Annual Tool & Supply Directory Inside!

Arboriculture in the Rearview Mirror
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The Cost of Resting on One’s Laurels...

Last month, we celebrated nine years of TCI magazine’s success in adding value to the tree care industry. But that was last month. Congratulations and celebrations always have their place, and we should duly acknowledge accomplishments throughout our industry as they occur. However, it is easy to become somewhat complacent when the economy is good, our employees have stayed with us for a few years, and we have more business than we can service. In those cases, long hours can feel pretty good.

Just as the National Arborist Association (NAA) has celebrated the contributions of TCI in serving NAA members and the industry at large, we also stopped and asked ourselves “now what?” at our recent board of directors’ meeting. The leadership of your industry took a full stop to reexamine the work in strategic planning that had been done to date and made sure the assumptions are still valid a year later. With some reprioritizing and “tweaking,” NAA should be in a position to serve the industry better as we evolve together into your association of the 21st century. We’ll be starting task forces of members in the near future to work in several areas that will be crucial for our efforts on your behalf. The most important part about our work together was not the celebration of the past. Instead, we looked into the future and thought about the impacts that the economy, employment, good business and ethical practices, changing demographics, and the provision of resources for the industry would have on your ability to do business even more competently in the future.

Think about your businesses. When was the last time you stopped and took the time to plan for the future—to position yourselves through marketing, employee development, hiring practices, personal educational and business development goals, business plans, and advertising strategies—to be in a very different place in one year, two years, five years, or ten years from where you are now? Tomorrow’s success doesn’t just happen. It is created. It takes time and energy to plan for success.

Know, too, that success can bring its own challenges—labor shortages, new employee benefits or expectations, more advanced business management requirements in the office, changes in personal financial management, new equipment, larger facilities, media attention from the local Chamber of Commerce and reporters, and requests from the community to share your success in mentor programs or working with students.

Taking the time to plan for your businesses’ tomorrow will ensure that you end up where you really wanted to be. What is the cost of resting on one’s laurels? You have probably heard the expression, “If you want to keep on getting what you’re getting, keep on doing what you’re doing.” Today is not too late to start planning.
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JULY

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On the Cover

Modern equipment has replaced manual labor in many respects. Transplanting palms in 1930 (inset) was labor intensive for workers with M.F. Blair Tree Experts. Photo courtesy of Sierra Moreno Mercantile.

8 A Brief Look at a Young Profession
Well-known author and lecturer Don Blair traces the roots of the profession, while noting that—while methods and means may change—history does repeat itself.
When you need more power and less width for your stump-cutting applications, go with the right equipment — go with Vermeer.

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TCI's mission is to engage and enlighten readers with the latest industry news and information on regulations, standards, practices, safety, innovations, products and equipment. We strive to serve as the definitive resource for commercial, residential, municipal and utility arborists, as well as for others involved in the care and maintenance of trees. The official publication of the non-profit National Arborist Association, we vow to sustain the same uncompromising standards of excellence as our members in the field, who adhere to the highest professional practices worldwide.
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<td>Tree and Shrub Damage due to Pruning or Care</td>
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<td>Property</td>
<td>Damage from Striking Underground Cables, Pipes or Conduit</td>
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<td>Equipment Floaters</td>
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Trees have been important to mankind since the Garden of Eden. Amos was a sycamore fig pruner in the Old Testament.

The expression “by hook or by crook” relates to one of the earliest tree protection ordinances, under which peasants in England were restricted by the king from gathering any more wood than that which was laying on the ground or could be reached by hook or by (shepherd’s) crook.

Explorers to the New World discovered a land with forest wealth nearly beyond description. It was said a squirrel could walk from Plymouth Rock, Mass., to the Mississippi River without having to leave the forest canopy. Forested land provided abundant resources and material for shelter, fuel, food and clothing, but first, the land had to be cleared.

To colonials, trees were an obstacle and a resource. When the United States was still a colony, the Crown claimed vast tracts of oak forest for the Royal Naval shipyards. In the age of sail and steam, abundant forest resources were a strategic reserve, as important as oil and hydroelectric power are now.

During the American Civil War, one railroad alone, the Pennsylvania Central, burned 3.2 million cubic feet of firewood (25,000 cords) a day on military priority transportation!

As America began to heal the wounds of the Civil War, it also began to enjoy the prosperity that its emerging industrial power was beginning to create. As the frontier moved steadily westward, settlements in the East had long given way to thriving cities. Railroads stitched the nation together, bringing long-range mobility to the masses, and never-before-imagined wealth to many individuals.

By the time my father was born in 1893, America had tamed enough wilderness, built enough cities and made enough money to be ready to accept a stewardship role in caring for urban trees. Thus, the stage was set for the growth of the industry, profession, art and science that we recognize as arboriculture.

If you stop and think about it, 100 years is a remarkably short span of time in the big picture. My youngest son, Mat-
Millard Frank Blair fills a cavity in a tree on the Stanford University campus in 1928.

Thev Forrest Blair, was born in 1993. My father, Millard Frank Blair, was born in 1893. The profession of arboriculture is not that old, not if I have shaken hands with many of the men who founded their businesses alongside my father in the 1920s and 1930s. Having performed his first acts of arboriculture in 1911, my father wasn’t the first but he was certainly among the first. And the first modern arborists were most certainly still alive at that time.

This address isn’t intended to be a tribute to my father, but his life gives flesh and blood to the growth of arboriculture. My dad didn’t have to study the history of arboriculture. all he had to do was to remember it.

Where were we as a nation about 100 years ago?

I’d like to make some comparisons between the 1890s and 1990s.

<table>
<thead>
<tr>
<th></th>
<th>1890</th>
<th>1990</th>
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<tbody>
<tr>
<td>Population</td>
<td>62 million</td>
<td>250 million</td>
</tr>
<tr>
<td>Male life expectancy</td>
<td>46.3 years</td>
<td>71.8 years</td>
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<tr>
<td>Female life expectancy</td>
<td>48.3 years</td>
<td>78.8 years</td>
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<tr>
<td>Total federal budget</td>
<td>318 million</td>
<td>1.2 trillion</td>
</tr>
<tr>
<td>Defense budget</td>
<td>67 million</td>
<td>328 billion</td>
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<tr>
<td>% with right to vote</td>
<td>26.9</td>
<td>76.0</td>
</tr>
<tr>
<td>% who vote</td>
<td>74.7</td>
<td>55.2</td>
</tr>
<tr>
<td>GNP per capita</td>
<td>$280</td>
<td>$22,276</td>
</tr>
<tr>
<td>Infant mortality in Mass.</td>
<td>16.3</td>
<td>.07</td>
</tr>
<tr>
<td>Patents issued</td>
<td>25,322</td>
<td>61,819*</td>
</tr>
</tbody>
</table>

* The government once considered closing the Patent Office because they figured everything that could be invented had already been invented.

In 1898, we were still in the horse-and-buggy era. William McKinley was the last of the Civil War Veterans to be elected president. Unfortunately, he was the also the first in this century to be assassinated.

“Sourdoughs” were struggling up Chilkoot Pass on their way to the gold fields in the Yukon.

In Cuba, Teddy Roosevelt’s “Rough Riders” were securing a place for themselves in American myth, legend and immortality on San Juan Hill. When informed of the rout of the Spanish, Gen. Joe Wheeler, a former Confederate Cavalry officer who was delirious with malaria, is said to have yelled “We’ve got the Yankees on the run!”

Were things that different from today? Well, yes and no. Styles have changed. Technology, population and personal wealth have grown at rates beyond comprehension. Yet, the basic human animal—with all our needs, wants and desires—hasn’t changed a bit.

Each generation discovers the world for itself and has a tendency to reject the experiences of the preceding ones as dated, out of step with the times and irrelevant to the future.

Are things that different from the times and era that saw the birth of the profession of arboriculture?

World War II has been over for 54 years. The Civil War had been over for only 53 years when World War I ended in 1918.

There’s scandal in the White House today. Grover Cleveland fathered a child out of wedlock. The Republicans hoped
This spray rig, mounted on a 1922 International, featured a hand crank, gravity-flow gas tank and wooden-spoke wheels. Employees with M.F. Blair Tree Experts would fill the 200-gallon cedar tank and deliver 8 gallons per minute.

that disclosure would cost Cleveland the 1884 election. To friends who urged him to cover it up, he roared: “Whatever you say, tell the truth.” He won the election.

My generation got bogged down in an unpopular war in a far away place called Vietnam. After the Spanish American War, the United States got bogged down in a futile guerrilla war with Filipino Freedom Fighters who didn’t want the Spanish or the Americans in their country. The American Army kept saying that victory was just around the corner and that we only needed more troops to finish the job.

In 1900, John D. Rockefeller had more money, power and influence than Bill Gates has now and he was probably more controversial.

In 1900, we tried to keep out the Italians, Slavs and Asians. The country now worries about immigration and has tried to seal our borders from Hispanics.

Rather than focus on the negative aspects of our history, I marvel at the positive. I rejoice at what we did with guts and audacity and vision and hard work and intelligence. I do, however, take note of parallels, similarities and connections, because in so many ways the challenges we face now are challenges we have faced in the past.

Considering the fact that my dad was 10 years old when the first powered flight took place in 1903, I still marvel to think that he and I watched a man walk on the moon on television.

To this day, people who conduct seminars on planning and vision use President Kennedy’s goal to “place a man on the moon by the end of the decade” as an excellent example of a clear goal. If he had said something vague and uninspiring, such as “We will explore space,” we might still be sending monkeys into orbit. Clear goals are vital. Once a clear goal has been achieved, establish new ones that keep you reaching forward and keep you challenged.

As ancient and basic as trees are, without the technology of the 20th century, we’d still be looking at them as an obstacle and a resource instead of the foundation of our profession. I can imagine what arboriculture would be like without bucket trucks, chippers and chain saws, because I was there at the transition. I cannot imagine arboriculture without the telephone and at least a Model T salesman’s car or an International Speed Truck for hauling brush.

The growth of all service businesses was greatly aided by the telephone and the horseless carriage. Could you imagine doing all your bids by mail or telegram? Could you imagine horse-drawn tree equipment? Neither could arborists. In all my years of research, I’ve never seen a fleet of horse-drawn arborist wagons, but I have seen fleet pictures of Model T cars and trucks.

Interestingly though, in the earliest days of the profession, arborists would take streetcars to the estates they worked on, carrying their tools, including pole pruners, with them. At one time, brush could be burned, so disposal was easier than now. My father would work for weeks on large estates and live on the property. At the Holt Family Estate in Stockton, Calif., Millard and his helper slept on sacks of potatoes in the garden shed for several weeks while they pruned the oaks. Could you imagine asking a client now where your men could sleep? I know of a recent case where an arborist’s employees got him into a lot of trouble because his guys were caught by the client in her kitchen plucking and cooking her pet quail for lunch.

The Wright Brothers, the Five Cent Cigar, World War I, Prohibition, the Great Depression, World War II and even the 1950s and the 1960s all seem so long ago,
1990 Peterbilt 320 - 8.3 Cummins diesel auto with 5-ton Effer Knuckleboom crane. 18' dump body with high sides, liftgate. 
$39,500

1989 LT8000 Narrow Cab SteelHauler. Haul long logs from front to rear, 6 x 6 all-wheel drive, 7-8 diesel. Auto. 37k miles with 6.5 ton IMT Crane. 
$44,500.

1993 Ford F600, 5.9 diesel 5sp/2sp, 33 GVW. 49,000 miles with 14-ton RO Crane. Model 2863. 73' hook height. 
$51,900.

1984 GMC 8.2 Diesel, auto a/b w/52' Hi-Ranger Bucket. 
$24,900.

'96 GMC Topkick 3116 CAT 6sp, 33,000 GVW, air brakes with 17-ton Manitex. 118' Hook Height. Super Clean. 
$75,500

1988 International DT466. 5 sp/2 sp with 18-foot flat dump and Hiab crane. 
$27,500

1989 Mack R688ST Tandem 300 9 sp with 1997 Cormach 7-ton knuckle boom. 27′ side reach. 
$49,500. 10 other single & double knucklebooms in stock.

1985 Ford LT9000 Tandem L10-270 hp Cummins. 9 sp. 20′ bed w/9-ton CoPMA knuckleboom. 46′ side reach. 
$46,500


1985 General NTC 300 - 8 sp 20′ Steel Flatbed dump. 
$19,500

1988 GMC. 8.2 diesel; auto; chip body w/Aerial Lift of CT 50′ bucket. 
$37,500

89 Ford F800 Crew Cab; 7.8 Dsl; Auto; 35k miles; Dump Body 
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(4) Other Crew Cab Stakes in Stock!

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$19,500

1991 Ford F700 Crew Cab V8, 5sp 2sp, under CDL, 16′ Wood flatbed, liftgate. 
$19,500

1989 ud-3300. 6 cylinder diesel, 210 hp, 6 speed. A/B 33GVN, 18′ steel flatbed w/8-ton National knuckleboom, 29′ sidereach. 
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(30) 1 Ton Buckets: 28′ to 36′ In Stock Call For Price List

(10) Single Axle Knuckleboom Trucks - Ford, GMC, Internationals Call For List & Prices

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Please circle 42 on Reader Service Card
This Monterey pine was taken down at an estate by workers earning 19.5 cents per hour—top pay in 1918.

Labor Through Time

These are great times to be an arborist. We have plenty of work, the economy is good, there are new things to buy to take better care of trees (or take them down if all else fails). Things couldn’t be better—except for finding and keeping help.

Many tree care companies have more work than they can do with current staff. They lose long-term employees who leave to start their own business or work for someone else for more money.

Arboriculture is not unique. If you weren’t aware, there is a labor crunch that cuts across all facets, phases and aspects of American business that is only going to get worse and far more competitive. From what I understand, the problem is not unique to America.

A number of small companies are having trouble expanding and are seeing growth slow or stop because they can’t find good, new workers. If it continues, the small business job crunch could damage the U.S. economy because 98 percent of the nation’s employers have fewer than 100 employees and 40 percent of the Gross Domestic Product is generated by small firms.

Labor has always been tight and the survivors are those who found creative solutions.

In the first generation of the profession, few people owned automobiles and most would travel from town to town by train. I know that the F.A. Bartlett Tree Expert Company made a practice of establishing offices between the train station and the walk toward town, so theirs were the first “Help Wanted” signs seen by men looking for work.

As near as I can tell, the last time the job crunch hit arboriculture this hard was during World War II, when so many men entered the military. Even under those conditions, the survivors found a way.

Ross Farrens was placed in charge of clearing right-of-ways to bring power to defense plants. He used chain gangs, Boy Scouts, old men and women, who all viewed the back-breaking work as their patriotic contribution to the war effort.

The way I see it, we have a short-term problem and a long-term challenge.

In the short term, we have to realize that we are competing not with each other as much as with other businesses for our entry-level employees. Unfortunately, too many of us are competing with each other for the shrinking pool of qualified labor.

Do you operate a business that I would be willing to work for? Everywhere I go I can tell the climbers—they are the ones who look like they are suffering from combat fatigue. They’ve got the 1,000-yard stare and jump if they hear a chipper or chain saw in the distance. Too many of them tell me they have been working 60-hour weeks.

If this describes your employees, I can tell you why your best employees left. Too often, a company with two good climbers tries to put on three crews. My father established a policy that we carried right through to the end of our contracting days: Every crew had a minimum of two climbers.

If we only had two climbers, we only had one crew. Now that won’t work for everyone, but M.F. Blair Tree Experts had experienced climbers begging us for jobs because we only worked 36 to 40 hours a week, never scheduled heavy removals back-to-back, had the best of small tools, kept well-maintained rolling stock, and rented whatever specialty equipment we couldn’t afford to own or only needed occasionally.

In 65 years, we had two lost-time injuries; the workers recovered fully. In my experience, we almost always had a backlog. Even through the slowest times during the worst recession, I could get good work because we did good work, kept our word to our clients, and never ate any of their pets, quail or otherwise.

I won’t claim it was easy, that we never had employee problems, or that we didn’t have some jerks come and go. But we followed a management policy that reduced stress as much as possible and enabled those who worked for us to make a decent living. I’ve heard owners and foremen complaining for decades about the “idiots and cabbage heads” they work with or have to hire. Well, only an idiot would work for a firm that pays cash, doesn’t have insurance, doesn’t have brakes on the trucks, doesn’t enforce a drug and alcohol-free workplace and but they all happened within the lifetime of the birth of this profession. They all happened within the lifetime of many of the pioneers who built this profession, too.

There is a point to all of this nostalgia and reflection.

I’ve taken the time to slow you down enough to reflect upon how young we are
as a nation and as a profession. I knew we were young as a nation, but never really appreciated how young until I visited the Tower of London in 1997. There is a walled community that has been in continuous service for over 900 years. By the way, one of the Yeoman Warders (Beefeater) in service to the Queen is the father-in-law of a California arborist!

Where the trees benefitted from the telephone and the horseless carriage at the beginning of this century, they are benefitting from air travel, the Internet and multi-media today because these are the tools used by us to stitch the world together and make arboriculture an international profession.

Many people attend arborist meetings from all over the United States and the world. At any given TCI EXPO or ISA Annual Meeting, we will have arborists from Australia, the UK, Europe and South America. Would they attend if they had to take a steamship doesn’t really know that much about trees. We have to provide jobs and a work-environment that appeals to intelligent people.

As a profession we talk a lot about how important trees are to the environment. As a profession we talk an awful lot about how important arborists are to trees. As individuals, we cut each other’s throats on bids, steal each other’s men and don’t charge the consumer anywhere near what our so-called valuable services should be worth.

As Ed Irish once burst out at an NAA meeting 15 years ago, “What the hell are we, a bunch of down-the-road ham ’n eggers who don’t know our butts from page eight, or are we professionals?”

That question still begs an answer from too many.

Most every community has a top-notch professional or two, which is great, but it's not enough. In the short term, we still have to do what we have been trying to do for 100 years—get our acts together! The long-term challenge is even more interesting because it requires us to break free of this profession.

In the long term, it isn’t going to matter who makes the best saddles if there is no one to wear them. In the long term, the profession is not going to survive if everyone wants to sell tree equipment or consult and nobody wants to climb. In the long term, we won’t need training nearly as much as we will need to excel at recruiting. In the long term, we need to do a much better job of making the arborist as well known as the dentist or fireman.

These are some of the things I propose to achieve these goals:

Since I have become a father, my perspective has been broadened tremendously. My boys have every video ever made on firemen, trains, heavy construction, logging and police. You name the occupation, there is a tape. What an opportunity for a tape of an arborist climbing and pruning, or using chain saws, bucket trucks and chippers. Imagine an arborist skills video. If we can instill an interest and a desire in the mind of 5-year-olds—and maintain that interest at different levels as they grow—they’ll be ready and waiting for us as prospective employees or, at least, better informed consumers of arborist services.

Next to the tapes should be books on arboriculture starting with those for 1-2 year olds.

I’d like to see Tonka selling a chipper truck or bucket truck. I still have my 1950’s Tonka Highway Dept. trucks and my Nylint Lineman’s truck with an A-Frame boom.

I have dreamed of seeing a merit badge in arboriculture since I was in the Boy Scouts A LONG TIME AGO! To qualify for many merit badges, you have to go to a counselor to get signed off. What better way to get 11-15 year old boys and girls knowing where your business is than to be that counselor.

As the rural forest shrinks and the urban forest grows, tree climbing and arboriculture make an awful lot of sense to Scouting.

There are a few arborists smart enough to be civic-minded enough to belong to the Lions, Kiwanis, Rotary, Chamber of Commerce, Toastmaster, you name it. There should be more of you getting involved so that an arborist involved with his community becomes the norm and not a rarity.

Arbor Day is our holiday. How many get involved? As a child in elementary school, I participated in tree plantings organized by my father on behalf of the California Arborists Association. Thirty-five years later, those redwoods are still there and doing well. My wife and I have been doing programs at Mackenzie’s school. I did a little climbing, explained what an arborist was and did, my wife explained what she does as a plant pathologist, and we passed out seedlings. The teacher had each child write a thank you note. Some were absolutely precious.

I collect Civil War art prints. I would love to buy limited edition fine art prints with arborist themes. Imagine a series of prints depicting arboriculture through the decades, tying in recognizable landmarks and vintage equipment.

If you advertise for help in TCI, ISA or other green industry publications, you’re singing to the choir. I have never seen an ad relating to arboriculture in Guns and Ammo, Outdoor, Outside, Men’s Health, Backpacking, Fine Gardening, Rock Climbing ... Get the idea?

Perhaps people who love the outdoors would love to trade their Dilbert cubicle for the joy of arboriculture. I remember checking into the Boar’s Head Inn a few years ago. The fellow at registration asked me about the group I was with. To cut to the chase, he asked for and got a job with Van Yahres Tree Experts.

Just because someone has a job doesn’t mean that is the job they really want.

I’ll say it again, though, we as a profession and each one of you has to have a business that career-minded people with intelligence and character would want to be a part of and enjoy making a contribution to.

It doesn’t matter how big you are or small you are, especially how small. Many of the most significant contributions to arboriculture have been made by individuals.
and then a train? Some might from Europe, but it would take a really dedicated arborist with lots of time on his hands to make the trip from Australia if it weren't for the Boeing 747.

The world is getting ready for the year 2000, computers are conspiring to turn against us and the media is having a field day with retrospectives, introspectives and prognostications about the future.

Look in a *Popular Science* magazine from the 1920's to see the predictions of how life would be in the year 2000 (or even predictions from the 1960s). We should be flying around in personal anti-gravitational cars and living in colonies on Mars by now. I'm living in a stone house built in 1830.

What is arboriculture going to look like in the year 2000? That's easy, about the same as it does now. Many of you who pick up a bucket truck or stump grinder at this meeting will still be paying for it in the year 2000. A few Euc Men will still be using Fitchburg and Asplundh chippers built in the 1950's. I am proud to tell you that I will be driving a 1953 Dodge M-37 Power Wagon (U.S. Army ret.) myself.

