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1986 Olathe 864 Wood & Debris Chipper; 100 Hrs.; Cummins Turbo Diesel ............... $19,500

1982 Rototiller; John Deere 4 Cyl. Diesel ............................................ $13,500

1986 Olathe 864 Wood & Debris Chipper; 100 Hrs.; Cummins Turbo Diesel $13,500

1982 Rake Chipper; (2) New, 100 Hrs.; Used In Stock, Morbark 20-36 Chippers; 290's; Used Asplundh, Woodchuck, Etc.; (20) In Stock.

1968 Chevrolet; 5+2; w/1981 Int'l; V8; Auto.; LR50 ASPUNDH Bucket & Chip Body ........................ $29,500

1993 Chevrolet; 5+2; w/1993 Chevrolet; 5+2; w/338, w/FAIRMOUNT Rail Gear $13,000 Ea.

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1994 Chev. Suburban; V8 Auto.; CD, w/FAIRMOUNT Rail Gear; $9,500

1968 Ford: 5.2; w/National 455 Crane; 8 Ton Cap.; 65' Hook Height; Gas Up & Down Clean ................ $29,500

1988 Ford; V8; 5.2; w/NATIONAL 4-65; 8 Ton Cap.; 65' Hook Height .... $29,000

1983 Chevrolet; 5+2; w/1987 Ford; 5.2; w/R.O. (2) 1990 Int'l; JLG 1000BT: 10 Ton Cap.; 77' Boom + 20' Jib = 109' Hook Height $47,500 Ea.
Shindaiwa Assists Arborist Training

Shindaiwa, Incorporated, of Tualatin, Oregon, has donated chain saws for field training to the M.F. Blair Institute of Arboriculture. The Institute, headed by Donald Blair, sponsors training workshops throughout the United States on Rigging for Removal and other subjects.

Lee Richey, Shindaiwa’s Western sales manager, presented a new saw to Blair. Shindaiwa also supplied saws and financial support to the National Arborist Association for the production of chain saw training videos.

Shindaiwa manufactures gas and electric chain saws, line trimmers, brush cutters, hedge trimmers, water pumps, leaf blowers, cutoff saws and clearing saws.

Don Blair, left, accepts a new saw from Lee Richey, Shindaiwa’s Western sales manager.

Chemicals Reference Available


The T & OCR is probably the best single resource for chemical planning and hazardous communication training programs. Included in the Second Edition are labels and material safety data sheets for more than 315 chemical products, supplied by 23 manufacturers. Other features are six quick-reference color-coded indexes cross-referencing each product (Brand Name Index, Manufacturer Index, Product Category Index, Common Name Index, Plant & Site Use Index and Pest Use Index); a Hazardous Chemical Inventory Reporting Table; Department of Transportation shipping requirements; an expanded summary of regulations affecting the turf and ornamental professional; posting and notification requirements by state; a guide to state registrations of products; state Poison Control Centers; state regulatory officials; and a helpful application record-keeping chart.

Looking forward to seeing you at the NAA Annual Meeting and Conference
February 9-13, 1993
at the beautiful
Don Cesar Resort in sunny Florida!

Paul McFarland
President, NAA

10 GOOD REASONS TO ATTEND THE 1993 NAA ANNUAL MEETING & CONFERENCE:

1. Get a head start on achieving your 1993 Goals.
2. Network with your peers and experts in the industry.
3. Improve your marketing efforts.
4. Investigate the Zero Defects Program.
5. Review insurance needs.
6. Prepare for an OSHA inspection.
7. Listen to, learn from and meet Dr. Alex Shigo.
8. Get a fresh perspective on your business.
10. Enjoy the activities offered in beautiful St. Petersburg . . . and more!

For more information please call:

NATIONAL ARBORISTS ASSOCIATION
1-800-733-2622

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NAA's 1993 Annual Meeting And Conference Offers A Change

The National Arborist Association's Annual Meeting and Management Conference is different from any other arborist meeting you have ever attended. For example, the keynote speaker is Dr. Alex Shigo, a well-known authority on trees and tree systems. However, at NAA's Annual meeting, Al Shigo has promised not to talk about trees—at all.

Beginning with Shigo, this year's conference will be informative, exciting and enlightening. Scheduled for February 9-13, the meeting will be held at the Don Cesar Resort in St. Petersburg, Florida. The programs will focus on timely issues. The meeting format is designed to help all those in the tree care industry improve their business and stay informed.