What arboriculture is going to look like in 100 years is a far more challenging proposition. By then, we will be 200 years old as a profession—old enough to have outlived all of the direct descendants who knew the men or shook the hand of one who shook the hands of the men and women who built this profession.

How much in our society is the same as it was 200 years ago? Not much. What do you know about your very own relatives who lived 200 years ago? Most people know very little about their family histories beyond their grandparents.

The challenge that I put to arboriculture now is to set a series of clear goals that will enable us to break the curse of the third generation and grow and progress and prosper and evolve, so that
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<table>
<thead>
<tr>
<th>Dependability</th>
<th>Ease of Operation</th>
<th>Performance</th>
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<tbody>
<tr>
<td>• Little Down Time</td>
<td>• Easy to Feed</td>
<td>• Chip a large volume with limited trimming</td>
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<tr>
<td>• Easy to Maintain</td>
<td>• Easy to Tow</td>
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we are still important and still able to get the work done in the year 2098. Believe it or not, many of the children born this year will be alive in 2098.

These are interesting times to be an arborist. The last 100 years of research has taken us a long way toward realizing how little we really know about the trees we profess to care for. We are indeed fortunate to be able to claim Dr. Alex Shigo as one of ours. If he'd gone into medicine, he might have discovered a cure for baldness or mediocrity, but he's ours and he's done a lot toward making us understand that we've got to know our patient better before we try to treat it.

At the beginning, I shared with you a very brief glimpse of how things were 100 years ago. I have related what I think we need to be doing if we are going to continue to grow and thrive and prosper in an increasingly competitive labor market. Every once in a while I encounter a really profound thought, sometimes on a T-shirt, coffee mug and occasionally a bumper sticker. I can't remember where this came from. That doesn't matter, what counts is the message:

One Hundred Years From Now
... it will not matter what your bank account was,
the sort of house you lived in,
or the kind of car you drove ...

... but the world may be a better place because YOU were IMPORTANT
in the life of a CHILD.

Don Blair is an author, lecturer and owner of Sierra Moreno Mercantile, an arborist supply company in Big Pool, Md. This article was excerpted and adapted from the keynote presentation at TCI EXPO '98 in Baltimore, Md.
Low Price - When to say “When”

By: Jeff Lee, Branch Management, Riverside, CA • (909) 319-7003

Sponsored by The Bishop Company for the advancement of our industry.

The rising sun cutting through the over- cast skies lit the teeming activity at the local drive-in. That’s right, it was early Sunday morning, otherwise known as “Swap Meet.”

Deals. Bargains. Today and today ONLY. “Opportunities” galore and wow! A once-in-a-lifetime chance for Max Bunyan to stock up on all the vital climbing equipment he’d been lusting for - at rock bottom prices!

Max passed the station wagon with the tailpipe flopped open and made his way through the miscellaneous power tools, baby strollers, 5-gallon propane tanks and extension cords strewn out on the pavement, until he came upon the supplier he had been looking for. The cargo-style doors of the primer-painted van yawned invitingly, exposing the tempting treasures within its cavernous maw.

The burly man with a striking resemblance to Popeye’s pal, Brutus (right down to the stubby old cigar), waddled out to meet Max beneath a makeshift awning of blue tarp. “I ‘usta work utilities fer 30 years,” he said. “You can have the whole shootin’ match fer three-hundred clams.” Without hesitation, Max forked over the cash and headed back to his truck, bearing a load of “seasoned” rope and climbing equipment.

By now, I’m sure you’ve guessed that this story ends painfully with Max discovering the folly of shopping at Brutus’s “Bargain Basement.” Tree work, by its very nature, is inherently dangerous, but you can minimize that danger with a few simple precautions.

Unknown History. Max had no idea where this equipment and ropes came from, their application, or even how old they were. They could be as old as “Brutus’s” career in “utilities” and used for tasks other than climbing. Because of that ignorance, Max had no way of knowing if this equipment had been properly cared for, or if it had reached the end of its usable lifespan.

ANSI Z133.1 guidelines clearly define the requirements necessary for climbing equipment. Remember that these guidelines have been designed for YOUR safety, your CO-WORKERS’ safety, and the safety of INNOCENT PEOPLE close to your job site.

ONLY BUY FROM A REPUTABLE DEALER. This is the only way to be assured that the new equipment you have purchased has been properly stored and cared for, and better satisfies the intent of the ANSI standards. What’s more, an educated dealer can assist you in selecting the right rope or equipment to suit your particular application, and is looking to enhance a long-term partnership with you and your company. “Brutus” can’t do that!

Please circle 17 on Reader Service Card
Getting Off to the Right Start

By Wayne Outlaw

You have spent a great deal of time and effort to attract and hire a top level candidate for a key position. You know your organization’s ability to serve customers and produce profits is only as good as its people—its human capital. How do you maximize your chances that new climbers or crew leaders will become productive long-term employees?

Getting them off to the right start is key. You never get a second chance to make a first impression. You only get one chance to build the foundation for a successful and productive relationship between the new employee and your company.

It’s unrealistic to expect new employees to report to work and be instantly productive, no matter how great their potential or how good their experience. If you want new hires to become productive, successful, long-term employees, you have to first invest time to orient and train them.

The most successful organizations have a planned, systematic approach for integrating newly hired employees into their company. They make employees feel comfortable, help them develop their skills and knowledge, and help them understand their job and what’s expected of them. The following steps will help you get employees off to the right start.

Acclimation plan

Anything important should be planned out and done well, and getting a new employee off to a good start is no exception. Before the individual reports to work, you should review all information learned during the employment process and use it to develop an acclimation plan. Look over the employee’s strengths, weaknesses, areas of concern, and what motivates them—then consider how to manage them. Most of this information can be obtained from pre-employment evaluation instruments, interview and reference notes. If an employee has had a problem in the past in any particular area, you can plan how to help the employee overcome the difficulty in the new position. If, for example, he has experience in fine pruning but is somewhat weak in climbing, you can assign him to initially work with a person who is strong in that area.

Developing an acclimation plan for a new employee is a wise investment of time and energy because it not only reduces the potential for turnover, it also increases the probability the individual will be productive.

The first day

The first few hours and days set the stage for an employee’s attitude toward the job and your company. On the first day a brand-new employee might be anxious or apprehensive, as well as excited with high expectations. If you can help reduce the fear, calm the anxiety, and keep the excitement and level of expectations high, it will go a long way toward giving the employee a good start.

Initially, the objective is to put the employee at ease and develop pride and commitment to the company. You, or someone you designate, should again review the notes from the interview and pre-employment tools to learn about the employee as a person. Take the time to truly communicate with the new employee and build a bridge of understanding that will last through the entire period of employment.

Avoid the most common mistake of orientation and training: using employees (or even the employee leaving your company) to do this job. These people are unlikely to convey the enthusiasm for the company and the seriousness of doing the job right that you or a manager would. As a result, many new hires do not reach the owner’s expectations and soon go through the revolving door of employee turnover. Take time to give this important part of the hiring process your personal attention, at least on the first day.
Acclimation

Don't send a new hire right out into the field, even one with years of experience. Provide a new employee with a tour of the company. Introduce him to others, especially those he will be working with. Explain the duties of each person so everyone, including long-term employees, can understand how they fit into the organization. Explain the facility, locate the restrooms, break areas, equipment, and where things are located. Show him where the tools and equipment are kept.

Policies

Explain all personnel policies, including pay, benefits, sick days, overtime, etc. An employee is often given an employee handbook or benefit sheet and told to read it, but that's not enough. If you have an employee handbook, it is very important that a knowledgeable person answers questions and goes over the manual the first day.

Unwritten rules

Many things are never written down, but an employee still needs to know them in order to feel comfortable. An employee should be told the "unwritten" rules from the start. These may be simple things like how to store equipment, when and where to eat lunch, and care of their vehicle. The new employee will need to know the basic information of working at the company, such as how to handle time cards and keys. Make a list of these things and go over them, leaving the door open for questions in the days to follow.

Prepared work area

Ensure you have the new employee's work area and equipment ready with any necessary supplies or tools. Nothing makes a person feel more at home than to have new or well-maintained equipment waiting.

Expectations

Explain the levels of supervision in the organization and the schedule, especially if it involves activities such as training. Take time to sit down and review what is expected using the job requirements, candidate requirements and level of expectation that were developed during your hiring process.

Be sure to schedule the start day at a time when you have both time and energy to get the employee off to the right start. Realize the first day is busy and mentally tiring for both of you. You will never have another chance to make a positive first impression. Make it great!

Wayne Outlaw, author of SMART STAFFING, will be the keynote speaker at TCI EXPO '99 in Indianapolis, Ind., Nov. 4, 1999. He will give two talks, one on recruitment and the other on employee retention. He can be reached at (800) 347-9361 or www.smartstaffing.net.

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Corona Clipper announces the introduction of its new AL 8000 Series professional bypass loppers with StrataShear™ blade technology. The new series features anodized aluminum handles and are available in six models with cutting capacities of 1 inch, 1-1/2 inch and 2-1/2 inch and handle lengths of 20 inches, 25 inches, 26 inches and 32 inches. Corona's technology has continued to deliver reduced force-to-cut results after more than a year in the field under intense agricultural and landscape applications. Developed, refined and tested for several years, the blade provides a significant reduction in force-to-cut over competitors' similarly sized lopper models. The blade technology is a unique, patented formula combining a three-stage, permanently bonded metal alloy substrate and a fluoropolymer treatment which reduces friction over the life of the blade, even after long-term use and repeated sharpening. For more information, contact Corona at 800-847-7867 or visit their Web site at www.coronaclipper.com.

Tanaka has added a new pole saw to its line-up, which is powered by Tanaka's PureFire low emission two-stroke engine. The 26cc, 1.4 hp PureFire™ low-emission, two-stroke engine reduces emissions levels by 70 percent and increases fuel efficiency by 30 percent. In addition, the engine is certified to the California Air Resources Board’s (C.A.R.B.) Tier II/Year 2000 emissions standards. The TPS-270PF pole saw is 90 inches in total length, which allows operators to easily reach branches up to 14 feet tall. In addition, it features a 10-inch Oregon bar and chain combination with a self-contained oil reservoir and automatic oiler. The TPS270PF weighs just 12.3 pounds, and is covered by Tanaka's 1/2/5 warranty, which provides one-year coverage for professionals, two years for homeowners, and five years on the electronic ignition module. For more information, contact Tanaka America, 22461 72nd Avenue South, Kent, WA 98032. Phone: 253-395-3900; Fax: 253-395-1515. Contact: Mark Woodling; E-mail: mark@tanaka-ism.com; Web site: www.tanakapoweredequipment.com.
Wood-Mizer Products announces its first dual blade edger. A full 2,260 pounds, this industrial-strength machine is meant to last a lifetime. From the laser-cut steel throughout, to the stainless steel drive and blade shafts that inhibit pitting, rusting, and galling, Wood-Mizer's Twin Blade Edger is the perfect complement to any serious operation. Powered by your choice of a 25 hp Kohler engine or a 15 hp, 3-phase electric motor, the adjustable feed rate (50 or 70 FPM) and twin 14-inch carbide blade provide precision cutting. The board fence maintains board accuracy and reduces operator error. The main arbor allows quick blade changes, minimizing downtime. Extra-long 6-foot in-feed and 10-foot out-feed conveyors are standard. These industrial-grade conveyors have 2.5-inch rollers with 11 gauge walls and stainless steel "crash bars" on both the in- and out-feed ends. Six knurled, hardened-steel feed rollers provide positive board-feeding and square cuts that inexpensive belt conveyors can't match. More than 22,000 Wood-Mizer sawmills are operating in the United States, Canada, Europe, Africa and Asia. For more information contact Wood-Mizer Products, Inc., 8180 W. 10th Street, Indianapolis, IN 46214-2400. Phone: 800-553-0182; Web: http://www.woodmizer.com.

Excel has introduced a stump cutter to its front-mounted Hustler tractors. Excel Hustler manufactures a complete line of commercial riding rotary mowing equipment. All feature durability, productivity, ease of operation, and year-round attachments. The StumpCut'R, mounted on the zero-turn Hustler, can get in and out of position much faster than self-propelled, trailer-type, or walk-behind type cutters. Hustler powerplants come in 23, 28, 38, or 54 hp. The PTO-powered 15-inch diameter cutting wheel can cut stumps from 23 inches above to 14 inches below ground. An optional hydraulically-operated dozer blade can be used for chip removal, backfill and cleanup. For more information on this and other Excel products, contact Excel Industries, Inc., 200 South Ridge Road, P.O. Box 7000, Hesston, Kansas 67062. Phone: 800-395-4757 or 316-327-4911; Fax: (316) 327-3123; Web: http://www.excelhustler.com.

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Cummins Promotion

Cummins Michigan Inc. announces the promotion of Jim Osborne to Executive Vice President of Cummins Michigan Inc. Osborne spent the early part of his career in service at the Dearborn branch, and has been engaged in the DOEM and industrial engine business for the last 15 years.

In conjunction with this promotion, he will carry a joint title as President of Cummins Power Products (CPP), which is a separate division of Cummins Michigan Inc. is engaged in the design and assembly of Cummins and M11 power units.

IPM Newsletter

Branching Out, an IPM newsletter for trees and shrubs, may be just the ticket if your woody ornamentals pest management program could benefit from timely, reliable field reports and up-to-date management recommendations.

Faculty and staff in Cornell University's Department of Plant Pathology, in cooperation with Cornell Cooperative Extension educators throughout the state, gather information via on-site scouting at selected locations from Long Island to Rochester. They use that information, together with tips from professional and trade literature, to prepare articles.

Thus, each issue has an up-to-the-minute scouting report, regional feature articles, growing degree day reports and other items of interest to tree care professionals. The annual subscription rate is $35.

Check out their Web site to see a sample: http://branchingout.cornell.edu

PPEMA Members Reaffirm Technical Focus

The Members of the Portable Power Equipment Manufacturers Association (PPEMA) unanimously endorsed a renewed technical focus for the Association at PPEMA’s 1999 Annual Meeting on May 5-7, 1999 at Kiawah Island, S.C.

PPEMA Chairman Tom Bunch, President of Shindaiwa, Inc., proposed a long-term vision for the Association that builds on PPEMA’s experience and strengths in the technical and standards areas for handheld outdoor power equipment. The membership authorized a new General Engineering Committee within PPEMA to coordinate standards and regulatory activities at the international, national, state and local levels. In addition, a new professional staff person specifically dedicated to technical issues will be added to PPEMA’s Bethesda, Maryland staff.

USDA Tests Control Options for Asian Longhorned Beetle

The United States Department of Agriculture (USDA) considers the Asian longhorned beetle a serious threat, and is taking measures to keep this destructive pest from spreading to other parts of the country. Efforts to bring it under control include several long-term studies of potential treatment options and a U.S. government ban on all untreated wood packing materials from the beetle’s native China.

The beetle has caused the removal of more than 4,000 trees in the state of New York and 700 in Chicago, Ill. At this time, the only means to control this pest is to destroy the infested tree.

In 1997, USDA, Animal and Plant Health Inspection Service (APHIS) did preliminary research exploring the use of systemic treatments on the pest. Because only limited data was available, USDA did not consider the results conclusive. Instead, this preliminary research justified further studies on systemic and surface treatments.

Merit Insecticide, manufactured by Bayer Corporation Garden & Professional Care, is among several products currently being tested by USDA in studies in the United States and China. In June, scientists and other officials involved in the studies met with Bayer scientists to set guidelines on the best testing and procedures for using Merit in trees.

“'There was some indication that Merit and acephate (Orthene) were somewhat effective,' said Win McLane, Section Leader for USDA, APHIS Insecticide and Application Technology Section at Otis Air National Guard Base, Mass.

More substantial long-term studies began in 1998 and are currently ongoing. APHIS is not working alone on this research. The Forest Service and Agricultural Research Service of USDA, as well as universities, are also conducting studies. They hope to identify products that effectively control the spread of Asian longhorned beetles.
Running your business means walking a fine line. You have to eliminate insect pests, but you have to do it without harming beneficial insects, plants or your workers. The answer? Conserve® SC turf and ornamental insect control. Nothing's better at controlling tough insect pests. And since it's derived from a naturally occurring organism, Conserve also controls your worries about plant damage and beneficials. Conserve. It's not a synthetic. It's not a biological. It's business insurance.
As a result of a recent OSHA-wide initiative, companies who have 50 or more employees will likely receive an OSHA inspection this year.

According to OSHA Directive Number 99-3 (CPL 2) on Site Specific Targeting (SST), effective April 19, 1999, tree care employers with a lost work day injury, and an illness (LWDII) rate of 16 and above, will receive programmed inspections by Dec. 31, 1999. The SST plan targets establishments with “high” injury and illness rates in calendar year 1997, as determined by data collected in OSHA’s 1998 Data Initiative.

In other words, the inspection would be triggered by information your firm voluntarily supplied to OSHA in a 1998 survey. Approximately 80,000 establishments were surveyed in the 1998 data initiative.

To determine if your firm might be targeted, you can calculate your firm’s LWDII rate from your OSHA 200 form for 1997, although you should calculate the LWDII rate from the data provided to OSHA in the 1998 survey if possible, because this is the statistic that triggers investigation.

The LWDII is calculated based on \( \frac{N}{EH} \times 200,000 \), where \( N \) is the number of lost work day injuries and illnesses combined, \( EH \) is the total number of hours worked by all workers during the calendar year and 200,000 is the base for 100 full-time equivalent workers.

If an Area Office will complete its inspections of all establishments with LWDII rates above 16.0 before Dec. 31, it is supposed to estimate the number of additional programmed inspections it can conduct before that date. They can then start a second round of inspections using a supplemental inspection list randomly generated by the National Office from those establishments reporting an LWDII rate between 10.0 and 16.0.

If an establishment to be inspected under the SST plan currently has fewer than 50 workers, the inspection will still be conducted, provided that it has more than ten workers and its LWDII rate is greater than 10.0, or if records are not available.

Establishments that have received a comprehensive safety and health inspection after Jan 1, 1997 will be deleted from the inspection list. Similarly, employers who participate in selected voluntary compliance programs may be exempted from programmed inspections.

The inspection is to follow a fairly specific protocol, starting with a review of paperwork. A company’s LWDII rate for 1997, 1998 and 1999

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**NAA Joins Coalition**

The National Arborist Association recently joined the National Coalition on Ergonomics in an effort to stop the passage of an arbitrary and capricious OSHA Ergonomics Standard.

Organized by the U.S. Chamber of Commerce, the coalition represents more than 300 associations and businesses that want OSHA held accountable for promulgating a standard based on sound science.

OSHA’s draft Standard clearly ignores a Congressional-ally-authorized review of the scientific evidence by the National Academy of Sciences (see Washington in Review in June 1999 TCI, page 16). The review should be complete in 14 to 20 months.

The proposed OSHA standard would require the employer to pay for a medical assessment to determine whether an employee’s job caused a claimed “repetitive stress injury,” then to pay full wages and benefits for up to six months of recovery. The proposal invites fraud and guts the purpose of state workers’ compensation law, which is to provide an incentive to get employees back to work.

The coalition urges employers to write to their U.S. Senators and Congressmen, urging their support of legislation that would effectively block the Ergonomics Standard until the NAS study is complete. The bills are H.R. 987, “The Workplace Preservation Act,” introduced by Representative Roy Blunt (R-MO), and its companion measure in the Senate, S. 1070, “The Sensible Ergonomics Needs Scientific Evidence Act,” introduced by Senator Kit Bond (R-MO).
to date will be calculated. The LWDII rate for 1997 will be compared to the LWDII rate reported by the employer to the OSHA 1998 Data Initiative.

If the establishment’s recalculated rate is below 16.0, but the 1997 or 1998 LWDII rate is at or above 10.0, the inspection will proceed.

If the establishment’s recalculated rate using the establishment’s records is less than 10.0 for both years, OSHA will do a records audit and then recalculate the establishment’s LWDII rate. If the rate for both years is below 10.0, the inspection will proceed regardless of whether the establishment is in compliance. If the rate for both years is below 10.0, the inspection will proceed.

In the opening conference, the compliance officer will explain the purpose of the inspection, provide a copy of the complaint if applicable, and shall include employees unless the employer objects. The opening conference shall be kept as brief as possible and may be expedited through use of an opening conference handout. Conditions of the work site shall be noted upon arrival, as well as any changes which may occur during the opening conference.

Interview statements of employees or other individuals will be obtained whenever the compliance officer determines that such statements would be useful in adequately documenting an apparent violation.

At the conclusion of an inspection, the compliance officer will conduct a closing conference with the employer and the employee representatives, jointly or separately, as circumstances dictate. The compliance officer will describe the apparent violations found during the inspection and other pertinent issues as deemed necessary by the compliance officer.

A second closing conference may be held by telephone or in person to inform the employer and the employee representatives whether the establishment is in compliance.

Be prepared by being sure there is full documentation of, and compliance with, your company safety policy, training requirements and enforcement procedures.

Peter Gerstenberger is director of safety & education for the National Arborist Association.
Tree care companies around the country face the same challenge: how to educate employees, clients, potential clients and allied industry professionals in a systematic way. Autumn Tree Care Experts in Glenview, Ill., answered that challenge in an innovative way this spring.

One morning, rather than head immediately out to the field, more than 100 employees, landscapers, property managers and village foresters held the first in a series of annual informational seminars.

After relaxing over snacks, coffee and conversation, two of the Autumn Tree Care employees donned their acting hats during a laugh-filled introductory skit. It was a unique way of kicking off the seminar.

To stimulate brains at the beginning of the growing season, two experts spoke about diseases that are common in this area each year. Brian Hudelson, from the University of Wisconsin at Madison Department of Plant Pathology, and Nancy Pataky, director of the University of Illinois Plant Clinic, spoke about diseases affecting deciduous and coniferous trees. Each speaker informed Autumn employees of the environments most conducive to each disease, and reviewed their most prominent signs and symptoms.

Pat Kelsey from the Morton Arboretum spoke about some common problems affecting trees living in urban soils. He gave insights into the history of some of the current urban practices, why they have survived, and why trees react the way they do.

For example, many find it frustrating that today’s construction practices continue when they damage so many trees. Learning how modern construction has evolved gave a better understanding of the current relationship between tree care and construction.

The Autumn Tree Care staff created a booklet to supplement the lectures. It was filled with information and color pictures on each topic. These booklets will be great quick reference materials either in the field or in the office. Customers would even enjoy reading them to better understand the problems on their property.

This unique seminar was helpful for everyone (professional and nonprofessional) because of the useful, practical information. We encourage everyone to help organize and support professional continuing educational seminars like this one. As an experienced municipal forester was quoted “Excellent seminar with great speakers. Have more!”

Laura Smies is an arborist with Autumn Tree Care Experts, Inc.
Tree care is a craft that requires a great deal from the user as well as from the equipment. The 335XPT arborist saw is light and balanced, and features our exclusive ArborGrip, a textured handle with thumb and throttle finger supports to give you a stronger grip for better control. The powerful engine housed in a compact saw body ensures unbeatable power-to-weight ratio which makes it possible to cut bigger and larger branches in narrow and difficult positions. Husqvarna also offers a full line of specially designed safety gear, and we are proud to sponsor ArborMaster training programs. To find your nearest Husqvarna Power Retailer, just call 1-800-HUSKY 62. For information about ArborMaster Training, call 1-800-487-5958, ext. 8-4513.

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Use of chain saws in trees should only be done by professionals with specific training.

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Trading Up ...

... Can Lower Costs of Business

By J. Paul Lamarche

Introduction

There's no doubt that today's arborists are better equipped and more qualified than ever before. Better equipment has considerably opened up the market to greater productivity and higher profits. By the same token, the number of equipment companies offering leading technology has also expanded. While improved capacity in equipment is good news, it can also be confusing for the purchaser. A company owner may simply be overwhelmed by the choices of wood chippers and their wide range of capacity.

Most tree care business owners would probably say that they would have purchased the very best wood chipper available if money were no object, but like most of us today, they had to adjust their desires to the capacity of their bank accounts.

Trading up ... Is it for you?

The process of purchasing a chipper should be as logical as purchasing a chain saw. You owe it to your financial health to purchase the right piece of equipment—or the savings gained by purchasing the cheaper version will cost you in the long run in extra wages and downtime. Just as smart companies constantly seek out methods to improve productivity and thereby lower their costs of doing business, contractors must also be alert to cost-cutting methods.

The greatest expense facing the company owner is labor and employee downtime. These two costs alone can sometimes surge to 40 percent of every dollar of revenue. For this reason, it is critical that your employees have the most productive chipper possible.

For example, an employee can use a 12-inch chainsaw to cut a 24-inch diameter tree. Yes, the job will get done. But it will take four times longer to cut the tree and the life span of that chain saw may be just long enough to cut down that tree.

How do you calculate if trading up to a larger, more expensive chipper is for you? And what will it save you in costs? The decision to trade up is always up to the business owner. No one can tell you how to operate your tree care company. Perhaps this article can, however, give you enough mathematical information to help you zero in on the best buy for your circumstances.
Three Types of Chippers

Let's look at three different types and sizes of chippers. No two chippers are alike; each has something different to offer. We will examine their outstanding features to determine if trading up is in your best interests, and we will look at three different sizes using industry ratios. These may or may not be applicable to you, and there may be variances pertaining to chipping hardwood as opposed to softwood.

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<thead>
<tr>
<th>CHIPPER SIZE</th>
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<th>HP</th>
<th>COST</th>
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<td>6 inches</td>
<td>100 FPM</td>
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<tr>
<td>12 inches</td>
<td>100 FPM X 2 passes ***</td>
<td>80</td>
<td>$25,000**</td>
<td>15 YEARS</td>
</tr>
<tr>
<td>18 inches</td>
<td>100 FPM X 3 passes</td>
<td>80</td>
<td>$32,000**</td>
<td>15 YEARS</td>
</tr>
</tbody>
</table>

* Hand fed
** Requires tractor to feed chipper
*** Can pass twice as much material as the 6-inch chipper

What has to be determined?

We want to determine the cost per hour for each of these machines. Using the JPL Machine Cost Formula:

\[
\text{Cost per hour} = \frac{\text{Cost of machine}}{\frac{\text{Life-span of chipper}}{2} \times \text{hours of use per year}}
\]

Let's assume that each machine would have variable hours of use per year. If we traded up to a larger capacity machine, we would, in effect, be increasing productivity as we could accomplish more work in less time. However, it would be necessary to double or triple sales to have the equal number of hours of use per year to keep that larger chipper working at peak efficiency.

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Cost per hour of 6-inch chipper

Cost of machine

\[
\text{(Life-span of chipper divided by 2) x hours of usage} = \frac{12,500}{(15 \text{ yrs} / 2) \times 1200 \text{ hrs}}
\]

\[
= 9000
\]

\[
= $1.39 \text{ per hour}
\]

Cost per hour of 12-inch chipper

Cost of machine

\[
\text{(Life-span of chipper divided by 2) x hours of usage} = \frac{25,000 + 12,500 \text{ feed tractor}}{(15 \text{ years divided by 2}) \times 750 \text{ hours}}
\]

\[
= 5625
\]

\[
= $6.67
\]

* NOTE: Because we upgraded to a faster, more powerful machine, it was necessary to feed the chipper by tractor with an attached grapple. Due to the increased productivity, the hours of use will decrease dramatically, (note the difference from 1200 hours on the 6-inch chipper versus the 750 hours on the 12-inch chipper), provided net sales remain approximately the same.

Cost per hour of 18-inch chipper

Cost of machine

\[
\text{(Life-span of chipper divided by 2) x hours of usage} = \frac{32,000 + 12,500 \text{ feed tractor}}{(15 \text{ yrs. divided by 2}) \times 500 \text{ hours}}
\]

\[
= 3750
\]

\[
= $11.87
\]

** NOTE: The 18-inch chipper is almost three times as productive as the 6-inch chipper. Here again, with a more productive machine and without a corresponding increase in sales, we can expect to put fewer hours on this machine than the 6-inch chipper.

For many tree care company owners, this would be the end of the story, as it is obvious that the 6-inch chipper costs a lost less per hour. See Figure 1 below:

**FIGURE 1:**

Cost per hour of each chipper:
- 6-inch chipper costs $1.39 per hour
- 12-inch chipper costs $6.67 per hour
- 18-inch chipper costs $11.87 per hour

Operator and cost per employee hour

While the costs listed above reflect real expenses, the story is just getting interesting. To date, there are no chippers that can operate entirely by themselves. An operator is required to get the show on the road. Let’s assume that two workers are required to feed each chipper. While different crews may use very different methods for feeding their chippers, for the purposes of this article, I have allowed for two workers per machine.

We have established the cost of the machine per hour, but we have to factor in the cost per worker hour to arrive at the real cost of the chipper. For simplicity’s sake, let’s say that we would pay the same rate per employee hour regardless of whether the upgrade would be to a 12-inch chipper or 18-inch chipper.

Let’s assume you pay $10 per hour per employee to feed a 6-inch chipper, and it takes these two employees two hours to dispose of the trees and brush at a job site. In other words, the total cost to dispose of this debris with different chippers would be as follows. See Figures 2-4.

**Figure 2:**

Cost to dispose of debris with 6-inch chipper:
Two hours of 6-inch chipper machine time = 2 x $1.39 = $2.78
Plus: four worker hours @ $10 per hour = 4 x $10 = $40
Total Cost = $42.78

If we would upgrade to a 12-inch chipper, we would be able to perform twice the work, but another piece of equipment would be required to feed the chipper. The two-hour job performed by the 6-inch chipper will now take less than one hour, give or take a few minutes. See Figure 3.

**Figure 3:**

Cost to dispose of debris with 12-inch chipper:
One hour of 12-inch chipper machine time = 1 x $6.67 = $6.67
Plus: two worker hours @ $10.00 per hour = $20
Total Cost = $26.67

Now let’s examine the 18-inch chipper, which has the capacity to perform approximately three times the work of a 6-inch chipper. The two-hour job performed by the 6-inch chipper will now take less than 40 minutes, give or take a few minutes. See Figure 4.
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costs as they vary greatly, but you can insert them yourself within the cost of goods sold to arrive at final figures for your specific situation.

Therefore, costs of good sold are:
18-inch chipper: $21.25
12-inch chipper: $26.67
6-inch chipper: $42.78

Again, federal and state payroll taxes and downtime will inflate the per hour cost in each example accordingly. Overhead costs can vary greatly, too, depending on the size of the company. Generally, large companies have an average overhead of 25 percent and smaller companies average over 40 percent. We will use the 40 percent overhead in these examples as the vast majority of companies have overhead expenses ranging closer to that figure. We now have all the information required to use the JPL Estimating Formula to establish our Break Even Point (no desired profit), or how low we are prepared to price the job.

What to charge the customer using the 6-inch chipper:

Cost of Goods Sold

\[
\frac{(\text{Overhead \%} + \text{Desired Profit \%}) - 100\%}{\text{Cost of Goods Sold}}
\]

In the example of the 6-inch chipper:

\[
\frac{42.78}{(40\% + 0\%) - 100\%}
\]

= $42.78

60%

= $71.30 for the job

As discussed previously, to do the two-hour job with two workers using the 6-inch chipper, you would charge $71.30. This would pay your two workers $10 per hour for two hours each, it would also pay for the hourly charge of the 6-inch chipper and it would pay your 40 percent overhead expense. There would be no profit on this job, however.

What to charge the customer using the 12-inch chipper:

To calculate how much to charge the customer for the 12-inch chipper, insert the calculated charge per hour that was calculated previously ($26.67) and apply it to the formula:

Cost of Goods Sold

\[
\frac{(\text{Overhead \%} + \text{Desired Profit \%}) - 100\%}{\text{Cost of Goods Sold}}
\]

We have already calculated the important “cost of goods sold” figures (the cost of the machine per hour and the employee cost per hour), but two important and expensive elements are not yet included. Missing from costs calculations are payroll taxes, which vary greatly from state to state, and employee “downtime” which can rise as high as 25 percent, depending on the travel time involved with each job. It is beyond the scope of this article to examine these
$26.67

\[
\frac{(40\% + 0\%) - 100\%}{60\%}
\]

\[
= \frac{26.67}{60}\%
\]

\[
= \$44.45 \text{ for the job}
\]

It is interesting to note that, though the job is identical, you can now charge your customer $44.45, if you have the 12-inch chipper. The amount includes paying both workers $10 per hour, and they can complete this job in one hour instead of two. You can cover the cost per hour of the more expensive machine and the additional tractor with a much lower price. Remember, there is no profit added to this number.

**What to charge the customer using the 18-inch chipper:**

Finally, let’s use the use the JPL Estimating Formula to establish how low we are prepared to price the job with the 18-inch chipper.

\[
\text{Cost of Goods Sold} = \frac{\text{Overhead} \% + \text{Desired Profit} \%}{100\%}
\]

\[
= \frac{21.25}{(40\% + 0\%) - 100\%}
\]

\[
= \frac{21.25}{60\%}
\]

\[
= \$35.42
\]

So, if you had the 18-inch chipper, you could do the exact same job in 40 minutes, pay both workers, and cover the cost of the most expensive machine, as well as your overhead expense.

**Conclusion**

Please note that the examples given are best-case scenarios and do not include many costs, such as interest paid to finance these machines, employee downtime, and state or federal payroll taxes. However, all other costs related to the chipper, such as gas, insurance and maintenance, are included in overhead expenses.

The intention of the article was to provide you with some mathematical information to help you make smarter decisions. You can add your own personal information yourself and customize the formula to gain a different perspective on productivity.

J. Paul Lamarche is an industry specialist and provides estimating workshops for arborists. His next workshop will be in Toronto in August 1999. He is also author of “What the Market will ‘Bare’ “ an estimating manual for service industries. For more information, visit his website: http://www.geocities.com/SiliconValley/Port/1933. Contact him by e-mail at ladybug@npiec.on.ca, or by telephone at 905-386-7450.
No business succeeds in the long term without sound strategic positioning. This fact is easily demonstrated when one considers the keys to success of the most admired companies in the world.

“A comprehensive strategic plan should comprise no more than a few pages which can easily be read over a cup of coffee.”

Take Pick ’n Pay, for example, where customer focus and value for money reign supreme. Or Proctor & Gamble, which has built an empire by selling leading products and conducting aggressive marketing warfare against any potential market entrants.

On the other hand, where would Honda or Microsoft be today, had they not considered product innovation a critical component to their long-term success? Or how could the legendary Federal Express possibly have become a leading mail company without CEO Fred Smith’s commitment to 24-hour turnaround?

Deceptively simple at first sight, the strategies of the above companies stemmed from more than a flash of managerial brilliance. Had they not been carefully thought through and planned from their very inception, none of these organizations could possibly have reached their present heights.

For example, in order to implement their strategy of customer focus and value for money, Pick’n Pay has had to instigate relevant and comprehensive customer service and buying practices. Few senior managers, unfortunately, take the time to formulate corporate strategy carefully, resorting instead to fire fighting or the occasional flirtation with the latest management “flavor of the moment.”

The common excuse for this reactive, rather than proactive, approach is that strategizing is commonly perceived to be a lengthy and unproductive process.

I was called in recently by a major corporation to assist in fine tuning their corporate strategy. Lengthy environmental scanning had led to the compilation of three weighty volumes of strategic research, but when I asked the senior managers which of them had read these volumes in their entirety, not one member of the planning group raised a hand!

The overriding criteria for strategic planning are the following:
- Must be simple.
- Must be quick
- Must be sure that the plan leads to producing visible results within six to eight weeks.

Strategic positioning may be divided into five components:
1. Driving Force (the corporate philosophy)
2. Mission Statement (the internalized culture)
3. Strategic Theme (market perception)
4. Major Objectives (strategic business units)
5. Targeted Milestones (critical achievements)

Although it will take you at least a few hours to formulate the strategic objectives pertinent to your tree care company, the description below demonstrates how short and concise the end product should be.

1. Driving Force (corporate philosophy)

The driving force of the company expresses the underlying purpose motivating employees to pursue specific objectives. Briefer than the mission statement, it usually takes ten years for a driving force to go full cycle. Some examples:

“Make sure that a strategic plan produces visible results within six to eight weeks”
“Continuous excitement from start to finish.” - Steven Spielberg
“We have one ambition—to be the best.” - Lee Iacocca
“Conspicuous, superlative value.” - Dr. Peter Johnson

Values naturally differ from company to company. It is also important to review, and if necessary change, the driving force of a company every few years.

2. Mission Statement (internalized culture)

The mission statement of a company should be a truth told in advance. The mission statement defines the future direction of the organization—its efforts and activities in broad terms. Designed only for internal use, it should be superlative, lofty and goal-oriented. Remember nevertheless, to keep it short and no longer than one paragraph.

Don’t restrict your vision to present limitations. Think like Lee Iacocca, envisioning what could be possible five to ten years down the line.

An American bank phrased its mission statement as follows: “To clearly establish and maintain a positively recognized and respected reputation as the best, full-service financial institution providing the very highest caliber of market-oriented products and backed by the finest team of responsive service professionals available anywhere in the United States today.”

3. Strategic Theme (market perception)

The strategic theme of the company conveys the essence of its driving force and mission statement to the public. It is a verbal expression of a distinct, unique and visible market position, and is communicated to consumers in the form of a jingle, slogan or tag line, such as:

“*The Pepsi Generation.*”
“*It will be there in the morning.*”
“*It may cost a little, but it’s worth a lot.*”
“*We may be No. 2, but we try harder.*”

Strategic themes may not necessarily be 100 percent true, but they should always be believable. For example, when Avis coined their No. 2 slogan, they were actually No. 6, but the public still bought their runner-up line.

It is also important for visual material and messages to be in agreement. An outstanding example of visual and verbal congruency was IBM’s campaign titled “Simple answers to your questions about IBM PCs,” staged to compete against Apple’s “user friendly” advantage. This message was accompanied by a picture of a Charlie Chaplin figure shot against a stark white background, with an IBM PC placed on a table decorated by a vase with one rose. Like the verbal message, this visual represented simplicity.

Even nuisance tag lines ultimately work in the favor of marketers, because when it comes to buying, the consumer is always more comfortable with the devil he knows.

4. Major Objectives (strategic business units)

Major objectives should be both qualitative and quantitative and pertain to the major strategic business units in the organization, such as:

- Product
- Support service
- Marketing and sales
- Operations

In order to check whether your major objectives are working, you should ask yourself whether your objective is attainable, measurable and profitable.

An example of a sound marketing and sales objective would be reaching a specific dollar level by the end of say, the first, second and third years in business.

On the product side, a sample objective could be achieving a stipulated level of customer satisfaction on a designated index.

5. Targeted Milestones (continual achievements)

Targeted milestones relate to activities needed to create short-term momentum in the company within a period of no longer than the following three months. The advantage of setting these milestones is that they help you to do the right things at the right time and for the right reasons.

Dr. Peter Johnson is an internationally acclaimed expert on marketing strategy and strategic business planning. This article was adapted from a presentation at National Arborist Association’s Winter Management Conference in Cancun, Mexico.
Have you ever been asked to bid on a municipal, commercial, or even a residential job where the contract called for “all pruning to be done according to ANSI A300-1995 standards?” That’s it. That is all the information given! They didn’t provide any additional specifications, no pruning type called for, no pruning objective! No minimum branch size! You have no way of knowing what kind and amount of work is needed!

When you are asked to bid on a pruning job and there are no detailed pruning specifications other than vague inferences, how can you possibly know what the client wants done to the trees? The answer is, you cannot know. The client probably does not know what they want either.

This is why specifications are so vital to the future of our industry, for without them we cannot move our profession ahead. Without good specs, every arborist will be bidding on a different type and amount of pruning. Just like a builder would not even dream about bidding on construction of a home without a set of plans, why should you bid on a pruning job without a set of plans (i.e., specifications)?

Who can write pruning specifications?

The A300 standards require that specs be written by a pro-

Notice the stem on the left has been subordinated, or shortened, back to an existing lateral branch.
A fork without included bark (right) is stronger than one with included bark.

A professional possessing the technical competence to provide for, or supervise, the management of woody landscape plants. Many municipalities, residential associations, and other organizations have either a qualified person on staff, such as a municipal arborist, or they hire a consulting arborist to write the pruning specs.

Problems arise if the person writing the specification is not qualified and/or does not understand how to write pruning specifications developed from A300 standards. They may require that all pruning be done according to ANSI A300 standards and not provide the required pruning specifications, such as designating the pruning type. When this happens, tree care professionals need to educate the agency on the value of good pruning specifications.

Unfortunately, most contracts are put out for bid without proper specifications. When asked to bid on pruning jobs without adequate specs, you need to educate your potential client. Point out the value of well-written specs. The biggest advantage is that all bidders will know exactly what work is to be done, so all bids will be on the same amount and type of work. Without well-written specs, every firm will be bidding on a different job! This is the main reason bids come in with such a wide range of prices.

You, the tree care professional, can also write pruning specifications. Try writing work estimates/proposals with pruning specs developed from A300 standards. It will help give new clients a method to compare estimates and will help educate your current clients, aiding in client retention. After you try writing a few yourself, you will find that writing, reading, and understanding pruning specs is easier. With some practice, you can offer the service of writing pruning specs through your company and charge for it!

First, here's some help on the “educating” part. You need to communicate the following information to the agency writing the specs. Inform them that in order to write good pruning specifications developed from ANSI A300 standards, the contract needs to reference more than just the phrase, “prune according to A300 standards.”

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Properly written tree care specifications developed from ANSI A300-1995 Tree Pruning should include, at a bare minimum, the following information:

- a statement that says all work will be performed in accordance with ANSI A300.
- a statement with (a) clearly defined pruning objective(s),
- the type of pruning to be performed to meet (the) objective(s),
- size specifications of the minimum and/or maximum branch size to be removed.

In addition to the information given above, the specification writer needs to understand that ANSI A300 sets the standards for pruning practices that should be followed by anyone dealing with tree health. The specification writer might want to stipulate some or all of the following on the contract, since some bidders might not understand all the implications of the sentence, “prune according to ANSI A300 standards.”

In general, an arborist “pruning according to ANSI A300 standards”:

- should not climb a tree to be pruned with tree climbing spikes (climbers),
- should prefer to use thinning cuts instead of heading cuts,
- shall not cut off the branch collar (not make a flush cut),
- shall use sharp pruning tools so as to not leave jagged, rough, or torn bark around cuts,
- shall not top or lion’s-tail trees,
- should not remove more than 25 percent of the foliage of a single branch,
- should not remove more than 25 percent of the total tree foliage in a single year,
- should leave 50 percent of the foliage evenly distributed in the lower 66 percent of the crown,
- should not use equipment or practices that would damage bark or cambium beyond the scope of the work,
- shall not leave cut limbs in the crown of a tree upon completion of pruning, at times when the tree would be left unattended, or at the end of the work day,
- should not use wound paint.

You will note that American National Standards are written with requirements and recommendations. Any statement that contains the word “shall” is a requirement. You must adhere to the requirement to be working within the standard.

Any statement that contains the word “should” is a recommendation and is a proper work procedure that is strongly recommended by the ANSI A300 standards. If a work specification does not follow a “should” recommendation, the specification writer needs to justify the reason why the recommendation was not followed. It is a good idea to write that reason on the work spec to avoid confusion.