Experts will present programs on insurance, pesticides, OSHA, marketing, zero-defects programs, and more. Conference attendees will have the opportunity to explore specific issues in informal sessions with the experts.

The beautiful location of this year's conference lends itself perfectly to networking with peers, broadening the scope of business relationships, renewing old acquaintances and meeting new friends.

For further information, contact the National Arborist Association, P.O. Box 1094, Amherst, New Hampshire 03031, or call 1-800-733-2622.

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Leonardi Manufacturing Co., Inc., introduces Tuff Teeth replacement teeth for stump grinders. Tuff Teeth are three-fourths of an inch thick to last longer than standard teeth. Surrounding Tuff Teeth in the photo above are Leonardi’s Tuff Teeth pockets, as well as the company’s round and square-tip standard teeth, standard pockets and bolts. For further information, contact Leonardi Manufacturing Co., Inc., 2728 Erie Drive, Weedsport, NY 13166. Phone: 600-537-2552, 315-834-6611. FAX: 315-834-9220.

LABB Systems/Software has just released version 2.0 of the new Trims Street Tree Inventory. The new software package is an IBM PC compatible tree management system for municipalities, colleges, universities, parks and industrial complexes. Trims Street Tree Inventory assists in planning and scheduling street tree maintenance, requesting bids and tracking tree history. For a free brochure and demo disk, contact LABB Systems/Software, 6018 East Osborn Road, Scottsdale, AZ 85251. Phone: 800-733-9710.

Safety Storage, Inc., announces the new FireShield (FS-Series) safety storage buildings for flammable and combustible liquids and hazardous materials. FS-Series hazmat storage buildings are the first all-welded, unitized 2-hour fire-rated steel buildings in the industry. They offer high strength, light weight, and economy while meeting federal, state and local regulations for fire-rated storage units. For further information, contact Safety Storage, Inc., 2301 Bert Drive, Hollister, CA 95023. Phone: 800-344-6539. FAX: 408-637-7405.

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Mid-Am offers:
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- Convenient Thursday through Saturday show schedule;
- Educational meetings, seminars and events sponsored by industry associations;
- Prime location in Chicago’s loop with reduced room rates and parking at the luxurious Hyatt Regency Chicago;
- Low-cost parking at Soldier Field with free shuttle bus to and from Mid-Am;
- Discounted rates for early registration;

For registration information, contact:
Mid-America Horticultural Trade Show, 1000 N. Rand Road, Suite 214, Wauconda, Illinois 60084.

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A new "maintenance" spike is available from the Lutz Corporation, for treating manganese, magnesium and potassium deficiencies of palms. The Lutz #30193 Palm Tree Maintenance Spikes are formulated to fertilize palms while protecting them from common nutrient deficiencies. Their nutrient release is slowed by the use of proprietary binders. Each Lutz spike provides exact measured amounts of nutrient so palms can be properly fertilized. For further information, contact the Lutz Corporation, 501 Ford St, Oregon, IL 61061. Phone 815-732-2383.

The H. L. Bouton Company, a leading manufacturer of protective eye wear for more than 50 years, introduces the 9500 USA to the line of 9500 Plastic Aviator safety spectacles. The 9500 USA offers classic aviator style and comfort in a lightweight red, white and blue multicolor plastic frame with a USA imprint. The 9500 series frames are also available in neon red, neon blue, neon green and traditional caramel and smoke colors. Replaceable polycarbonate lenses come in clear, grey, and four IR green shades. For more information, contact Jeffrey Sherman at 508-295-3300.

Rayco introduces the Hydra-Stumper T175, a land improvement and site preparation machine. The T175 features two self-contained, quick change heads which reduce the cost of stump removal and brush mowing. The stump cutter has a heavy duty hydrostatic motor that powers a 36-inch-diameter cutter. The cutter wheel's rock cutting percussion teeth provide longer service life. The cutter travels 112 inches across the stumps and reaches 48 inches above and 40 inches below ground. For more information, write to Rayco, 4255 Lincoln Way East, Wooster, OH 44691. Phone: 800-392-2687 in Ohio, 800-392-2686 outside Ohio.

The Fox Corporation, 16005 Delmar, Lowell, IN 46356, introduces new CEI 800 Series Cutter Teeth: Eliminate bending and breaking! Dependable in tough conditions! Last 3-5 times longer! No gauging! 5 years proven performance! Patented carbide design for longer edge life! To order, call 1-800-333-5234.