The following is a sample pruning specification, developed from A300 standards, for trees on a condominium site. The spec is only an example to be used as a model. Each job will require different specifications developed from the A300 standards depending on the tree’s age, size, health, location, amount

Before

After

Stem in upper left canopy has been shortened (drop-crotched) back to an existing lateral.

of structural problems, the budget, and other factors.

Use the following sample pruning specification developed from A300 to help educate your clients who write insufficient pruning specs. Also, with some minor wording changes, you can use this as an estimate/proposal on residential and other small jobs, where the customer doesn't offer written specs. This helps ensure that customers will have a good idea of what work is to be performed on the trees. They can also use your spec to compare to other tree care company estimates/proposals to see that your company offers more quality per dollar!

Sample pruning specification for medium-aged and mature trees in a condo complex

First, provide general, “boiler-plate” requirements and recommendations given in ANSI A300 standards. These are entered below as numbered paragraphs. This will establish a strong foundation for building your specific pruning specification.

Second, provide specific pruning requirements and recommendations for the work to be done. These are entered below as lettered paragraphs. They can include ANSI A300 standard recommendations and/or your own specifications based on the needs of the work.

Italics provide the reasons for some of the statements in the specification.

Pruning Specification for XYZ Condominium Complex’s Landscape Trees

All pruning will be performed according to ANSI A300 standards. The provisions of ANSI A300 include, but are not limited to:

1. Safety (per ANSI A300 section 4): Tree maintenance shall only be performed by qualified tree workers. Operations shall comply with all applicable OSHA, ANSI Z133.1, state, and local regulations.

   A. Specific safety and training requirements: If electrical hazards exist on this site, tree workers must meet the requirements of OSHA’s CFR 1910.269, Electrical Power Generation, Transmission and Distribution, safety and training requirements.

   [This will help “scare off” less professional tree care companies that do not provide proper employee training. You may also want to specify for training credentials, such as an ISA or a state arboriculture association certified arborist, National Arborist Association Electrical Hazards Awareness Program (E.H.A.P.), or university degree in arboriculture, to further increase the safety and professionalism of the work.]

   Here is a sample requirement statement for electrical hazards. “Only qualified line clearance tree trimmers or qualified line clearance tree trimmer trainees, per ANSI Z133.1, shall work within 10 feet of electrical conductors.
and/or an electrical hazard. Electrical hazards exist when a worker, a tool, or any conductive object is closer than 10 feet to an energized overhead conductor of 50kV or less. Consult ANSI Z133.1 Table 1 and 2 for a complete list of approach distances and nominal voltages.

2. General Instructions: All requirements and recommendations of ANSI A300 Section 5 shall be adhered to, in addition to specific, additional requirements as specified by this office. General requirements and recommendations of ANSI A300 Section 5 include but are not limited to:
- Tree inspection requirements
- Tool and equipment use
- Pruning cut technique
- Wound treatment restrictions

[This requires the tree care company to follow accepted pruning practices of the tree care industry.]

A. Specific, additional requirements:
1. Provide a brief description of the trees to be pruned so there can be no confusion. A map is suggested.
2. Identify those trees that have included bark in the crotches between codominant stems. Make a note of these on the site map. These trees will be evaluated separately for possible cabling. Cabling will be performed under a separate contract.
3. Identify limbs and trunks with vertical cracks. Make a note of these conditions on the site map.
4. No trees less than 12 inches trunk diameter shall be pruned.
5. All debris and equipment shall be removed from the site by the end of each work day.

3. Objectives: The following objectives shall be met upon completion of work.

Hazard Reduction Pruning per ANSI A300, to reduce the danger to specific targets such as property; pedestrians; and residents, caused by visibly defined hazards in a tree.

A. Specific objectives for hazard reduction pruning operations:
- Special attention shall be given to removing dead branches.
- Reduce the weight of branches or stems with included bark.

Maintenance Pruning per ANSI A300, to maintain or improve health and structure.

B. Specific objectives for maintenance pruning operations:
- Improve structure of trees with codominant stems by reducing the weight toward the ends of all but one codominant stem.
- Allow more light to reach the ground under the tree and to reduce damage from wind storms.

4. Pruning Types: The following pruning types shall be used to meet pruning objectives.

Crown cleaning: Crown cleaning shall consist of selective removal of one or more of the following items: dead, dying, diseased, weak branches and waterspouts from a tree's crown. Additional specifications given in 6.A.6.

Crown thinning: Crown thinning

Branches and stems are subordinated with thinning or drop-crotch cuts to allow the portion of the tree not cut—typically the trunk—to dominate the structure. Drop-crotch cuts are used to remove the upright portion of a branch or stem back to a more horizontal position, thus encouraging a less vigorous, horizontal growth from the cut stem or branch. This creates a type of hole in the canopy above the cut and allows more light to reach the branches that were previously shaded by the removed branch. This stimulates growth on the suppressed branches higher in the tree. Drop-crotch cuts were made at the arrows in the figure.
shall consist of selective removal branches to increase light penetration, air movement, and reduce weight. Additional specifications given in 6.A.6.

Crown reduction (crown shaping): Crown reduction reduces the top, sides, or individual limbs by the means of removal of the leader or longest portion of a limb to a lateral no less than one-third of the total diameter of the original limb, removing no more than 25 percent of the leaf surface. Additional specifications given in 6.A.6.

Crown restoration: Crown restoration pruning should improve the structure, form and appearance of trees that have been severely headed, vandalized, or storm damaged. Additional specifications are given in 6.A.5.

A. Pruning Size Specifications (the following size specifications shall be followed to meet the objectives):
- Live branches less than 1.5 inches diameter should not be removed.
- Dead branches greater than 1.5 inch diameter measured at the base of the branch shall be removed from the canopy of all trees.
- No branches greater than 8 inches diameter shall be removed from the tree without authorization from our office.
- No more than 20 percent of live foliage shall be removed from the tree unless performing Crown Restoration pruning.

B. Specific pruning specifications:
1) Climbing spurs shall not be used when climbing trees, except to climb a tree to be removed or to perform an aerial rescue of an injured worker.
2) Rope injury (to tree) from loading out heavy limbs should be avoided.
3) The definition of a “drop-crotch” cut shall be “the shortening of a branch or stem by cutting back to a lateral large enough to assume the terminal role” (“cutting of a parent branch back to a lateral large enough to assume the terminal role” per ANSI A300 thinning definition, see sidebar). The definition of thinning cut shall be “the removal of a lateral branch at its point of origin.”
4) Reducing weight to meet hazard reduction objectives. Main scaffold limbs with included bark shall be reduced by 33 percent by thinning branches 2 inches or greater at the end of the limbs and/or by removing the end of the limb using a drop-crotch cut.
5) Subordinating to meet maintenance objectives. If a tree less than 30 inches trunk diameter divides into two or more codominant leaders of about equal size in the bottom 66 percent of the tree, reduce the end weight of the weaker stem(s) by approximately 33 percent (Adjust this percentage depending on the size hole in the canopy that can be tolerated) using drop-crotch and thinning cuts on weaker stems. To accomplish this, thin lateral branches growing into the center and leave those that are growing outward. Do not prune the stem selected to become the strongest and most dominant leader. Avoid drop-crotch cuts on larger trees. (Note: On some trees, you may not be able to perform all of this because you cannot remove more than 20 percent of the foliage. Make a note of this on the site map).
6) Crown cleaning and thinning.
to meet maintenance objectives. If less than 20 percent of the foliage was removed on a mature tree following procedures 1 and 2 above, crown thin and crown clean the canopy. When crown thinning and cleaning, the foliage removed should be taken from the outer edge of the canopy, not from the interior. Interior, live branches shall be left on the tree. Do not remove water sprouts from the interior of the tree.

7) Crown Restoration. Include cold-damaged trees in the list of trees on which to perform a crown restoration. Remove or shorten all water sprouts except one to become the dominant stem at that point. You may remove up to 30 percent of the foliage when performing this work.

5. Additional Business Requirements:

[In general, government agencies cover this information in other areas of the contract and/or bidding process. You may want to include the following information for smaller commercial and residential estimates/proposals.]

A. Penalty clause

Provide a penalty clause for failure to meet specifications. Here is a sample clause: “Violation of these procedures and techniques could result in termination of your contract without payment.”

B. Areas of inclusion

States which landscape areas and/or trees the contracts cover. Consider providing a plan map.

C. Exclusions

Provide a brief description of the trees and large shrubs that are not included in the bid.

D. Insurance requirements

Although some state regulations may already provide a liability and/or workers’ compensation insurance requirement for businesses, it is a good idea to specify for some basic insurance coverages and/or bonding. Here is a sample statement, “The selected contractor shall be required to furnish a certificate of insurance to include liability, automobile, and workers’ compensation before commencing work.”

With these detailed pruning specifications, developed from ANSI A300 standards, all firms bidding on the “condo job” will be bidding for the same work. As you educate clients to require well-written pruning specifications, bids will be more competitive and closer to each other in price. These specs will also scare away the underqualified firms that should not be working on these trees anyway!

If you offer these specs as part of an estimate/proposal for residential and other smaller jobs, your clients will have criteria they can use to compare tree care companies and the work quality they offer.

ANSI A300 standards give you a strong foundation upon which you can develop your pruning specifications. The additional specifications you require allow you to adjust for the size and/or quality of work needed. Try writing specifications with A300 standards and watch the benefits grow!

You can learn more about writing pruning specifications at TCI EXPO ’99 in Indianapolis. Dr. Ed Gilman will be giving a seminar on “Developing Pruning Specifications using A300.”

Dr. Ed Gilman is on the faculty of the Environmental Horticulture Department at University of Florida. Robert Rouse is ANSI A300 secretary.

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Public Comments on ANSI Revision

During the last public comment period for the revision of ANSI A300-1995 Tree Pruning, the committee received comments on the types of pruning cuts described in the standard. The cut in question is the thinning cut as defined by A300. The definition includes the “removing of a lateral branch at its point of origin” and “cutting of a parent branch back to a lateral branch large enough to assume the terminal role” as a thinning cut.

Some tree experts prefer A300’s current definition. This definition results in two types of pruning cuts—the heading and thinning cut.

Other tree experts recommend that the number of pruning cuts should be three: heading; thinning; and drop-crotch (reduction) cuts. They note that A300’s current definition of thinning cut has two portions, “cutting of a parent branch back to a lateral large enough to assume the terminal role” and “removing a lateral branch at its point of origin.” They feel this really describes two different kinds of cuts. They recommend that the portion described as “cutting a parent branch back to a lateral large enough to assume the terminal role” should be defined as a different type of cut, termed a “drop-crotch,” or “reduction” cut.

These experts mainly disagree with the current definition in the A300 standards because later A300 standards state that “thinning cuts should be the preferred cut.” The experts feel this is confusing since they believe “cutting a parent branch back to a lateral large enough to assume the terminal role” should not be preferred to “removing a lateral branch at its point of origin.” The A300 committee will be addressing all the experts’ comments during the next meeting.

For this article, the coauthor, Dr. Ed Gilman prefers the term “drop-crotch,” that is why it is used throughout this article.
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TCI EXPO '99 is more than simply the largest arboricultural trade show under one roof. Yes, visitors will find an impressive and varied collection of tools, supplies and services on the trade show floor—but attendees will also have the opportunity to learn about proper tree care and the latest in business management practices. The Smart Manager Series of presentations showcases proven experts on specific, detailed facets of running a tree care business successfully. The Expert Practitioner Series features the latest information on caring for trees. Both categories are designed for instant application in the office and the field.

Expert Practitioner Series

♦ In Top Insect Pests & Control Strategies, Professor Cliff Sadof will focus on new strategies for scale control, as well as some of the new alternatives to foliar sprays and how they might fit into an arborist's program.
♦ Nationally known expert, Dr. Ed Gilman, moves Beyond Deadwooding to help you become more efficient at pruning. He will provide a method for evaluating trees and tree care. Review how trees work and how this impacts your pruning practices and bottom line. You will leave the seminar looking at trees in a new way, with new techniques to incorporate into your business.
♦ Paul Pecknold's personal list of the 10 best/10 worst shade and ornamental trees in the Midwest will highlight Top Diseases & Control Strategies. He'll cover anthracnose, apple scab, blister leaf of oak, verticillium wilt, aggressive canker diseases and more.
♦ John Ball, a former commercial arborist and researcher at South Dakota State University, will share preliminary research results in Cabling & Bracing/Applications for the Cobra System. He will discuss when and where the Cobra System can be used successfully, as well as informing the audience what questions he has and how they are being addressed.
♦ Dr. Donald Marx studied mycorrhizae and rhizobacteria during his career with the Forest Service. In Mycorrhizal Fungi & Other Microorganisms, he will demonstrate how trees and shrubs can become more resistant to the stresses in urban landscapes by the introduction of these beneficial microorganisms.
♦ If you are asked to bid on a pruning job and there are no specifications other than vague inferences, how can you possibly know what the client wants? This is why Developing Pruning Specifications Using A300 is so vital to the future of our industry. Dr. Ed Gilman will review the basics of good specifications and guide you through the process of developing them.

Don't Miss the Keynote Address!

No longer can we rely on traditional methods in today's tight and competitive labor market. Innovative and creative techniques must be sought out to attract quality employees. In Staffing: Key to Success Now and in the Coming Years, Wayne Outlaw will examine the cost of turnover, as well as approaches to solving the most perplexing staffing problems. He will assist owners and managers in discovering how to identify and hire top people. Learn the strategies that organizations, both in and out of the tree care industry, have used to ensure their organization is fully staffed with top people.

Smart Manager Series

♦ Keeping Your Employees has never been more important than in today's tight labor market. Noted author and management consultant, Wayne Outlaw, will present the strategies and techniques that work best to keep employees. This in-depth look will provide information on benefits, compensation, and other incentives required to stabilize and keep top employees.
♦ When you're dealing with accounting matters, you need to understand the language of accountants. Creditors, bankers, accountants, shareholders, but especially you, want financial information about your business. Unfortunately, that information can be encoded in accounting vocabulary and practices—the only way to get it is by understanding Accounting: Talking the Talk with Mary McVicker.
♦ Basic Office Computerization gives you the ability to organize and streamline work processes for your tree care business. Jack Mattingly, green industry consultant with 23 years of experience, will explore basic business applications for the PC using off-the-shelf software that can take your business to the next level.
♦ Although access to the Internet has become a necessity for today's businesses, the potential for its use as a business and client service tool is just beginning to be realized. If you aren't Using the Internet to Build Your Customer Base, you are missing the immediate opportunities provided by the Internet and its subsidiary applications to enhance customer service and increase employee efficiency. Speaker John Lloyd will show you how.
♦ Don't let the generation gap come between you and effective hiring and employee development. Generational Warfare & Employee Relations can be confusing, especially when you manage an age-diverse population. Listen to a dynamic presentation from John Curtis, a business consultant specializing in Organizational Assessment, Strategic Planning, and Human Skills Development.

For more information, see the complete TCI EXPO '99 program in the center of the August-October issues of TCI magazine or call the National Arborist Association at 800-733-2622.
Events & Seminars

July 1-3, 1999
American Association of Botanical Gardens and Arboreta
Annual Conference
British Columbia
Contact: Dorothy (610) 925-2500 ext. 11

July 13-15, 1999
VA Tech and VA Turfgrass Council
Turf and Landscape Field Days
Blacksburg, VA
Contact: David McKissack (540) 231-5897

July 15, 1999
PGMS-DC & NVNLA
Green Industry Professional Field Day
Evans Farm, McLean, VA
Contact: (703) 250-1368

July 23, 1999
Swarthmore College
Third Annual Conference on Woody Plants
Swarthmore, PA
Contact: (610) 388-1000

July 23 - 25, 1999
ALCA Masters in Management
Hilton Chicago O’Hare Airport
Chicago, IL
Contact: (703) 736-9666

August 1-4, 1999
International Society of Arboriculture
75th Annual Conference & Trade Show
Stamford, CT
Contact: Lisa Thompson at (217) 355-9411

August 1-15, 1999
1999 STIHL Timbersports Series
Dollywood
Pigeon Forge, TN
Contact: (800) 467-8445

August 18, 1999
1999 Michigan Turfgrass Field Day
Hancock Turfgrass Research Center
East Lansing, MI
Contact: Kay Patrick (517) 321-1660

August 27, 1999
California Arborists Assn.
Pruning Concepts Workshop
Santa Rosa, CA
Contact: (707) 254-8862

August 27-29, 1999
1999 STIHL Timbersports Series
Ducks Unlimited Outdoor Festival
Oshkosh, WI
Contact: (800) 467-8445

August 31-September 3, 1999
National Urban Forest Conference: Building Cities of Green
Seattle, WA
Contact: Cheryl Kollin (202) 955-4500

September 1 - 4, 1999
CalScape Expo '99
Seminars & Trade Show
Hotel Queen Mary
Long Beach, CA
Contact: (707) 462-2276

September 13-15, 1999
American Society of Landscape Architects
Annual Meeting & Expo
Boston, MA
Contact: (202) 216-2336

September 17, 1999
California Arborists Assn.
CPR/Aerial Rescue Workshop
San Mateo, CA
Contact: (707) 254-8862

September 20-22, 1999
Pacific Northwest Chapter - ISA
1999 Annual Conference
Contact: (503) 585-4285

September 24, 1999
California Arborists Assn.
Climbing Skills Workshop
Davis, CA

September 29 - October 2, 1999
ASCA 32nd Annual Conference
San Antonio, TX
Contact: (301) 947-0483

October 1, 1999
Washington Association of Landscape Professionals
Trade Show & Field Day
King County Fairgrounds
Enumclaw, WA
Contact: (800) 833-2186

November 4-6, 1999
TCI EXPO '99
Indiana Convention Center & RCA Dome
Indianapolis, Indiana
Contact: Carol Crossland (800) 733-2622

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Amherst, NH 03031-1094.
Fax: 603-672-2613;
E-mail: Garvin@natlarb.com TC
The Blight Fight Continues

By Deborah Logan

He rose into the tree using an ascender and the footlock technique. If this method became too tiring, he was prepared to use another ascender rigged to a step plate to create an inchworm-type system. Once in place, he affixed a figure-eight below his ascender and locked it off. This way, when his work was complete, he could descend without creating cambial damage from the friction of a rubbing rope in the crotch above.

Sean Gere, owner of Green Tree Care in Madison, Wisc., was the first climber contacted by the Wisconsin Department of Natural Resources (WDNR) for assistance in helping to preserve a unique stand of more than 2,500 American chestnut trees. Defying the blight that wiped out most of the chestnuts growing in the United States, this 160-acre stand survives in West Salem, Wisc. It is believed to be the largest stand of American chestnut left in the country, and is home to the state champion that, in 1983, measured 136 inches around the base, stood 76-feet high, and featured a 68-foot spread.

Sometime around 1885, Martin Hicks, a farmer settling in Wisconsin from the East, planted nine American chestnut seeds in hopes of establishing a fence row. Growing in well-drained soils like those of their native range, the nine seeds not only survived among the surrounding native species of shagbark hickory, paper birch, red oak, and white oak, but multiplied. A recent survey found 2,434 trees measuring more than two inches in diameter, with more than half of those measuring more than five inches in diameter. Still others were recorded between 36 and 50 inches in diameter.

The grove in Wisconsin may have escaped the blight that devastated the species elsewhere because it was planted so far away from the chestnut’s natural range. But wishful thinking evolved into strategic planning when four trees were identified with the deadly fungus in 1987.

Knowing that quick action to isolate and destroy the infected trees might save the stand, a crew from the WDNR, headed by Forest Pathologist Jane Cummings Carlson, wasted no time trying to eradicate the disease.

Since cutting down the trees and hauling them out could spread the spores, the crew first covered the infected trees with fire-fighting foam before cutting them down. It was believed that the thick foam would smother any fungal fruiting bodies and prevent the release of spores. Before the tree was cut, a bulldozer was used to carve a four-foot-deep trench. Then the cut tree was buried.

Even though further precautions were taken by covering the
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A History of Decline

The American chestnut once blanketed the country from southern Maine across the Midwest to Michigan, down through Indiana and Illinois, and south to Alabama and Mississippi, and eastward into the Appalachians.

In virgin forests throughout their range, mature chestnuts averaged up to five feet in diameter and up to 100 feet tall, with many measured at ten feet in diameter, and some bigger still. Loggers tell of loading entire railroad cars with boards cut from just one tree.

Straight-grained, lighter in weight than oak, and more easily worked, chestnut was as rot resistant as redwood. Because of its resistance to decay, industries sprang up throughout the southern Appalachians to use wood from the American chestnut for telegraph poles, railroad ties, and split-rail fences, while its straight-grained wood was ideal for building log cabins, furniture, and caskets.

The bark and wood were rich in tannic acid which provided tannins for use in the tanning of leather. In fact, more than half of the vegetable tannin used by the American leather industry at the turn of the century came from the American chestnut.

And, of course, we can’t forget about the infamous nut. As the year-end holidays approached, chestnuts by the railroad car-full were shipped all over the country for roasting on open fires, stuffing the golden brown turkeys, and used as the secret ingredient in grandma’s delicious pies.

The American chestnut was able to compete with other pioneer species and tolerate shade for many years as an understory species until an opening in the canopy of foliage gave it the light needed to rocket skyward. It was also known as a renewable resource - cut a tree for its many uses, and others would grow back from the roots.

Chestnut blight was first found in U.S. chestnut trees on the grounds of the New York Zoological Garden by Herman W. Merkel, a forester at the Bronx Zoo. It is believed that the fungus was introduced into the United States around 1904 from Asian chestnut trees that were imported as nursery stock. Merkle and W.A. Murrill, a mycologist on the staff of the New York Botanical Garden, identified the disease and gave it the name of Endothia parasitica.

The chestnut blight is a fungus that causes swollen or sunken orange-colored cankers on the limbs and trunks of the chestnut trees. The spores of the fungus enter into the tree by cracks and wounds in the bark. The fungus then spreads into the inner portion of the tree and girdles the tree. The leaves above the point of infection die, followed by the limbs. The cankers spread, encircle the stem, and kill the tree above the point of infection. The entire tree dies within two to ten years.

As the chestnut trees in the Bronx Zoo were killed back to the ground, the blight was beginning to spread. It spread northward into Connecticut and Massachusetts, and southward into New Jersey. Thereafter, it spread like wildfire through the eastern forests, and nearly wiped out the species within 40 years.
A 1995 analysis of the project indicated that only 30 percent of the cankers treated contained the hypovirulent fungus. At the same time, other trees were infected with the lethal fungus, and climbing trees with ladders proved to be very dangerous. Therefore, some changes were made in 1996. A new hypovirulent strain was introduced and a climber, Gere, was added to the team. A 1997 survey showed that 38 percent of the cankers inoculated contained the new fungus, and two more climbers, Lance Wallace, part-owner of Wallace Lawn and Tree Care in Milwaukee, Wisc., and Kevin Hamm, owner of Hamm’s ArborCare Inc. in Portage, Wisc., joined the project.

The new applesauce-like substance brewed in MacDonald’s lab could be the answer to controlling the disease. The mixture is a genetically engineered strain of the fungus responsible for chestnut blight. The hypovirulent strain contains a virus that renders it virtually harmless.

“If we can get the engineered strain to spread the virus more effectively, it should enable the virus to destabilize the fungus to the point where chestnut trees can survive, even though infected,” explains MacDonald.

Cryphonectria parasitica, the fungus that causes chestnut blight, enters a tree through a wound. This fungus grows in and around the bark until it surrounds the tree. Symptoms of chestnut blight are cankers on the bark and yellowing of the tree’s leaves as infected limbs die.

The fungus reproduces by creating asexual and sexual spores that are spread by insects, rain and wind. MacDonald is focusing research on this reproductive cycle of the fungus.

Forest pathologists have known for some time there are naturally occurring viruses that retard the growth of the fungus. These viruses have been found to control chestnut blight in forested areas.

“The fungus is weaker because of these virus infections,” MacDonald says, adding that the viruses are only infectious when the lethal and nonlethal strains fuse. Previous efforts to introduce virus-infected nonlethal strains of the fungus into forests where American chestnuts grow met with limited success, leading researchers to examine the compatibility between the lethal and nonlethal strains of the fungus.

Researchers have found a large number of virulent (lethal) strains. They have also found that the nonlethal strains transmitted the virus to some of the lethal strains’ asexual spores and none of their sexual spores. The latest research involves copying the DNA of the virus in the nonlethal strains of the fungus and adding it to the genetic makeup of the lethal strain.

Researchers at the University of Maryland Center for Agricultural Biotechnology have genetically engineered the virus-infected strains.
MacDonald and his team have already applied the engineered strains of the virus to infected chestnut sprouts in West Virginia and Connecticut.

The experiments have yielded impressive results. The virus-laden nonlethal strains have successfully transmitted the virus and permitted it to enter the sexual spores. With this technique, half of the sexual spores now contain the virus. This significantly improves the chances of spreading the nonlethal strains through the reproductive cycle.

In late May, Gere, Wallace and Hamm spent two rainy days sterilizing their boots, climbing American chestnuts, and sampling cankers with disinfected tools, to see if the hypovirus injected last year was present.

The trees climbed were not healthy. They had cankers that had been treated in previous years. This time, however, when the climbers used a bone marrow sample tool to test for the presence of the hypovirulent fungus, they noticed some of the cankers were beginning to callus over. They knew that was a good sign.

Unfortunately, during their two-day stint in the trees, all three climbers noticed the same thing—more trees had become infected. In fact, they found approximately 100 more trees with new cankers.

Ideally, the new cankers should have been inoculated immediately, but the climbers could not leave their businesses for more than two days. And so before leaving for home, climbers and researchers discussed how they might make improvements for next year, in hopes of saving more trees. They are pleased with the WDNR’s efforts to inoculate cankers, but are disappointed with how slowly the hypovirulent fungus is moving through the stand.

All involved recognize that many more infected trees will need to be treated with the hypovirulent fungus in the future. To accomplish this goal, they will be searching for sponsorship and more climbers.

This year, some companies recognized the importance of being involved and contributed to the effort. PMI-Petzl Distribution donated a gri-gri, Sherrill Arborist Supply donated a Big Shot ascending device and rope bags, Samson donated climbing lines, Buckingham donated specially designed saddles, Arborwear donated climbing pants, and ArborMaster Training has volunteered to locate more sponsors.

Years ago, Robert Frost shared his insight about the future of the American chestnut and wrote:

"Will the blight end the chestnut?  
The farmers rather guess not.  
It keeps smoldering at the roots  
And sending up new shoots  
Till another parasite  
Shall come to end the blight."

If he were alive today, I wonder if he might have added two more lines:

"With the help of sponsors and climbers  
The chestnuts will be survivors."

Deborah Logan is an arborist and freelance writer in Edgerton, Wisc. If you are interested in becoming a sponsor or in volunteering to climb, please contact Sean Gere by at 608-255-0663 or e-mail at Blockout18@aol.com.
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Twenty Minutes May Be All It Takes

By Bob Rouse

Twenty minutes every week, if put to the right use, can save a life, prevent an injury, avert property damage, reduce workers' compensation modifications, avoid an OSHA citation and increase crew productivity.

Seem simple? It is!

How? Institute a weekly tailgate safety program.

The tailgate concept of training has been successfully used by tree service firms for years. The process can be very easy to put in place using the following guidelines.

When do you do it?

Schedule a weekly tailgate safety program on payday. Every employee takes days off, but nobody misses payday. Have your crews come in early on payday for a tailgate meeting before checks are distributed.

Where do you hold it?

Tailgate meetings are easily held outdoors on sunny days or in the garage/warehouse during inclement weather. If you are operating crews out of a temporary location and no indoor facility is available, find a coffee shop and put some tables together. The cost of coffee and donuts is well worth the opportunity to stress safety.

Who conducts the program?

A foreman, supervisor, you or anyone else you may designate can conduct the meeting. Some companies assign crew members on a rotating basis to conduct weekly tailgate safety meetings. A properly prepared meeting with the necessary components isn't difficult for anyone to lead. The more people you involve in the process, the more likely you are to have crew members buy into the concept.

What are the component parts?

You need to establish an outline of subjects to cover. These topics can be standard safety issues, such as a review of safe climbing techniques or safe use of a chipper. Any recent incidents might be discussed. Focus on what occurred, and, more importantly, why. A critical review of a "near miss" is often a very effective safety training tool.

Regardless of the content, everyone present needs to sign a dated document that briefly summarizes the content of the session. (One sentence will do.) Documentation of training is an OSHA requirement. If you don't have records and there is an incident, the lack of documentation can be a valid basis for a citation. Also, if you can establish that an employee has been adequately trained, you can absolve yourself of liability by establishing that an incident was the result of willful employee negligence. To reinforce your position, you must keep records in employee files that you enforce compliance with the safety requirements discussed in your tailgate or other safety training programs. A simple copy of a note to an employee identifying a violation of a company safety practice and the need to comply would be sufficient. Notice of a more serious or continuing violation should include some form of reprimand or penalty.

Where do you find the subject matter?

There are several resources. Each paragraph of the ANSI Z133.1 Standard can be the specific tree care safety subject for a tailgate session. Your insurance carrier can help with material on general safety issues, including safe driving. Materials are available from the National Safety Council, as well as OSHA, on general safety issues. The National Arborist Association has a Tailgate Safety program tailored specifically for tree care available for purchase. For further information call 603-673-3311.
What is the NAA’s Tailgate Safety program all about?

The NAA’s program is divided into 60 sessions. Each is designed as a standalone tailgate safety meeting. Meetings focus on one job safety subject. Many are based on ANSI Z133.1 safety requirements for the tree care industry, some focus on OSHA requirements, and still others cover job safety issues of the ‘90s, such as workplace violence and safe driving. Trainers get a one- to two-page training instruction sheet giving valuable background information, safety requirements, and suggested safe work practices. Your employees get a handout outlining issues covered in the meeting. A test and answer key for each meeting is provided to test your employee’s knowledge and retention. The answer sheet can be placed in employee files for verification of training required by OSHA. If you have the old NAA Tailgate Safety program with 40 sessions, you can still purchase a 20 session upgrade while supplies last.

What about Spanish-speaking employees?

You are not released from your safety training obligations simply because an employee doesn’t speak English. The NAA has translated the Tailgate Safety program into Spanish to help you train Spanish-speaking employees.

How do you make a tailgate safety program effective?

Be consistent. Do it weekly. Lead by example. Give employees awards for safe practices, such as a year with no lost time to accidents or for a particular safety related incident.

How do you measure your success?

Success is measured as much by what doesn’t happen as it is by what does. If your accident frequency decreases, your program is a success. If the man from OSHA appears and gives you a clean bill of health, your program is a success. If your workers’ compensation modification is reduced, your program is a success. If potentially hazardous situations are effectively addressed, your program is a success.

Why go through this exercise?

Because when you stress safety, everybody wins!

Bob Rouse is the staff arborist and Secretary of the A300 Committee with the National Arborist Association.
The devastation wrought by the 300 plus mile-per-hour tornados in Oklahoma City, Okla., in early May 1999 was an eye-opener to the volunteers who traveled through the night to help with cleanup. After only three hours of sleep, they awoke to see the debris and ravaged terrain that only super cells of twisters can create.

Thirty-eight people lost their lives and almost 9,000 homes were destroyed by the deadly storms. The landscape had the look of a war zone and the people had a feeling of despair. Some mature red oaks had been violently snapped in two; others had been uprooted from the sandy Oklahoma soil. Even grass had been torn from the ground, leaving dirt fields where lawns once grew.

Seventy-three volunteers from Vermeer Manufacturing in Pella, Iowa, were eyewitnesses to the ruined properties in Newcastle and Bridge Creek, Okla. They had driven through the night to spend two solid days helping with the cleanup. They brought a brush chipper and a stump cutter with them, and a tub grinder was sent earlier in the week. The volunteers were organized by a disaster coordinator into groups of 15 and put to work in different areas. One group spent the first of two nine-hour days at a location where a farming and ranching family had their homes. The parents and three sons had built homes amid ten acres of beautiful red oak. Now, the homes and associated outbuildings were rubble. Dead trees were lying in silent testimony to the force that can only be delivered by a killer tornado.

The volunteers tore into the debris, felling snapped trees and cutting long limbs from tree trunks. The workers fed long limbs, brush and tree trunks into the BC2000 chipper. During their two-day session, the crew created over 140 tons of wood chips.

The Vermeer factory provided a TG-400AL to grind storm debris at this site most of the first day. The mulch output from the grinder was spread across the ground and used as erosion control. On the second day, the tub grinder was transported to several off-road sites to grind brush piles amassed by weary Oklahomans.

After the brush and logs had been cleared from a particular location, a SC505 stump cutter finished the job.

"We knew that we would be working in areas where there would be a lot of debris," notes Tony Gray, a factory group leader, so they brought a self-propelled model on tracks.

The stump cutter ground an astonishing 175 stumps in two days. Max De Jong, who is an environmental engineering parts manager at Vermeer, ran the stump cutter. "The red oak stumps were anywhere from one foot to two feet in diameter. The chain saw crews worked ahead of me, prepping the torn and snapped trees by cutting the stumps down to a manageable height."

The second day, De Jong worked a half mile away where a cattle buyer and his family had lost their home and a cattle barn. An area with very rough terrain, it had once been used as pasture land. The tornado had vacuumed the pasture grass up from its roots, leaving dirt behind. De Jong ground stumps for half a day. Later that morning he returned to the original work site where he ground another 30-40 stumps. He admits he was working so fast that he lost count.

"As soon as I was done with one, I went to the next. We had two days, and..."
I was trying to get as much done as possible," he explains.

What started out as an inter-office e-mail escalated into something much more.

"I expected a lot of people to be interested in the trip, but the response we got from employees was awesome," says Heather Butler, administrative assistant in Environmental Engineering. "The effort really showed that Vermeer is a family company. So many people got out and helped."

"Iowa's been helped a lot in times of tragedy," says Tony Gray, Environmental Division Plant Assembler for Vermeer. "So we just felt like we needed to help our neighbors in return."

Gray traveled to Oklahoma just after the storms, and was moved by the enormous need for help. He then rallied fellow workers in Vermeer's Environmental Division and approached upper management for support. Vermeer officials backed the trip and offered to send equipment and safety gear. They contracted a bus, and scheduled tetanus shots as a precautionary measure for each of the volunteers, who stayed in area churches during their mission.

"The people of Oklahoma were phenomenally grateful. They couldn't find the words to express their gratitude," relates Project Engineer Keith Roozeboom.

Vince Newendorp, Environmental Division Director, was instrumental in securing executive support. He stresses that the volunteers believe it was worth the 600-mile trip.

"The feeling from the people who went down to Oklahoma was that it was a great opportunity," says Newendorp. "Volunteers were overwhelmed with the devastation but really dug in and got a lot done in a short amount of time."

The mission of mercy carried out by the volunteers from Vermeer Manufacturing was duplicated by many others who responded to the needs of the Oklahomans. These volunteers were happy to help out in whatever way they could. It's in times like this that the true character and can-do spirit of Americans shine through.

Richard Yach is a technical writer in Des Moines, Iowa.
The billboard above Canal Street in New Orleans calls the Formosan termite the real “millennium bug.” Truly, for those of us living in Louisiana and suffering $300 million a year in residential damage, the Formosan termite grabs our attention. In April 1999, Bob Odom, Louisiana’s Commissioner of Agriculture, declared that 90 percent of the trees in New Orleans area were infested. More conservative estimates range from 5 percent to 25 percent. Regardless of the most accurate figure, arborists in our city report that the termite has become the main problem with our trees.

This was not always the case. Back in the 1970s and 1980s, we were only concerned with routine tree pruning and removal work, occasionally dealing with oak caterpillars or butt rot of hackberry. And we were always gearing up for the annual hurricane season. We would occasionally notice termites swarming toward the lights on a warm night in May—and we even dug out a basketball-sized colony from one tree after felling and dissection—but we never suspected what was to come.

While we blithely went about the business of arboriculture, however, government scientists were quietly drilling holes in park trees across the street from the Algiers Naval Station. They packed the trees with P.V.C. pipe to which mysterious plastic cylinders were attached. We puzzled over them while jogging by. These disconnected events were heralding to us that something new and terrible was going on with the trees.

Though Formosan termite’s devastating potential to our trees and homes has been known since the ’60s, in my opinion facts about this insect have been either ignored or suppressed by the U.S. Forest Service. As a result, research on Formosan termites has been done by state and local governments, as well as through private efforts. Arborists in the United States look to the U.S. Forest Service for leadership on reporting and studying of pests of trees. Work done by the service and in various universities in the United States have traditionally provided the scientific background for the practices in our industry. Even though the Formosan termite was introduced by the U.S. Navy to the New Orleans area immediately after WW II, only now is the U.S. Department of Agriculture setting up a Formosan Termite lab in New Orleans.

In this area, our understanding of termites comes from the native subterranean, *Reticulitermes flavipes*. Operating from nests in the ground, this insect connects to above-ground food sources with soil tubes. It is not considered a pest of trees, however, and residential damage can be defeated by soil barrier treatments. The Formosan termite, on the other hand, operates from much larger colonies. It attacks the root pan of trees from below, creating basketball to garbage-can sized carton nest in the
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Gallier Hall, near St. Charles and Poydras streets in New Orleans. Termites migrated from the trees in Lafayette Park under the street to the hall.

butt, then foraging from this site to nearby food sources in buildings and fences. Indeed, 25 percent of the 1100 trees that we have drill-treated were associated with residential damage nearby.

The connection between tree colonies and residential damage was proven in an elegant experiment conducted by the New Orleans Mosquito and Termite Control Board. Lafayette Square is a small park surrounded by tall buildings in downtown New Orleans. The park is a shady spot, dominated by Southern magnolias, sycamores and oak. On the west side of the park across St. Charles Avenue sits the historic Gallier Hall building. For years, pest control operators had been confounded by a recurring and persistent termite infestation of the building, which has caused more than a million dollars in damage to the structure. In a fascinating experiment, entomologists collected termites from tree colonies in the park, dyed them blue, and returned them to their nests. In a few weeks, dyed termites began to appear in Gallier Hall!

They concluded that the termites had tunnels running from nests in trees in the park under the pavement and streetcar tracks more than 100 feet into the center of the building. Also, the size of the tree colony could be estimated by counting the blue-dyed workers and figuring the total nest size by observing the proportion of blue dyed insects in the building. Entomologists came up with an astonishing estimated colony size of over 10 million.

Infested trees are usually diagnosed when typical soil or frass tubes are seen between root flares at ground level or higher on the trunk associated with cavities or V crotches. Sometimes, brown launch pads teeming with termites are present. When the tubes are broken, or disturbed, the termites may be seen.

The Formosan termite is distinguished by the presence of a high percentage of soldiers, which have a distinctive brown, teardrop-shaped head. They are very aggressive and will readily bite by sinking their long, curved mandibles into the skin and hanging from them. The bite is painless but very surprising.

Since 1990, we have found termites in about 60 species of trees, shrubs and vines. The top 10 in frequency of occurrence are:

- water oak
- bald cypress
- live oak
- Southern magnolia
- American elm
- nuttall oak
- pecan
- red maple
- laurel
- oak
- river birch

Very few trees show resistance or immunity to attacks by Formosan termites. At present, our short list of resistant trees includes:

- spruce
- pine
- Bradford pear
- Japanese plum
- China ball
- Oriental arborvitae
- hollies (some species)
- Japanese magnolia
- Chinese pistachio
- citrus
- persimmons

Bald cypress trees and other members of the Taxodiaceae family are particularly susceptible. Infestation of bald cypress can
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be distinguished by unique sap droplets on the lower bole. Re-infestation of treated trees is determined the same way. Also, termites in these trees will forage to the surface via the drill holes and can be seen around the silicone plugs remaining in the trunk. They also have a predilection for burrowing through the plastic foam material that we use.

Native termites usually swarm in March and April in our area, while huge swarms of Formosan termites occur from mid-May to July. Heavy swarming of alates toward lights (particularly blue fluorescent lights) at twilight indicates that Formosan colonies are nearby.

Until recently, there were no pesticides specifically labeled for the treatment of termites in living trees. Effectiveness requires a slow-acting, non-repellent poison that is non-phytotoxic to trees. At present, a few are on the market. The action of pesticides against tree termite colonies can be improved by adding surfactants or using foaming techniques. We have been experimenting with our own strain of an entomopathogenic fungus for the past two years.

There are also baiting systems for sale that can be effective against termite tree colonies, but they are much more costly. Of course, chemicals are expensive, too, and a typical dose for a tree can cost $50 and beyond.

When trees become reinfested, it usually happens within six months of the initial treatment.

Since 1990, we've tried 11 different combinations of chemicals and biologicals to control tree termite colonies. We have treated 640 trees with chemicals, achieving a success rate of 89 percent, while 416 trees were treated with biologicals, with a combined success rate of 92 percent. Biologicals are much cheaper and may be able to start a chain reaction of fulminating epizootic disease capable of killing all the termites that are in communication with the insects at the point of introduction.

The species of infested tree can determine colony development and success rate of treatment. The largest colonies can form in nuttall oaks, pumpkin ash and bald cypress. Termite colonies are relatively easy to eradicate in live oak, conifers (including ginkgo), Salicaceae and Magnoliaceae. Termite colonies in red oaks, pecan, sycamore, river birch and elm are harder to eradicate. Formosan termites can kill tulip and poplar outright by girdling them at the ground line or eating the inner bark higher up, creating large cankers. Termites on slash and loblolly pines infest lightning wounds or aggregate outside the bole of the trees between the root flares, feeding on the bark but only rarely penetrating these trees.

On some occasions, we have been able to abate nearby persistent residential infestations by eradicating termite tree colonies. As a result, we get many referrals for tree treatment from residential pest control operators.

In an interesting twist of government regulation, our early termite treatments in trees were challenged by an inspector from the Louisiana Dept. of Agriculture and Forestry on the grounds that our Ornamental and Turf Commercial license did not cover control of termites, which are considered structural pests covered by a Structural Pest Control license. We argued that the Formosan termite wasn't overly concerned with pesticide law and was both a structural and an ornamental pest capable of bridging the two domains. Therefore, we argued, when we treated trees and shrubs (including outside baiting) and stayed outside of the threshold of structures, we would be within the limits of our license. Time and practice have allowed our opinion to prevail.

In 1989, we treated a huge, 52-inchdbh nuttall oak for control of a Formosan termite colony. Drilling revealed a rind of wood only four inches thick supporting this monster tree. A few months later, Hurricane Andrew passed through the New Orleans area and the tree collapsed across four backyards. Luckily no one was injured and there was no significant
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property damage. We took a cue from this event and developed a special procedure for all drill-and-treat work in trees. As the drill cuts through the base of the tree in search of the cavity containing the carton nest, the thickness of the supporting wood is noted. This information is compared to the dbh measurement of the tree. When we are finished, the client receives a written analysis of the physical condition of the tree along with documentation of treatment on the invoice.

A rough picture (showing a bagel, donut or watermelon-rind geometry of the butt of the tree) can be drawn. Copies of this information are maintained in a permanent database. Drilling trees for control of Formosan termites reveals many hazardous conditions in trees that must be documented permanently in order to deflect liability arising from death, serious injury or severe property damage arising from the collapse of one of the trees we have treated. This database, including 1056 tree treatments over 10 years, provides fertile scientific information to analyze the phenomenon of termites affecting trees.

We have also discovered a small number of native termites colonizing living trees (maples, bald cypress, water oak, swamp myrtle, southern magnolia, ligustrum and pittosporum). In two cases, these colonies have been associated with residential infestation by the same species of termite.