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Tree Care Industry reaches over 16,000 Arborists, so whether you're trying to sell equipment or find the right employee, your classified will get action! The cost is $45 per column inch with a one inch minimum. Ads must be paid for in advance. Call TCI at (603) 673-8952 for more information.
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Video programs from the National Arborist Association make it easier to train new employees and refresh the memories of experienced employees. All you have to do is select the subject and turn on the VCR. Order now and save 10%.

This month's feature video is:

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Every year you invest thousands in the maintenance of equipment and in the purchase of new tools. But even the most technologically advanced pruning equipment depends upon the skill and knowledge of its operator to function correctly.

Principles of Pruning covers the methods, equipment and reasons for pruning.

Pruning Practices and Standards covers the limits and criteria for arboricultural work. This tape reviews the four classes of pruning:

- Class I - Fine Pruning
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- Class III - Hazard Pruning
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HELP WANTED

We are a full service arboriculture firm with offices in the Midwest and the East Coast. With our continued expansion, we are seeking qualified arborists for production, plant health care and sales positions within our company. We consider safety, quality, production, and communication to be the foundations of proper tree care. If you believe the same and wish to make arboriculture a career, we would like to hear from you. Send your resume with salary history to Carol Nallen, c/o The Care of Trees, Inc., 2371 S. Foster Ave., Wheeling, IL 60090. Phone: 708-394-4220.


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Order Form

Please use this form to order Principles of Shade & Ornamental Tree Pruning and Pruning Standards for Shade Trees and/or The Tree Worker. Mail this form and payment to National Arborist Association, The Meeting Place Mall, Route 101, P.O. Box 1094, Amherst, NH 03031-1094.

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Hardware and software, by an arborist for the arborist. For more information about the industry's best-selling package, call or write Arbor Computer Systems, 117 West- on Road, Westport, CT 06880. Phone: 203-226-4335. Hardware and software, by an arborist for the arborist. For more information about the industry's best-selling package, call or write Arbor Computer Systems, 117 West-on Road, Westport, CT 06880. Phone: 203-226-4335.

Aerial bucket trucks. Hi-Ranger, As- plundh, Sky Worker—most major brands—40' to 95'. Also, brush chippers, stump grinders, tree spades, log loaders and Rayco stump cutters. Parts for aerial buckets. Allied Utility Equipment, Inc., W. 204 North 11509 Goldendale Road, Germantown, WI 53022. Phone: 414-255-6161.


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To learn more about this dynamic product, call for a free brochure and video tape. We are also willing to arrange a demonstration in your area.

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Classified rates: $45 per inch (1-inch minimum), payable in advance, due the 20th of the month two months prior to publication. Send ad and payment to: TCI, Advertising Department P.O. Box 1094 Amherst, NH 03031
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The industry's most popular climbing saw just got better. The new Poulan Pro S25DA gives you the same superior balance, power-to-weight ratio and 38cc performance that's made the S25 series the tree care industry standard. But this model also comes equipped with its own heavy-duty metal climbing ring—no more improvising or settling for substandard parts.

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<td>10 John Brown &amp; Sons, Co</td>
<td>47</td>
<td>40  Plastik Food Co., Inc.</td>
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<td>42</td>
<td>41  Plastic Composites Corp.</td>
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<td>42  Poulan/Weed Eater ....</td>
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<td>43  Professional Tree &amp; Turf Equipment</td>
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<td>14 Cummins Michigan, Inc.</td>
<td>45</td>
<td>44  Rapco Industries, Inc.</td>
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<td>15 The Doggett Corporation</td>
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<td>45  Rayco Manufacturing, Inc.</td>
<td>Inside Front Cover</td>
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<td>16 East Hill Manufacturing Corp.</td>
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<td>46  Roots, Inc. ..........</td>
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<td>23</td>
<td>47  Sabre Manufacturing, Inc.</td>
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<td>18 Fox Manufacturing, Inc.</td>
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<td>48  Schoof's Truck &amp; Body Equip. Co.</td>
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<td>19 GFX ..................</td>
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<td>20 Hanson &amp; Associates, Inc.</td>
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<td>50  Shindaiwa, Inc ....</td>
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<td>21 Homelite/Textron ....</td>
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<td>51  Source Technology Biologicals</td>
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<td>22 Independent Protection Co.</td>
<td>46</td>
<td>52  Southco Industries, Inc.</td>
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<td>23 Jameson Corp .......</td>
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<td>53  Stihl ..................</td>
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<td>24 Karl Kuenzlering, Inc.</td>
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<td>25 LABB Systems/Software</td>
<td>44</td>
<td>55  Teco, Inc ...........</td>
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<td>26 Leonardo Manufacturing Co.</td>
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<td>56  Wis-Com Total Power Corp.</td>
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<td>27 Lifetime Career Schools</td>
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<td>15</td>
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<td>28 J.J. Maugel Co. ....</td>
<td>21</td>
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<td>Back Cover</td>
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<td>29 Mid-Am Trade Show ...</td>
<td>41</td>
<td>59  Western Tree &amp; Landscape Supply</td>
<td>14</td>
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<tr>
<td>30 Morbark Sales Corp. ..</td>
<td>......</td>
<td>60  Westwood Industries ...</td>
<td>20</td>
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*Circle this number on Reader Service Card for more information on this advertiser.
MARK YOUR CALENDAR NOW!