Termite spread, while steady, has been relatively slow. Since the first infestations in the late 1940s, many of the infestation boundaries have remained somewhat stable over the years. Estimates by the Mosquito Control Board and the Faubourg Marigny Association place infestation rates at between 11 percent and 25 percent. Based on years of treating trees in metropolitan New Orleans, I would put the figure at only about 5 percent. Also, uniform high levels of infestation of trees over large areas is improbable. Nevertheless, even a low estimate of 5 percent of our tree cover is still more than 50,000 shade trees. Factoring in a 25 percent associated residential infestation rate, they are eating up 12,000 homes! This level already equals damage caused by a significant hurricane.

The lack of quarantine restrictions in this country allows infested creosote railroad ties, U.S. Naval equipment and personal belongings to move about freely in the United States. Our feeling is that the Formosan termite will be constrained from becoming a major forest pest by soil microbiology, but it will become a significant problem in structures and residential trees in the southern half of the United States.

Formosan termite infestations have been found in trees in San Antonio, Texas, including some of the bald cypress on the famous Riverwalk. The campground office at the Meeman-Shelby State Park near Memphis, Tenn., was infested to the point it had to be demolished. Anecdotal evidence places colonies in Lake Charles, La., Houston, Texas, Charleston, S.C., Tampa, Fla., and in pockets in California. It has been established in Hawaii for almost a century.

And the termite is spreading to other parts of the world. Infested trees have been reported in Puerto Rico and elsewhere in the Caribbean. Termites are on the move in Europe as well, with a presumed Reticulitermes showing up in residential infestations in southwest England (Devon and Cornwall) as well as in France, Germany and Austria. A British publication described several species of Coptotermes colonizing trees in the Commonwealth.

Since the termite has not yet reached disastrous proportions in trees anywhere else in the United States, it has only been formally studied by scientists at the New Orleans Mosquito and Termite Control Board, Louisiana State University (LSU) Department of Entomology, University of Hawaii and a few other places. There is very little information available to the tree care industry.

Arborists around the country will become the vanguard in the detection and fight against this termite in their area. Evidence of a problem will come in the form of heavy swarming in late spring and the discovery of significant, tan-colored, egg-carton colonies at the base of felled and dissected trees. These colonies will be crawling with thousands of termites and will be characterized by a high percentage of aggressive soldiers with brown teardrop shaped heads. If you see these phenomena, report them to your state Agriculture and Forestry agent or drop a line (with samples if possible) to Dr. Gregg Henderson at the LSU Entomology Dept. or the New Orleans Mosquito and Termite Control Board. You will soon be gearing up to treat trees to control the termite nests inside.

Adrian Juttner is the owner of Adrian's Tree Service, Inc. in New Orleans, La.
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The maintenance of trees growing inside the $350 million Hawaii Convention Center differs in many respects from the care given the outside landscaping. According to Takano Nakamura, owner of Takano Nakamura Landscaping of Honolulu, special care is needed for the lobby interior. Nakamura is the contractor for the landscaping and maintenance of the plants and trees at the center. Plants include a grove of 20 coconut palms and landscaping on the roof terrace that features coconut palms, loulu palms, hala, plumeria, breadfruit, kukui nut trees and numerous tropical plants and vines.

Nakamura’s firm installed and maintains both the interior and exterior landscaping at the Convention Center. The original plans were conceived by landscape architects, Walter, Kimura, Motoda, Inc. of Honolulu.

The interior grove in the entrance hall was installed by using a crane before the building was closed by the general contractors. Only one tree in the grove has died since the building was completed over a year ago. All the plants on the roof terrace are thriving.

Nakamura says that the cause of death of the tree has not been established. It was removed in sections and its replacement was chosen of a height that could easily be moved through the front glass doors and planted by using a forklift and other equipment.

Nakamura and Mike Palovin, general operations manager for the Hawaii Convention Center, agree that losing only one tree during the first year is a better record than they expected. They credit this maintenance success to the fact that the constant-drip irrigation system was correctly set from the beginning to assure lush growth without encouraging height over growth, as well as through frequent inspection of the trees by Nakamura’s team.

Careful and timely pruning to maintain the landscaping pattern of trees, shrubs and ground cover also contributed to their success.

Due to the high humidity of the Hawaii climate, continual observation to detect fungus and mold is necessary. The interior trees in the entrance hall grove are protected from frequent trade wind showers by skylights and tinted glass wall panels. This also reduces any problems of trees developing wind bend, which can result in the exterior land-
scaping. The glass wall panels, which are 10 to 90 feet from the ground level to ceiling, also provide sufficient light through the tinted glass, preventing excessive heating of the interior trees by the semi-tropical sun.

The lobby area is naturally ventilated. A stable, cool temperature is maintained throughout the day by fabric sails, and the glass curtain walls provide a constant air exchange.

Pruning is scheduled every three to four months. All the trees are pruned to conform to height constraints and yet retain the lush growth pattern that allows the grove to give the impression of a Hawaii sense of place.

The coconut palm grove in the lobby was arranged at random. The palms were planted in 5-foot deep planters which actually extend below the mean sea level. A separate drainage system for these lobby planters provides appropriate drainage in conformance with National Pollution Discharge Elimination System (NPDES) Standards. The planters are made of cement and lined with plastic to prevent leaks. Pruning must also take into consideration that the constant irrigation drip might result in trees leaning from the soil becoming over-moist. However, so far the planters appear to be of sufficient depth that this problem has not developed.

More than 3700 cubic yards of fertilized soil was originally placed in the lobby planters and the roof terrace berms. The soil mix for the planters was of a medium weight and consisted of sand, soil and organic material. The soil mix for the rooftop terrace was a light weight. It was placed over 900 cubic yards of foam fill (Geo foam) and 400 cubic yards of gravel. In addition, the trees need to be fertilized every 3 to 4 months.

On the roof terrace, a 45-foot height is maintained for the trees. Here, they blend flowering, hanging vines to provide a backdrop for rooftop parties. Plants on the roof are afforded only partial protection from trade winds and weather. In fact, the palms and canopy trees help provide protection from showers and misty weather that can occur suddenly. These trees are cared for in a manner similar to the exterior landscaping.

Every three to four days, the maintenance crew inspects the interior trees, including bark, branches and leaves. Nakamura says that this involves more than just a quick visual glance. It requires arborists who are trained to spot the slightest indication of mildew, fungus or insects. Should any problems appear, remedial spraying is applied immediately. Preventive spraying takes place regularly, too, usually during fertilization or pruning.

The plants are mainly coconut palms and veitch. There are also some breadfruit, banana, hala, kukui nut and loulu palms.

Nakamura declares that the main interior tree maintenance at the Convention Center has worked out successfully because his crew is so well trained in their inspection skills and they apply this training conscientiously. He states that constant vigilance and immediate remedial action—as well as the conventional routine irrigation, fertilization and spraying—are necessary when trees must be maintained in an interior, artificial environment.
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continued on next page...
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continued on page 72
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continued on page 74
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Length 138”  Height 60”  Width 92”

**Chip Box Material:** (galvannealed)
1. Floor .......................... 10 ga. plate
2. Sides (removable) 3'-6" high . (2)pc. design- 12 ga. plate
3. Top: (removable) 8' long ....... 14 ga. plate
4. HeadBoard (stationary) ........ 12 ga. plate
5. Tailgate (270° swing) ........... Expanded Metal w/tubing frame
6. Runners ....................... 6" structural channel
7. Cross members ................. 3" structural channel
8. Side vertical supports ......... 3" x 3" sq. tubing

**General**
1. All G-60 galvannealed material
2. Sides: Fabricated in (2) pcs. for easy removal
3. All wiring in conduit
4. Sealed lexan lens lights meet FMVSS 108 specifications
5. Anti-sail mud flaps
6. Hydraulic dump hoist
7. Safety body prop
8. Trailer light connector 6 pole; Elec. back up alarm
9. Pintle; or pintle/ball combination trailer hitch with tow hooks
10. Bodies: mounted, undercoated, coal tar epoxy coating inside chip box, primed and painted
11. Stainless steel tool box hinge pins w/grease zerks
12. Tool Boxes - “Weatherproof” - Bulb type weather stripping
13. Top includes (4) corner lifting eyes
14. Chipper Air Exhaust Vents

**Tool Boxes (14 ga. galvannealed material):**
1. Underbody tool boxes:  (two) 48” long x 20” high x 17” deep
2. Locks: Slam locks, keyed alike with hidden theft resistant rods

**Cross Box:**
1. “L” cross box - which includes underbody tool box
   Cross box: 24” long x 92” x 37” high across chassis rails; (6) swivel rope hooks; (1) shelf; (3) gal. water cooler holder

**Optional:**
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Bandit Whole Tree Chippers
(1) Model 1200, Cummins 177 hp; (1) Model 1250, Cummins 200 hp; (2) Model 1290 Drum, John Deere 80 hp; (1) Model 1690 Drum, Ford 119 hp; (1) Model 1400 Tree, Cummins 200 hp; (1) Model 1450 Tree, Cummins 116 hp diesel; (1) Model 1850 w/loader, Cummins 250 hp; (1) Model 1900, Cat 3406TA 425 hp; (1) Model 3680 Beast, John Deere 375 hp.

Morbark
(1) Model 5, Kohler 12 hp gas; (1) Model 7, Wisconsin 35 hp; (1) Model 10, John Deere 56 hp diesel; (1) Model 13; (1) Model 16, Cummins 250 hp diesel; (1) Model 290, Cummins 100 hp; (1) Model 3036, Cat 330 hp; (4) Eeger Beever, Wisconsin gas, Cummins diesel, Ford 65 hp; (1) 1200 Tub Grinder, Cat Model 3412.

Vermeer
(1) 630-A Stump Grinder; (1) 665-A Stump Grinder; (2) Model 1250, Perkins 80 hp, Ford 6 Cylinder gas.

Miscellaneous
(1) Asplundh 100, John Deere 80 hp; (1) Asplundh, Ford 6 Cylinder; (2) Asplundh 16" Drum, Ford V-8; (1) Asplundh Whisper; (1) Wayne Drum, Chrysler 6-Cylinder; (1) Mits and Merrill, 6 Cylinder gas; (1) Treeplan Model-18, Deutz diesel 419 hp; (1) Innovater 8' tub, Cummins 177 hp diesel.

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Important Interpretation from ANSI A300

Your ANSI A300 committee is hard at work drafting the *Tree Support Systems* standard and revising ANSI A300-1995 *Tree Pruning*.

The committee made substantive changes, based on your public comments, in the *Tree Support Systems* draft. There will be another public comment period before the draft is approved for publication. The committee also received public comments for the *Tree Pruning* revision and will consider changes this summer.

Recently, a request for interpretation of the *Tree Support Systems* draft was sent by Tom Duffy of Sherrill Arborist Supply, Inc. The request was one interesting by-product of printing the entire *Tree Support Systems* draft in TCI magazine this past spring.

Duffy noted a change in the design of lag hooks offered by his supplier, and he asked the A300 committee to determine if both lag hook designs would meet the *Tree Support Systems* draft.

Duffy sent the A300 committee a lag hook from his current inventory and one of the "new" hooks from his supplier. The secretary and chairman of the A300 committee examined the lag hooks to determine if they could be installed according to the most recent draft of ANSI A300 Part 3 *Tree Support Systems*. They concurred that of the two lag hooks, one could be installed according to the standard and the other could not.

To differentiate between the two, we will refer to the hook that could be installed according to the standards, as Hook 1, and the hook that could not be installed according to the standards, as Hook 2. Note: Hook 1 had no markings, Hook 2 was stamped with the word: *China*.

Hook 2 could not be installed according to ANSI A300 standards, because its design prevented it from complying with the following requirements and recommendations:

**ANSI A300 - Part 3 Tree Support Systems draft:**

38.5 Lag-thread hardware shall only be installed in sound wood. The hole for the lag-thread hardware shall be 1/16" to 1/8" (1-3mm) smaller than the diameter of the lag.

**Interpretation:**

The outside-thread and root diameter of the threads on Hook 2 had sufficient variation to make the installation of Hook 2 into a hole "1/16" to 1/8" smaller than the diameter of the lag" difficult to impossible.

38.7 Lag hooks shall not be used if it is not possible to seat the full length of the threads.

**Interpretation:**

The threads of Hook 2 are cut beyond the bent portion of the hook, making seating of "the full length of the threads" impossible.

The A300 committee does make interpretations of its standards provided that: 1) the interpretation request is in writing; 2) the evidence provided is clear and unambiguous; 3) the interpretation requires a reasonable amount of time and resources; and, 4) comes from a person or entity with material interests.

Send requests for interpretations to: Robert Rouse, NAA, PO Box 1094, Amherst, NH 03031-1094.

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Threads of Hook 1 and 2 compared. Note the uneven root and outside-thread diameter, making installation into the proper sized drill hole difficult.

The threads of Hook 2 are cut beyond the bent portion of the hook. It is impossible to install the full length of the threads of Hook 2 without causing additional and unnecessary injury to the tree.
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Yellows Diseases: Go With the Phloem

By Mark L. Gleason

A witches'-broom, caused by ash yellows, on a green ash. Yellowing (chlorosis) of leaves on witches'-brooms of ash occurs by midsummer.

It's no surprise that many tree care professionals have never heard of yellows diseases. If you went to school in the '60s or earlier, yellows diseases weren't even on the radar screen. They were "discovered" by plant pathologists only about 30 years ago, but the symptoms they cause have probably been around since we were living in the trees.

Diseases like ash yellows, elm yellows and aster yellows—the "big three" most common in our urban landscapes—were once thought to be caused by viruses. It turned out that yellows diseases are instead caused by specialized bacteria called phytoplasmas. Unique offshoots of the bacterial kingdom, phytoplasmas, lack cell walls and live in the phloem (food- and hormone-conducting passages) of plants. One reason they eluded plant pathologists for so long is that they don't look like typical bacteria. Another reason is that they act like viruses in some important ways: they can be transmitted from plant to plant by certain insects and by grafting, for example. Finally—and this is a biggie when you're looking for pathogens—they can't be cultured outside a living host plant. It's a major challenge to find and study a microbe you can't grow.

Despite the handicaps, we've managed to piece together some of the yellows puzzle in the last three decades. Let's take a closer look at the "big three" yellows diseases in North American landscapes to clarify how they attack landscape plants, and what we can or can't do to manage them.
Forking (deliquescence) at branch tips of a green ash infected with ash yellows.

Ash yellows

Ash yellows attacks not only the major species of ash, including green and white ash, but also lilac. Symptoms range from mild to devastating, and white ash are more severely affected than green ash. A common but subtle symptom is a slowdown in growth. Caliper growth of infected ashes can decrease by 50 percent or more. Lateral branches increasingly tend to lack a central leader; instead, the twigs tend to fork at the ends—a symptom called “deliquescent branching.” In severe cases, ash yellows can cause branch dieback and even death of the entire tree.

Witches'-brooms are the only reliable diagnostic symptom of ash yellows, however. A witches'-broom is a cluster of spindly, short (usually less than one foot tall), bushy, upright twigs originating from a single point on a trunk or large limb—where you don’t usually find foliage on a healthy ash. Leaves on witches'-brooms often turn yellowish green, or chlorotic, by midsummer. Witches'-brooms also occur on infected lilacs. The unreliable part of this reliable indicator of ash yellows is that most infected ashes don’t produce witches'-brooms. So in most cases, it takes a laboratory test of the roots or

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phytoplasmas attack their hosts. As they
leaves—traditionally by a staining tech-
nique, but more recently by a molecular
method called polymerase chain reaction
(PCR)—to confirm the diagnosis.
How does ash yellows cause these
symptoms? The answer is in the way
phytoplasmas attack their hosts. As they
multiply in the phloem sieve tubes, they
interfere with the movement of plant
sugars. Since growth-regulating hor-
mones also move through the phloem
passageways, clogging of the phloem
will disrupt normal growth patterns.
Roots of infected plants accumulate less
starch then normal, and may even die. 
When you have an underfed ash with
mixed-up growth hormones, it’s no won-
der you get witches’-brooms, chlorosis,
and deliquescent branching, not to men-
tion retarded growth.
Ash yellows was first studied in for-
est stands in the northeastern United
States, where it kills many white ash,
especially in the understory. In the last
decade, we’ve learned that the disease af-
fects ashes in the urban landscape, too. 
Studies in the Upper Midwest and Great
Plains have extended the known range
of the disease from the Northeast as far
south as the Ohio River, as far west as
Utah, and north to Alberta. In some Great
Plains cities and windbreaks, over half
the green ash tested positive for the
pathogen, while about 15 percent of ur-
ban green ash tested positive in Iowa,
Wisconsin and Minnesota.
Mystery still surrounds the subject
of how ash yellows spreads from tree
to tree. The phytoplasma is easy to
transmit during the grafting that oc-
curs during production of green and
white ash landscape trees, and the dis-
ease has occasionally appeared in
nurseries, but the level of risk of
spreading yellows through nursery
stock—though probably tiny—is
anybody’s guess. Insects in the leaf-
hopper group are thought to transmit
the phytoplasma from tree to tree, but
hard evidence is still lacking.
Management options for ash yellows
range from slim to none. Antibiotic in-
jections have been tried, with
inconsistent results. Nothing available is
a cure but for a valuable landscape tree
there are options that can, at least,
supress the disease. Among the few rec-
ommendations for infected urban trees
are to provide added TLC (in the form
of mulching, watering, and fertilization,
if needed), and remove them if they’re
in advanced stages of decline.

Does the threat of ash yellows mean
that we should stop planting ash? Not
at all. An encouraging outcome of the
recent survey work is that most urban
green ash seem to coexist with ash yel-
lows—apparently for decades—and
show no ill effect other than slowed
growth. So while ash yellows is a
cloud in the sky for landscape ashes,
it’s by no means a thunderhead.

Elm yellows
As if our native elms didn’t have
enough problems, elm yellows (a.k.a.
elm phloem necrosis) adds insult to in-
jury. This phytoplasma-caused disease
attacks not only American elms, but the
other native species (red, rock, cedar,
and September elms). The European and
Asiatic elm species are highly resistant
to the disease, however.
Elm yellows symptoms are far more
dramatic than for ash yellows, and the
prognosis is almost always grim: in-
fected trees die within a few weeks to
two years after symptoms appear. At
first, roots begin to die—first the fine
roots, then the larger ones. Later, leaves
all over the tree droop and curl, turn
bright yellow, then brown, and finally
fall. As the disease progresses, the inner
layers of bark (the phloem tissue) start
to smell faintly of wintergreen—the
same minty-smelling substance used in
chewing gums, candies, and various
household products—when peeled from
the tree. To detect the minty odor, you
may need to seal a small chunk of freshly
peeled bark in a plastic bag or small vial
for a few minutes, then open and sniff.
This distinctive odor, together with a
yellowish-brown colored darkening of
the inner bark, is often used to make a quick
field diagnosis of elm yellows. Any
brown discoloration of the outer sap-
wood (xylem) can easily be scraped off
with a knife; browning that is deeper in
the sapwood is likely caused by Dutch
elm disease or Verticillium wilt.
Local epidemics of elm yellows, killing
hundreds to thousands of trees, have ap-
peared in about 20 eastern, central, and
southwestern states, all east of the Mississippi

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River, as well as in southern Ontario. The most common insect vector of elm yellows, the white-banded American leafhopper, sucks the phytoplasma from the phloem of infected elms and spits it into the phloem of healthy trees. The geographic range of elm yellows seems to be limited by the low-temperature tolerance of this leafhopper—about -15 degrees F—since areas with colder winters don’t experience the disease. Infection can also spread through root grafts between neighboring trees of the same elm species (shades of Dutch elm disease).

Our bag of tricks for elm yellows management isn’t much more impressive than for ash yellows. Sanitation—prompt removal of yellows-infected elms in order to block spread of the disease—heads the list. Breaking of root grafts between nearby (less than 50 feet between trunks) elms of the same species can prevent root graft transmission if done soon enough. Tetracycline antibiotics, injected into

|Yellowish-brown colored inner bark of an elm yellows-infected elm (right) compared to normal cream-colored inner bark (left).|

Witches'-brooms, deliquescent branching and overall decline due to ash yellows can be seen on the field trip in conjunction with the Wilt Diseases of Shade Trees National Conference, Aug. 25-28, in St. Paul, Minn. Featured conference topics include bacterial leaf scorch, yellows diseases, Verticillium wilt, oak wilt, Dutch elm disease and Fusarium wilt. Presentations are directed toward practitioners and emphasize diagnosis of the problem along with disease management. For more information visit www.scisoc.org/opae/shortcourse or contact Cindy Ash at cash@scisoc.org or phone 651-454-7250.
yellows-infected elms, have prevented recurrence of symptoms for up to three years; but currently this is not a labeled (i.e., legal) use of tetracycline. Fortunately, elm yellows outbreaks, though devastating, tend to be localized, spread slowly, and may appear only sporadically even in the epidemic zones. Of course, planting European and Asiatic elms effectively avoids the risk of elm yellows.

**Aster yellows**

Don’t look for this phytoplasmal disease on trees. But aster yellows can affect so many herbaceous flowers, vegetables and weeds that you may well have seen it. Among the hosts are cultivated plants like carrot, marigold, purple coneflower, rudbeckia, petunia, pansy, chrysanthemum, coreopsis, delphinium, gaillardia and salvia, and weeds like wild carrot, dandelion, field daisy, black-eyed Susan and wide-leaved plantain.

Aster yellows outbreaks are sporadic but memorable. Symptoms range from the expected for yellows diseases—yellowing and witches’-brooms—to the truly bizarre. Infected marigolds (one of the most common hosts) are easy to spot, with yellowed or purple foliage and stiff, upright branching. Even more eye-catching are purple coneflowers, which sprout tiny, distorted leaves from the centers of their flowers. Like other yellows diseases, aster yellows focuses on the phloem, so growth distortions go along with disruption of the normal flow of growth hormones.

Also like other yellows diseases, aster yellows can’t be cured, so plants with symptoms are pulled up and discarded. This sanitation step is helpful, because otherwise insect vectors such as the aster leafhopper can continue to spread the disease in their patented suck-and-spit manner. Insecticides can deter the leafhoppers, but are likely to be more effective if applied in the early part of the growing season to nearby weeds that may be sources of the aster yellows phytoplasma. Another tactic is to go after the weedy areas with herbicides, but again you need to get started early in the season to beat the leafhoppers.

**Summing up**

The “big three” yellows diseases are distinctive in many ways—host plants, symptoms and consequences—but a few common elements are worth remembering. Like all yellows diseases, the point of phytoplasma attack in the host, and the source of damage, is the phloem. As these parasites sponge up the plant’s food supply and throw its hormones out of whack, the results are bizarre symptoms like witches’-brooms, minty smells, and leaves sprouting from flowers. Phloem-feeding insects like leafhoppers are the natural vectors, but grafting can move phytoplasmas just as effectively.

Finally and unfortunately, another common element with yellows diseases is that our current management efforts don’t amount to much. But since yellows diseases were recognized a scant 30 years ago, and research on them has picked up speed continually since then, it’s reasonable to hope for more effective tactics to emerge in the future.

Mark L. Gleason is an Extension Plant Pathologist at Iowa State University.
Building Relationships

By Sachin Mohan

A recent article published by the American Marketing Association discussed how organizations developing marketing plans should concentrate on the 4 Ps of marketing: Product, Price, Promotion and Place. The author goes on to say, however, that while the 4 Ps are still relevant, business managers should add 4 Rs to the concept of a marketing strategy: Relevance, Response, Relationships and Returns.

As marketing and sales managers, our job isn’t done once we have sold a product or service. We may have provided the best quality, price and satisfaction-guaranteed service, yet the customer expects more from us. There is more to marketing than selling a service—we must build relationships. Don’t believe that calming irate customers and answering their questions is the limit to our boundaries; we must go beyond and feel their pulse.

The National Arborist Association has devised a program which helps build such relationships. The Excellence in Arboriculture Awards program recognizes companies and their clients who have distinguished themselves with excellence as shown by their work and dedication. Past winners have earned long-term clients who are present at the awards ceremony to stand by these tree care companies.

For a moment, consider what clients would think about earning worldwide recognition because they hired your company for their tree work. Or ponder how winning a national award will influence your future clients’ decision to hire your company when they are looking for quality tree work. They would be able to share the pride you exhibit in your work.

“For a long time, we have promoted our company as environmentally sound,” says Jeff Hartert, vice president of Landscape Operations for Post Properties, Inc. in Atlanta, Ga. Post Properties, Inc. is a client of NAA member, Arbor Care. “Winning an [Excellence in Arboriculture] award reinforced our company’s commitment to what we stand for. It also strengthened our relationship with Arbor Care. We are entrenched with Arbor Care and committed to preserve our trees.”

The Excellence program is not designed as a competition but as a measure of quality work that upholds the highest professional standards of the industry. This means that there can be multiple entries which can earn the Grand Award. Other benefits of the program include improved employee morale, recognition in the local community and among peers. Winning an award also enhances a company’s reputation through announcements in various newsletters, national newspapers and TCI magazine. This is a chance for NAA member companies to further raise the bar of industry standards by performing exemplary tree care.

What should your company do?

Identify clients with whom you would want to generate long-term relationships, or identify projects which will require exceptional work. Take before-and-after pictures of the project that show the challenges involved in the beginning, how these challenges were overcome and the end result. Call the NAA for copies of the entry forms.

The Excellence in Arboriculture Awards program is open only to members of NAA. Call 1-800-733-2622 for more information on awards and membership.

Sachin Mohan is director of marketing & public relations for the National Arborist Association.

Extra Mileage

The NAA takes care of national publicity for the Excellence in Arboriculture Awards program. But what about local publicity? Here is an example of a company that went the extra mile. The project was a restoration of a 300-year-old white oak planted before Cleveland, Ohio was incorporated. Forest City Tree Protection Co., in South Euclid, Ohio made sure that their community heard all about their accomplishment. Press releases were sent out to local papers, and a newsletter sent to their clients explained their project and the company’s commitment to the community. The client put this announcement as the cover story in its monthly publication. Local colleges, organizations and newspapers joined to recognize Forest City Tree Protection.

“The award means a lot for the company and our community,” relates President Lauren S. Lanphear. “This has been a great motivation for the employees as we complete 90 years in business and prepare for the new millennium.”
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When Equipment Fails, Share the Blame


By Steve Crowley

"Pack it up," I said to my new employee. "We have to get the next job done today!"

Off we went to the next removal in my newly acquired aerial lift—though it was not so new, as newly acquired. The tree to be removed was far off the street, so we parked the truck parallel with the curb, set the chip truck up, and looked the area over.

"I can reach it from here," I said as I jumped into the bucket. Being in a tight spot, I had to raise the lower boom upright to 90 degrees, rotate over the side of the truck and unfold the upper boom for maximum side reach. As I unfolded the upper boom, I was facing away from the truck looking at the ocean and dreaming of the weekend. As the boom got below vertical, I felt the bucket start to spill me forward. I immediately turned around to see what was wrong and had a feeling I never want to have again. I realized I never put the driver's side outrigger out. The truck was starting to tip over!

I tried to boom down but it was too late. It went over slowly, but I knew that when it got to the turning point it would really come over fast. As it hit the point of no return, I gave up hope and crouched down in the bucket. After I hit the ground and realized I was alive, my next thought was the condition of the truck. I tried to run to the truck for a look, but my lanyard, which was attached to the boom, snapped me back. I am very thankful to the powers that be that day and for teaching me a few lessons.

Among them:

1. Bucket trucks are becoming more affordable to small companies and some of these trucks are not perfect. This particular bucket has an outrigger-boom interlock, but it was so old it failed.

2. To rely on a machine, take the same precautions you use when relying on a rope—take your time to inspect everything twice.

3. This business is very dangerous. If you hurry, you will get hurt.

4. Above all, take nothing for granted.

You can not afford mistakes in tree care. I was lucky that day, and I never want to feel that lucky again.

Steve Crowley owner of Seaside Tree & Landscape Company in Marshfield, Mass.

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Rapco Carbide Saw Chains are available on Carlton and Oregon chain bodies from .325-inch pitch to 3/4-inch pitch and are available in all gauges. All sales for Rapco's carbide chain and related products are addressed to: Rapco Marketing, Inc., PO Box 5219, Vancouver, WA 98668. For additional information, contact: Ron Blehm, Rapco Industries, Inc., 6000 N.E. 88th Street, Ste. D-104, Vancouver, WA 98665-0958. Phone: 800-959-6130 or 360-573-0090; Fax: 360-573-0046; http://www.rapcoinc.qpg.com; E-Mail: rapco_carbide@prodigy.com.

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#### SHINDAIWA

Shindaiwa's full line of lightweight two-cycle chain saws provide high chain speeds and extra lugging power for easier cutting. Shindaiwa's line of chain saws includes the 357, which was specifically designed by and for arborists. Light, balanced and powerful. See it at your local Shindaiwa dealer. Phone: 800-521-7733; http://www.shindaiwa.com.

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### BANDIT INDUSTRIES, INC.

Bandit's Chipper/Chip Box Combo eliminates the need for a separate chip truck and related costs like insurance, licensing, etc. It is available with Bandit's Model 65 (6-inch diameter capacity) or Model 90 XP (9-inch diameter capacity). The Combo unit features an 8.5 cubic yard dump box with hydraulic lift. Chipper is mounted on a turntable. Seven different chipping positions are provided and can be changed in a matter of seconds. For further information, contact Bandit at 1-800-952-0178.

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### STIHL, INCORPORATED

The STIHL 020T chain saw is designed for high power (35.2cc), low weight (7.9 lbs.) and optimum balance and features an attachment ring, side access chain tensioner, STIHL Quickstop™ inertia chain brake. The 020T also features the exclusive STIHL Ematic™ guide bar, which can reduce bar oil consumption by up to 50%. For more information: 1-800-GO-STIHL (467-8445) or http://www.stihlusa.com.

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### DOSKOCIL INDUSTRIES, INC.

The Model 911 is the first in a line of chippers to be introduced by Doskocil Industries, Inc. Many of the patent-pending features on the Model 911 are a direct result of suggestions and ideas from professional arborists like yourself. We at Doskocil Industries are dedicated to design and manufacture quality equipment for your needs. Doskocil Industries, Inc., 1324 West Rialto Avenue, San Bernardino, CA 92410. Phone: 909-885-0988; Fax: 909-381-4743.

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### KARL KUEMMERLING, INC.

Manufacturer of the Mitts & Merrill Brush Chippers. Takes brush up to 8-inch diameter as fast as two or three men can feed it. Makes small chips which pack together on truck, resulting in fewer loads to dump. Small chips also excellent for mulch. Both standard and hydraulic feed roll chippers. 12-inch or 16-inch wide cutterheads. Gas or diesel engines. Karl Kueummerling, Inc., 129 Edgewater Avenue, NW, Massillon, OH 44646. Phone: 330-477-3457, 800-464-8227, 888-222-6166; Fax: 330-477-8528.

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TCI PRODUCT DIRECTORY - JULY 1999 - 10
**MORBARK, INC.**

Morbark’s Model 2400 Hurricane chipper offers land clearers and large volume tree services the ability to increase production rates and capabilities compared to traditional chippers. Improvements include an air impeller system to help clear light, leafy material and easier access to chipper drum with new pinned hood design. Power options available for 100 to 200 hp from John Deere, Caterpillar or Cummins. For more information or to arrange a demonstration, contact your local Morbark dealer or Morbark, Inc. at PO Box 1000, Winn, MI 48896. Phone: 800-362-9010; Fax: 517-866-2280; http://www.morbark.com; E-Mail: morbark@worldnet.att.net.

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**SIMONDS INDUSTRIES, INC.**

Eliminate your knife concerns and maximize your chipping time with Simonds Limb-inator knives. All Limb-inator knives are made with high-quality chipper knife steel and heat-treated to exacting tolerances. Simonds has been manufacturing chipper knives for over 115 years and pioneered the tough center brush chipper knife design. We have years of experience over our competition - perfect practice makes a perfect product! Simonds Industries, Inc., PO Box 500, Intervale Road, Fitchburg, MA 01420. Phone: 800-343-1616; E-Mail: Ray Eluskie@yahoo.com; http://www.simondsind.com.

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**WOOD/CHUCK CHIPPER CORPORATION**

Superior chippers since 1969. Wood/Chuck combines years of manufacturing experience with the latest technology to provide quality equipment for the tree care industry. Included in the product line are the classic drum, versatile disc, the unique self-propelled, and the dual-stage cutter/mulcher chipper for economically and environmentally conscious consumers. Wood/Chuck Chipper Corporation, PO Drawer 400, Shelby, NC 28151. Phone: 800-269-5188 or 704-482-4357; Fax: 704-482-7349; E-Mail: woodchuck@shelby.net; http://www.woodchuckchipper.com.

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**WOODSMAN CHIPPERS**

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The original tree climbers’ gear. Arborwear® clothing designed by tree climbers, for tree climbers. We offer a solid yet comfortable alternative to other work clothes, which were not specially designed for the tree care industry. Our pants, shirt and belt were designed in every way for the professional arborist. Treat yourself or your employees to industrial apparel that wears like iron but doesn’t sacrifice comfort or freedom of movement. Arborwear®, PO Box 341, Chagrin Falls, OH 44022. Toll-Free: 888-578-8733; Fax: 440-247-0178.

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**CONCEPT ENGINEERING GROUP, INC. (CEG)**

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Featuring the Resistograph - a mechanical drilling instrument providing a true picture of the defect zones within a tree. Fractometer - mechanical properties radial bending fracture strength and radial fracture angle from which the radial modulus of elasticity fracture energy can be derived. IML - Instrument Mechanic Labor, Inc., 3015 Canton Road, Suite 14, Marietta, GA 30066. Phone: 888-514-8851 or 770-514-8851; Fax: 770-514-8851; E-Mail: sales@imlusa.com; http://www.imlusa.com.

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ARBORMASTER™ TRAINING

ArborMaster™ Training conducts educational programs throughout North America and abroad, offering a variety of safety and productivity programs for the tree care profession. From participatory, hands-on training for small groups to customized seminars and trade show demonstrations for larger groups. ArborMaster™ is also involved in developing educational videos, study guides, articles, etc. ArborMaster Training, Inc., PO Box 62, Willington, CT 06279. Phone: 860-429-5028; Fax:860-429-5058; E-Mail: ArborMastr@aol.com; http://www.ArborMaster.com.

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INTERNATIONAL SOCIETY OF ARBORICULTURE

The International Society of Arboriculture keeps its members informed on the latest practical and scientific information through the Journal of Arboriculture and Arborist News. Members receive each publication six times per year. In addition, members are entitled to discounts on over 50 different publications, videos and other membership items. To become a member, call ISA; annual membership is $85. International Society of Arboriculture, PO Box 3129, Champaign, IL 61826-3129. Phone: 1-888-ISA-TREE (472-8733) or 217-355-9411; Fax: 217-355-9516; E-Mail: isa@isa-arbor.com; http://www.isa-arbor.com.

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NATIONAL ARBORIST ASSOCIATION

The National Arborist Association (NAA) promotes the interests of commercial tree care professionals. Since 1938, the NAA continues to introduce a wide range of advanced tree care safety and training programs, tree care practice standards, technical newsletters and successful business management programs for tree care companies. Call or write to learn how to affiliate your company with the premier commercial tree care trade association. NAA, PO Box 1094, Amherst, NH 03031-1094. Phone: 800-733-2622 or 603-673-3311; Fax: 603-672-2613; E-Mail: naa@natlarb.com; Web: http://www.natlarb.com.

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According to ANSI Z-133.1, as well as OSHA regulations, any employee exposed to electrical hazards must have documented experience and training in working with electrical hazards. Electrical Hazards Awareness Program (EHAP) is the only comprehensive, visual and hands-on program that trains tree workers to be prepared against electrical hazards. Tests are taken and videos watched under supervision of employers. Graduates are awarded certificates, hard hat decals and wallet cards. Now available in Spanish. NAA, PO Box 1094, Amherst, NH 03031-1094. Phone: 800-733-2622 or 603-673-3311; Fax: 603-672-2613; E-Mail: naa@natlarb.com; Web: http://www.natlarb.com.

Changing workforces bring challenges of cultural differences and language barriers. However, training of employees cannot be sacrificed. The National Arborist Association (NAA) offers training programs in Spanish, which allows companies to cross barriers to prepare a skilled and trained workforce. Programs include videos and manuals, such as Tailgate Safety, Electrical Hazards Awareness Program, professional tree care safety and pruning standards. Call today for a catalog or to place your order. NAA, PO Box 1094, Amherst, NH 03031-1094. Phone: 800-733-2622 or 603-673-3311; Fax: 603-672-2613; E-Mail: naa@natlarb.com; Web: http://www.natlarb.com.

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ADI TOOLS/DIV. TOL INCORPORATED

ADI pruning tools from TOL Incorporated of Tulare, California are designed with the professional arborist in mind. ADI offers a complete line of tools, including hydraulic chain saws, circular saws, loppers and pistol-grip chain saws. ADI tools meet the requirements for certification as insulated live-line tools. For complete information, call 800-732-2142. ADI Tools/Div. TOL Incorporated, PO Box 1498, Tulare, CA 93275. Phone: 559-686-2844; Fax: 559-685-1006; E-Mail: contact@tol-inc.com; Web: http://www.tol-inc.com.

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Tools that make pruning a breeze! High-end quality, ergonomically designed, lightweight and innovative for your pruning pleasure. From ARS Corporation/Japan and the best around the world. Available at your favorite distributor or catalog house. Visit our Web site for detailed specifications. Contact us by E-Mail to receive our catalog and price list. GROWTECH, INC., Fax: 847-427-1455; E-Mail: info@growtech-inc.com; http://www.growtech-inc.com.

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Peavey Manufacturing Company offers a variety of long-length handles in either white ash octagonal or fiberglass up to 16 feet long. We also carry sectional poles with lightweight aluminum couplers, pruner heads and saws, as well as a complete line of logging tools and pole line construction tools. Call or write for free brochure. The Peavey Manufacturing Company, PO Box 129, Eddington, ME 04428-0129. Phone: 888-244-0955 or 207-843-7861; http://www.peaveymanufacturing.com; E-Mail: peavey@mint.net.

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The Model 3680 Beast Recycler is an exceptional, productive, cost effective waste reduction machine that you can afford to own and operate. Unique cutter-mill allows material to be cut, not beaten apart. Reduces leaves, brush, stumps, palm fronds, whole trees, RR ties, telephone poles, pallets, newspaper, construction and demolition debris, sawmill and logging waste, cardboard and other similar materials to a consistent particle size. For further information, contact Bandit at 1-800-952-0178.

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FOX MANUFACTURING, INC.

Fox Stump Routers feature 34-year proven design, impressive speed and depth capabilities exceeding 12 inches. Chips are retained under machine, great maneuverability, easy load and unloading and quick-change cutter head. Kohler engines from 18 to 25 hp. Low cost to purchase, and maintenance is primarily sharpening your teeth and many, many happy customers. All this backed by a great warranty. Video on request. Financing available. Fox Manufacturing, Inc., PO Box 6, Lowell, IN 46356. Phone: 219-696-1440; Fax: 219-696-8107; E-Mail: fox@netnitco.net.

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MILLER MACHINE WORKS

Stump grinding attachments for use on tractors and skidsteer loaders. Using your tractor or skidsteer as both power source and tool carrier provides the lowest cost per delivered horsepower on the market...by far! When combined with a tractor, front-end loader or skidsteer bucket, then stump removal, back filling and wood handling becomes a one-man mechanized job. Eight models are available from 24 to 150 horsepower. All are professional-grade machines with simplicity, durability and high productivity. Miller Machine Works, 3309 East Washington, Brownsburg, IN 46112. Phone: 317-659-1524; Fax: 765-659-1524.

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RAYCO MANUFACTURING, INC.

Only Rayco makes a complete line of stump cutters from 13 to 275 hp. Worldwide, Rayco stump cutters command amazing popularity for their high profit earning performance and superior value. Either gasoline or diesel powered, each Rayco model (including the RG 50, shown) has special features that increase productivity while enhancing operator safety at a minimal labor cost. Rayco Manufacturing, Inc., Phone: 800-392-2686 (US & Canada); E-Mail: rayco@raycomfg.com; Web Site: http://www.raycomfg.com.

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Sunrise Concepts' innovative frame design plays a very important role in safety, as well as increasing engine life by keeping the engine more level throughout its operation. Our eight carbide-tipped teeth cut fast like a ripping saw and with less effort than a lot more teeth on a finishing saw. The Power Band belt and Belt Idlers eliminate slipping and burning while delivering the transfer of power you need from the engine to the cutter wheel to get the job done fast. For more information about Sunrise Concepts' Stump Grinder and FREE PARTS program, call toll-free: 877-469-4295.

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**FEDERAL SIGNAL CORPORATION**

Federal Signal - The worldwide leader in Reliable Warning Products. Federal Signal Heavy Duty Products offers a complete line of warning lights and back-up alarms for vehicles. Strobe and halogen beacons are available, and we also have mini-lightbars for extra warning power. Our back-up alarms come in a variety of decibel levels and draw minimum amperage. To receive a full-color catalog of our product line, call 800-824-0254 or E-Mail amberinfo@fedsig.com, and we will rush you one right away.

Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60466. Phone: 800-824-0254, 708-534-3400; Fax: 800-682-8022, 708-534-7035; E-Mail: amberinfo@fedsig.com.

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**ARBORSYSTEMS, LLC**

The Wedgle™ Tip, developed by ArborSystems, will significantly reduce the amount of time necessary to treat trees for pests, diseases or other problems. Chemicals are injected through a 1/16-inch slit in the wood, eliminating the damaging effects of drilling. The Wedgle™ Tip injection system is used exclusively with POINTER™ Insecticide (Merit™), Greyhound™ insecticide (Avid®), Shepherd fungicide (Alamo®), and IRON Nutriboosters™. ArborSystems, LLC, PO Box 34645, Omaha, NE 68134. Phone: 800-698-4641 or 402-339-4459; Fax: 402-339-5011; E-Mail: arborsystemslc.com.

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**CLEARY CHEMICAL CORPORATION**

Cleary’s 3336 systemic and Protect T/O fungicides form the basis of a complete plant protection program for deciduous and evergreen trees and shrubs. Used separately, or tank-mixed for complete protection, these products provide control of anthracnose, diplodia tip blight, phomopsis, and over 25 leaf spot diseases. Cleary Chemical, 178 Ridge Road, Ste. A, Dayton, NJ 08810-1501. Phone: 800-524-1662 or 732-329-8399 for more information.

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**CREATIVE SALES, INC. (CSI)**

ACECAP® and MEDICAP® tree implants are the industry’s lowest unit cost for prepared dosage systemics. We offer a complete product line, including insecticide, fertilizer and micro-nutrients. This unique application technique reduces time and labor, and there are no container disposal worries. Implants are available from an independent distributor network. Creative Sales, Inc., (CSI), PO Box 501, Fremont, NE 68026. Phone: 800-759-7739.

Please Circle 167 on Reader Service Card
THE DOGGETT CORPORATION

Since 1941, we have manufactured the leading brands of soluble fertilizers and kept ourselves current on tree nutrition and fertilization research. Not only do we strive for the optimum in formulating the finest product for the tree, but also to make the most suitable product for the tree health professional. (Soil-applied mycorrhizal spores). Free catalog available. The Doggett Corporation, 31 Cherry Street, Lebanon, NJ 08833. Phone: 800-448-1862.