TCI EXPO '93
November 18, 19 & 20, 1993
Cleveland Convention Center
Cleveland, Ohio

Please circle 54 on the Reader Service Card
What I couldn’t understand was that the bees weren’t bothering the other men. When I walked back to the yard, the bees began to buzz around my head again.

were all over the place. We stepped out of the truck to see what was going on.

The homeowner asked if we had started trimming the tree and upset the bees. I answered no, but the bees were landing all over us. Nobody seemed to pay them much attention, but then they started buzzing around my head.

Since it was summer, I didn’t have a hat on, and I was sporting my usual summer crew cut. I began to get nervous because of all the activity around my head.

I reached up and wiped over my head, and to my dismay there must have been 20 bees in my hand. Well, I couldn’t help but panic, so I took off—running and swatting at my head and face. I ended up running about 200 yards away, pulling my shirt over my head for protection.

What I couldn’t understand was that the bees weren’t bothering the other men. When I walked back to the yard, the bees began to buzz around my head again.

After about a half hour, they began to swarm on a limb in a different tree.

Later, a bee farmer came to collect the bees, and I told him what had happened. He said he had never heard of such a thing, but he thought that maybe the queen had flown over my head, leaving some of her scent on my stubble cut.

Well, we got the job done and I didn’t get stung. Bees won’t sting when they are swarming. At least that’s what the bee farmer said.
Disc or Drum? Now There's a Better Choice!

Morbark's New E-Z Chipper

Why Buy an E-Z?

Nearly two years of research and testing have been devoted to the development of Morbark's new E-Z Chippers. The result? The safest, most productive, most economical hand-fed brush chippers you can buy. In fact, this principle works so well, we're offering a full line of E-Z chippers from small drop feed units to large whole-tree chippers. Because the E-Z chippers are so superior in every way to conventional drum chippers and disc chippers, we are pleased to announce we will discontinue production of our own popular hand-fed, disc-style chippers. But don't just take our word for it. The only way to really appreciate these chippers is to see them run. We urge you to call today for a free video demonstration and for the name of your local Morbark dealer, who will be happy to arrange a live demonstration. Once you see an E-Z operate, we're convinced it will be your next chipper!

MORBARK
P.O. Box 1000 Winn, MI 48896 (800) 233-6065

Please circle 30 on the Reader Service Card
On Some Brush Chippers Distance To The Feed Rollers Is About The Length of Your Arm!

WARNING!

Due to recent accidents in Michigan (as well as New York, Florida and Chicago) involving non-Vermeer brush chippers, the following safety regulation has been adopted by the Michigan OSHA, and according to the NATIONAL ARBORIST ASSOCIATION, this requirement may soon become effective across the entire U.S.

"The American National Standards Institute (ANSI) has determined that a distance of 85 inches shall be maintained from the blades out the hopper and down to the ground. Our position is that with the addition of infeed devices the hazard is now closer to the operator increasing the probability of serious injury or death which the recent accidents indicate. To reduce this probability we are requiring that 85 inches be the minimum distance from any hazard to the employees whether it is the blades or infeed mechanism with sides having sufficient height to prevent operating personnel from exposure to the hazard during normal operation."

Michigan Dept. of Labor, Bureau of Safety and Regulations, MI-OSHA

All Vermeer Brush Chippers meet or exceed the new MI-OSHA safety regulations.

1220 & 1250 BRUSH CHIPPERS

Longer feed tables on Vermeer 1220 and 1250 Brush Chippers give you roughly twice the distance as some competitive units. More protection for your operators. More leverage when you're feeding heavy limbs. Plus, you can fold it up and lock out the "uninvited" when the machine is idle.

Also, check out the feed rollers. Spring-loaded vertical rollers allow you to get an aggressive bite on material up to 12 inches in diameter and virtually eliminate the wrapping problems which commonly occur when handling viney material with older chipping machines.

See us at TCI Expo

Call today! (800) 829-0051 for details and the name of your Vermeer dealer.
**XTC BRAIDED TREE ROPE**

This rope was designed specifically for the demanding needs of the professional arborist. "XTC" is a tightly braided single braid consisting of 16 individual strands of DuPont's Dacron® polyester plied over "para-ep" olefin. A high twist core of polyester keeps the construction firm & round, providing an extra measure of safety. "XTC" is an excellent choice for both climbing line and bull rope due to its nonsnagging abrasion resistant construction and excellent energy absorption characteristics. "XTC" is made entirely without internal obstructions such as braider splices to insure smooth running.

<table>
<thead>
<tr>
<th>STRENGTHS &amp; WEIGHTS FOR XTC &amp; XTC-PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1/2</td>
</tr>
<tr>
<td>5/8</td>
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</table>

**XTC PLUS**

XTC Plus incorporates all of the characteristics of XTC, plus a higher degree of visibility in the tree. Fully half of the cover strands are bright red extrusion dyed polyester—meaning the color is permanent and will not fade or run with use.

**XTC-12**

XTC-12 is a "Nubbier" hollow braid offering less weight and yet excellent abrasion resistance. A 12-strand single braid of polyester/"para-ep" olefin, this all synthetic rope has no tendency to rot or mildew and is entirely useable even when wet. XTC-12 is identified by two adjacent yellow strands.

<table>
<thead>
<tr>
<th>STRENGTHS &amp; WEIGHTS FOR XTC-12</th>
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<tbody>
<tr>
<td>SIZE</td>
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<tr>
<td>------</td>
</tr>
<tr>
<td>1/2</td>
</tr>
<tr>
<td>5/8</td>
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<tr>
<td>3/4</td>
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</table>
TREE BRAINT

is a non rotating alternative to 3-strand rope. Easily coiled and thrown, this rope will not hockle. Brait offers unsurpassed energy absorption capability and is an excellent bull rope.

<table>
<thead>
<tr>
<th>SIZE</th>
<th>AVE. STRENGTH</th>
<th>MIN. STRENGTH</th>
<th>STRENGTH KNOTTED</th>
<th>WT/100FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>5,175</td>
<td>4,650</td>
<td>3,100</td>
<td>6.6</td>
</tr>
<tr>
<td>9/16</td>
<td>6,480</td>
<td>5,800</td>
<td>3,800</td>
<td>8.2</td>
</tr>
<tr>
<td>5/8</td>
<td>8,100</td>
<td>7,200</td>
<td>4,850</td>
<td>10.3</td>
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YALEX PRUNER LINES

Yalex is a single braid of 100% polyester with a special urethane maxijacket coating, which adds to the durability of the line. Since it has low stretch, it takes less energy to work the tool, resulting in less fatigue. Yalex resists sunlight and therefore won’t form whiskers or break down in the weather.

<table>
<thead>
<tr>
<th>Size</th>
<th>Strength/Lbs.</th>
<th>Weight/Lbs. Per 100 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>2500</td>
<td>2.0</td>
</tr>
<tr>
<td>5/16</td>
<td>4000</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Yalex is the choice for throwing lines and for use on extension ladders.

SAFETY LANYARD

It’s bright yellow and red colors make this Yalex Adjustable Safety Lanyard highly visible in the tree. Produced with extrusion-dyed polyester - the colors won’t wear off. Dual action snaphooks add a margin of safety yet are easy to operate. Available in a wide variety of adjustable lengths, our most popular sizes adjust 32" to 84" and 32" to 102".

<table>
<thead>
<tr>
<th>Size</th>
<th>Strength/Lbs.</th>
<th>Weight/Lbs. Per 100 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>12,500</td>
<td>8.5</td>
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</table>

Work Load 1,250
Please send me a short sample of the following:

☐ XTC  
Name ________________________________

☐ XTC-Plus  
Company ______________________________

☐ XTC-12  
Street _______________________________

☐ Yalex  
City, State ___________________________ ZIP ____________

☐ Polyplus  
Tel. # _________________________________

☐ Also include your industrial catalog

Clip and mail to Yale Cordage or Fax to 800-255-9253.