GREENPRO SERVICES

Use the most effective and economical organic root developer, soil conditioner and fertilizer on the market, VITA TREE & SHRUB. Organic and mineral based; will not clog the line; economical to use; only about 30 cents per gallon. Place VITA TREE & SHRUB into the soil with the GreenPRO Soil Injector - the most productive soil injector available. Call GreenPRO Products & Services at 1-8000-645-6464.

GROWTH PRODUCTS, LTD.

Growth Products introduces Companion®, a microbial inoculate, to the professional arborist in a liquid solution. Companion should be used as part of your regular maintenance program and also to enhance the efficacy of chemical fungicides while reducing their application rates. Companion should be used where trees are subject to urban stress and harsh chemicals, which deplete the soil of natural microbes. Companion's microbes live in synergy with the trees' root systems and do not harm beneficial mycorrhizae. Companion also produces hormones that promote root and plant growth. Growth Products, Ltd., PO Box 1259, White Plains, NY 10602. Phone: 800-648-7626.

HAIMBAUGH ENTERPRISES, INC.

J. J. MAUGET COMPANY

Introducing the new convenient 25-unit packs! Now arborists can customize their orders with the new convenient 25-unit quarter (pack) flat. You now can combine up to four different Mauget products (fertilizers, fungicides, insecticides, antibiotics and combinations) per 100-unit flat or 12 different products per 300-unit case. This way, you can treat ALL the problems of your customers' valuable trees with one case of Mauget capsules.


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J. J. MAUGET COMPANY

New Tebuject Fungicide. The J.J. Mauget Company has obtained rights to include Bayer's latest triazole fungicide into its time proven micro-injection system. Tebuject with Tebuconazole is a systemic fungicide that is effective treatment of valuable trees in danger of damage by crabapple scab, oak wilt, Dutch elm disease and Hawthorn leaf spot. This new chemistry provides advanced disease control and extra defense against resistance.


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MONTEREY LAWN & GARDEN PRODUCTS, INC.

Florel Fruit Eliminator, long used to control nuisance fruit (olives, carobs, crab apples and apples) is now registered to control both leafy mistletoe on deciduous trees and dwarf mistletoe on conifers, as well as nuisance fruit on cottonwood, elm, pear, maple, oak, pine, sour orange, sweet gum, and sycamore. Odorless, non-staining, fast-acting. Monterey Lawn & Garden Products, Inc., PO Box 5317, Fresno, CA 93755. Phone: 559-499-2100; Fax: 559-499-1015; http://www.mone\r\nye\r\nerylawngarden.com.

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NU-ARBOR PRODUCTS

Specializing in quality liquid tree and shrub fertilizers, spray adjuvant, anti-transpirant, soil amendments, natural Plant Wash and the Kioritz soil injector. NU-ARBOR offers a variety of premium liquid root and foliar fertilizers, soil stimulants, anti-transpirant, spray adjuvant and a natural Plant Wash. NU-ARBOR fertilizers are uniquely homogenized to enhance vigorous root growth and improve plant/soil relations. Apply these liquid concentrated fertilizers with the Kioritz soil injector or your high pressure system. For a free video or to purchase our starter package, contact NU-ARBOR Products, PO Box 151455, Grand Rapids, MI 49515-1455. Phone: 616-456-8626; Fax: 616-456-7780; E-Mail: grd\r\nrbor @nu-arbor.com.

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PLANT HEALTH CARE, INC.

MycorTree™ Injectable™ endo/ecto Mycorrhizal fungi inoculants now contain Biopak™ biofertilizers and biostimulants with N-Fixing and P-Solubilizing bacteria. Call 1-800-421-9051 for the New 1999 PHC Green for Life™ Catalog of biologically-based products for tree and shrub care.

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ROOTS®, INC.

ROOTS2® and ironROOTS2® provide arborists with a new approach to plant health care. Healthy trees and shrubs can now be maintained with reduced pesticide use. Trees and shrubs treated with ROOTS2® are healthier and more stress tolerant than those treated with fertilizer alone. Plan now to use ROOT2® in your fertilizer program. ROOTS®, Inc. 3120 Weatherford Road, Independence, MO 64055. Phone: 800-342-6173; Fax: 816-254-1408.

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TREE HEALTH PRODUCTS

TREE TECH MICROINJECTION SYSTEMS

Tree Tech Microinjection Systems. Cost-effective pesticides and nutrient injection technology for insect and disease treatments, as well as nutrient amendments. Tree Tech® OTC for fire blight and other bacterial diseases in crop and non-crop bearing fruit trees. Vivid II for scales, aphids, mites and other pests of ornamental trees. Many other products available. Tree Tech Microinjection Systems, Williston Airport Industrial Park, Williston, FL 32696. Phone: 800-622-2831 or 352-528-5335; Fax: 352-528-0777; E-Mail: Treetek@aol.com; http://members.aol.com/Treetek/index.html.

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INDEPENDENT PROTECTION COMPANY

Lightning protection systems for trees, golf shelters, restrooms, clubhouses, maintenance buildings and secondary lightning surge protection for sprinkler systems. Tree lightning protection sales and installation kit available along with VHS, “How to Install Lightning Protection in Trees.” Free computer estimating program provides itemized material list for a specific tree. Independent Protection Company, PO Box 537, Goshen, IN 46527. Phone: 219-533-4116; Fax: 219-534-3719; E-Mail: info@IPCLP.com; http://www.IPCLP.com.

Please Circle 179 on Reader Service Card
AMERICAN TRUCK & TRAILER BODY COMPANY

American Truck & Trailer Body Company brings together the best in forestry body manufacturing. Heavy-duty steel fabrication of customized arborist trucks: cranes, dump bodies, forestry bodies, hoists, hydraulic tailgates, platform bodies, service bodies, tool boxes, truck bodies and more. For your next tailored need, contact Mike Garner. American Truck & Trailer Body Company, Inc., 100 West Valpico Road, Building D, Tracy, CA 95376. Phone: 800-499-8985 or 209-836-8985; Fax: 209-836-1871; E-Mail: amrtruck@pacbell.net.

ARBORTECH

For the professional, Arbortech produces a complete line of forestry bodies: chip bodies, crew cabs, brush bodies, pickup caps, tool boxes. Ready-to-roll, turn-key packages are available with financing. Arbortech, 3203 West Old Lincoln Way, Wooster, OH 44691-3298. Phone: 800-255-5715 or 330-264-4266; Fax: 330-264-0891; http://www.aip.com/arbortech.

FORESTRY EQUIPMENT OF SHELBY, INC.

Your one-stop shopping source for quality new and used arborist equipment. Aerial lifts, chip/dump box trucks, wood chippers, skidders and more. Forestry Equipment of Shelby, Inc., 2510 Taylor Road, Shelby, NC 28152. Phone: 704-487-7245; Fax: 704-482-4685. Evenings, call 704-482-3194 or E-Mail: FESC@shelby.net. Contacts: Steve Barkwell, Mark Sharmann.

ROYAL TRUCK & EQUIPMENT, INC.

SCHODORF TRUCK BODY & EQUIPMENT COMPANY

"Silver Knight" forestry bodies with "Dust Release System," lengths from 9 feet to 18 feet. Very popular options include aluminum removable roofs, lift gates and cranes. Complete packages with chassis are available. You deserve the best and we are happy to provide it to you. For a free brochure/quote, contact Mike Cassidy. Schodorf Truck Body & Equipment Company, 885 Harmon Avenue, Columbus, OH 43223. Phone: 800-288-0992.

SOUTHEASTERN EQUIPMENT COMPANY

Southeastern Equipment Company is your headquarters for used tree care equipment. We offer a wide range of chippers and stump grinders, plus a variety of specialty trucks (chipper dumps, large capacity chip trucks, bucket trucks, log trucks, & crane trucks). Call for pricing and availability or visit our Web site for more information. Southeastern Equipment Company, 4180 Highway 20, Buford, GA 30518; 770-271-8286; 800-487-7089; http://www.seequipment.com.

SOUTHCIO INDUSTRIES, INC.


ASV, INC.

The Posi-Trak HD 4500 features a completely greaseless undercarriage and other low maintenance features. The HD 4500 is powered by an 80 HP John Deere 4.5 liter diesel. The rubber-tracked HD machine exerts only 3 psi ground pressure. The HD's reversible seat allows it to be quickly outfitted into a tractor with a 3-point hitch. ASV, Inc., 840 Lily Lane, PO Box 5160, Grand Rapids, MN 55744. Phone: 218-327-3434; Fax: 218-327-9122; http://www.asvi.com.
**WOOD PROCESSORS**

**B & B MANUFACTURING**

Sell your wood at $300 per cord or more. Double or triple your profits by shrink wrapping wastewood or firewood with WOOD-PAKer! Attractive, various-sized packages can be obtained with our high production, easily operated and affordable machines. Eight machines available. Inquire for free details. Video and packing samples at nominal fee. B&B Manufacturing, 3007 West River Road, Olean, NY 14760. Phone: 800-654-5320; E-Mail: bbmfg@sprynet.com; http://www.sprynet.com/sprynet/bbmfg.

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**BANDIT INDUSTRIES, INC.**

Bandit’s Log Buster is the economical way to dispose of big logs and stumps. Will quarter oversized logs and stumps in a single pass, is able to process logs 10-feet long and can tackle almost any diameter capacity. Lets you rid stumps of dirt and rock before you grind, as well as reduce material before chipping. For further information, contact Bandit at 1-800-952-0178.

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**WOOD PROCESSORS**

**BRUTE MANUFACTURING CORPORATION**


Please Circle 190 on Reader Service Card

**TIMBERWOLF MANUFACTURING CORPORATION**

Timberwolf Manufacturing Corporation introduces the Model HD Wood Processor - by far the best value for the buck. High volume production: 1-1/2 to 3 cords per hour. Quality engine options. Affordable wood processing with high quality parts. Also offering a standard and PTO model. Professional wood splitters and conveyors. Timberwolf Manufacturing Corporation, 118 Spruce Street, Rutland, VT 05702. Phone: 800-340-4386 or 802-775-4227; Fax: 802-773-1275; E-Mail: twolf@sover.net; http://www.timberwolfcorp.com.

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8 ISA CEUs available upon completion

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EQUIPMENT

AERIAL LIFTS
Altec Industries, Inc.
Brink's Mfg. Co., Inc./VAN LADDER
Opdyke, Inc.
Polecats Industries, Inc.
Reading Body Works, Inc.
Terex Telelect Inc.
VERSALIFT, TIME Manufacturing Co.

AERIAL LIFT PARTS & EQUIPMENT
Aerial Lift, Inc.
Alliance Equipment Company, Inc.
Buckingham Mfg. Company, Inc.
CUES, Inc.
DUECO, Inc.
Forestry Equipment of Shelby, Inc.
Jameson Corporation
MIRK Inc./Toombs Truck & Equipment
Mobile Tool International Inc./Holman
NESCO, Inc.
Plastic Techniques Inc.
Quality Metal Products
Southeastern Equipment Company
Specialized Hydraulics Inc.
Wood's C.R.W. Corporation

AUGERS - EARTH & BITS
A & F Warehouse
American Arborist Supplies Inc.
Allen Meadows Company
Blue Ridge Arborist Supply
Buckingham Creek Equipment Inc.
UECO, Inc.
Forestry Suppliers, Inc.
P. Fuller, Inc.
Greenlee Fairmont

Grow Gun Corporation
Karl Kuemmerling, Inc.
Midwest Arborist Supplies
Niemeyer Corporation
Norwalk Power Equipment Company
Pacific Arborist Supplies (Canada) Ltd.
Tanaka
Tree Tools

BLOWERS, DEBRIS
American Arborist Supplies Inc.
Ben Meadows Company
Cleaves Company, Inc.
Deer Creek Equipment Inc.
Echo Incorporated
J. P. Fuller, Inc.
Hawkensens Equipment Company, Inc.
Karl Kuemmerling, Inc.
Landscapers Supply Corporation
Lanphear Supply
Niemeyer Corporation
Northeastern Associates
Norwalk Power Equipment Company
Oregon Cutting Systems Div. Blount, Inc.
Pitt Auto Electric Company
Plastic Techniques Inc.
Poulan Weed-Eater
Professional Tree Surgeons Supplies Inc.
Rapco Industries, Inc.
Shelter Tree
Sherrill, Inc.
Shindaiwa, Inc.
Tanaka

CHAIN SAWs & ACCESSORIES
A & F Warehouse
ADI Pruning Tools/Div. TOL Incorporated
Aerial Equipment, Inc.
American Arborist Supplies Inc.
American Chainsaw & 2 Cycle Inc.
Arbor Direct LLC
Bailey's
Bishop Company
Blue Ridge Arborist Supply
Buckingham Mfg. Company, Inc.
Carl W. Neutzel Services, Inc.

Cleaves Company, Inc.
Cutter's Choice
Deer Creek Equipment Inc.
Echo Incorporated
ESSCO Distributors, Inc.
J. P. Fuller, Inc.
Greenlee Fairmont
Hawkensens Equipment Company, Inc.
Husqvarna Forest & Garden Company
John Deere Consumer Products
Karl Kuemmerling, Inc.
Landscapers Supply Corporation
Lanphear Supply
Niemeyer Corporation
Northeastern Associates
Norwalk Power Equipment Company
Oregon Cutting Systems Div. Blount, Inc.
Pitt Auto Electric Company
Plastic Techniques Inc.
Poulan Weed-Eater
Professional Tree Surgeons Supplies Inc.
Rapco Industries, Inc.
Shelter Tree
Sherrill, Inc.
Shindaiwa, Inc.
STIHL, Incorporated
Tanaka
Tilton Equipment Company
Tree Line Supply Company
Tree Tools
X3 SawChain/
Div. Wilson Hardware Co. Inc.

CHIPPER/SHREDDER/VAC
Deer Creek Equipment Inc.
Hawkensens Equipment Company, Inc.
Salsco, Inc.
Western Tree Equipment & Repairs
CHIPPERS
Aerial Equipment, Inc.
Arborist Supply Company Inc.
Bandit Industries, Inc.
J. P. Carlton Company, Div. DAF, Inc.
Cleaves Company, Inc.
Crane & Shovel Sales Corporation
Danequip
Deer Creek Equipment Inc.
ESSCO Distributors, Inc.
Gravely International
Hawkensen Equipment Company, Inc.
Holt Company of Ohio
Karl Kuemmerling, Inc.
Key Knife, Inc.
Lanphear Supply
Lyons Sawmill & Logging Equipment & Supplies, Inc.
Michigan Caterpillar
MIRK Inc./Toombs Truck & Equipment
Morbark, Inc.
Niemeyer Corporation
Northeastern Associates
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Pacific Arborist Supplies (Canada) Ltd.
Professional Tree Surgeons Supplies Inc.
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Western Tree Equipment & Repairs
Wood/Chuck Chipper Corporation
Woodsmen Chippers

COMMUNICATION SYSTEMS
A & F Warehouse
American Arborist Supplies Inc.
Arbor Computer Systems
Forestry Suppliers, Inc.
Green Mountain Outfitters
Sherrill, Inc.
Tree Line Supply Company
Tree Tools

COMPOSTERS - BACKYARD
Crane & Shovel Sales Corporation

COMPOSTING EQUIPMENT
Bandit Industries, Inc.
Carl W. Neutzel Services, Inc.

CRANES
Crane & Shovel Sales Corporation
DUECO, Inc.
MIRK Inc./Toombs Truck & Equipment
Reading Body Works, Inc.
Southeastern Equipment Company
Wood's C.R.W. Corporation

ENGINES & ENGINE PARTS
A & F Warehouse
American Arborist Supplies Inc.
Cleaves Company, Inc.
Cummins Michigan, Inc.
Deer Creek Equipment Inc.
Deutz Corporation
EnginAire
Engine Distributors Inc.
ESSCO Distributors, Inc.
Foley Engines
Ford Power Products
Hawkensen Equipment Company, Inc.
Landscapers Supply Corporation
Niemeyer Corporation
North Coast Engines, Inc./Crane & Shovel Sales Corporation
Pacific Arborist Supplies (Canada) Ltd.
Power Great Lakes, Inc.
Professional Tree Surgeons Supplies Inc.
Sherrill, Inc.
Southeastern Equipment Company
Tree Tools
Wis-Con Total Power Corporation

EXCAVATORS
Hawkensen Equipment Company, Inc.
Wood's C.R.W. Corporation

FERTILIZATION/AERATION EQUIPMENT
A & F Warehouse
American Arborist Supplies Inc.
Ben Meadows Company
Cleaves Company, Inc.
Deer Creek Equipment Inc.
Forrest Lytle & Sons, Inc.
J. P. Fuller, Inc.
The Grasshopper Company
Grow Gun Corporation
Haimbaugh Enterprises Inc.
Tree Feeder Div.
Hawkensen Equipment Company, Inc.
Karl Kuemmerling, Inc.
Landscapers Supply Corporation
Lanphear Supply
Midwest Arborist Supplies

GENERATORS
A & F Warehouse
Cleaves Company, Inc.
Deer Creek Equipment Inc.
J. P. Fuller, Inc.
Greenlee Fairmont
Hawkensen Equipment Company, Inc.
Norwalk Power Equipment Company
Pacific Arborist Supplies (Canada) Ltd.
Tree Tools

GRAPPLES/LOADERS
Carl W. Neutzel Services, Inc.
Crane & Shovel Sales Corporation
Hollie Wood Enterprises
ImpleMax Equipment Co., Inc.
Lund Tech, Inc.
Lyons Sawmill & Logging Equipment & Supplies, Inc.
Southeastern Equipment Company
Vermeer Manufacturing Company

HYDRAULIC TOOLS & EQUIPMENT
ADI Pruning Tools/Div. TOL Incorporated
FCI/Racine
Worklift (UK) Ltd.

KNIVES, CHIPPER
Aerial Equipment, Inc.
American Arborist Supplies Inc.
Bandit Industries, Inc.
Cleaves Company, Inc.
Crane & Shovel Sales Corporation
ESSCO Distributors, Inc.
Hawkensen Equipment Company, Inc.
Karl Kuemmerling, Inc.
Key Knife, Inc.
Lanphear Supply
Leonardi Manufacturing
Northeastern Associates
Norwalk Power Equipment Company
Pacific Arborist Supplies (Canada) Ltd.
Professional Tree & Turf Equipment
Shelter Tree
Sherrill, Inc.
Simonds Industries, Inc.

TCI PRODUCT DIRECTORY - JULY 1999 - 34
Southeastern Equipment Company
Tree Tools
Vermeer Manufacturing Company
WesSpur, LLC.
Western Tree Equipment & Repairs
Wood/Chuck Chipper Corporation
Zenith Cutter Company

**KNIVES, CHIPPER REPAIR**
Aerial Equipment, Inc.
American Arborist Supplies Inc.
Cleaves Company, Inc.
ESSCO Distributors, Inc.
Karl Kuemmerling, Inc.
Northeastern Associates
Pacific Arborist Supplies (Canada) Ltd.
Professional Tree & Turf Equipment
Shelter Tree
Tree Tools
Vermeer Manufacturing Company
Zenith Cutter Company

**LIGHTNING PROTECTION SYSTEMS**
American Arborist Supplies Inc.
Independent Protection Company
Tree Tools

**LUBRICANTS**
American Arborist Supplies Inc.
Arbor Direct LLC
Bishop Company
Deer Creek Equipment Inc.
The Green Oil Company, Inc.
Landscapers Supply Corporation
Pacific Arborist Supplies (Canada) Ltd.
Plantoil, Ltd.

**MULCH COLORING EQUIPMENT**
American Arborist Supplies Inc.
Carl W. Neutzel Services, Inc.

**PNEUMATIC TOOLS**
DendroTech

**POWER PRUNING EQUIPMENT**
A & F Warehouse
ADI Pruning Tools/Div. TOL Incorporated
Aerial Equipment, Inc.
American Arborist Supplies Inc.
Ben Meadows Company
Bishop Company
Cleaves Company, Inc.
Deer Creek Equipment Inc.
Echo Incorporated
ESSCO Distributors, Inc.
Forestry Suppliers, Inc.
J. P. Fuller, Inc.
Hawkensen Equipment Company, Inc.
Husqvarna Forest & Garden Company
Karl Kuemmerling, Inc.
Lanphear Supply
Lawn Equipment Parts Company
Midwest Arborist Supplies
Niemeyer Corporation
Northeastern Associates
Norwalk Power Equipment Company
Pacific Arborist Supplies (Canada) Ltd.
Poulan Weed-Eater

**PUMPS**
Minnesota Wanner Company

**RECYCLING EQUIPMENT/ WOOD PROCESSORS**
B & B Manufacturing
Bandit Industries, Inc.
Brute Manufacturing Corporation
Carl W. Neutzel Services, Inc.
Cleaves Company, Inc.
Hawkensen Equipment Company, Inc.
Hollie Wood Enterprises
Karl Kuemmerling, Inc.
Lyons Sawmill & Logging Equipment & Supplies, Inc.
Robin Outdoor Power Equipment/Carswell Import & Marketing Associates
Timberwolf Manufacturing Corp.
Wood-Mizer Products, Inc.

**RIGHT-OF-WAY/ LAND CLEARING EQUIPMENT**
Brown Manufacturing Corp.
Cleaves Company, Inc.
Deer Creek Equipment Inc.
Gyro-Trac, Inc.
ImpleMax Equipment Co., Inc.
Lyons Sawmill & Logging Equipment & Supplies, Inc.
Poulan Weed-Eater
Rayco Manufacturing, Inc.
Sherrill, Inc.
Vermeer Manufacturing Company

**ROOT CUTTERS**
Corona Clipper
Crane & Shovel Sales Corporation
Pacific Arborist Supplies (Canada) Ltd.
Tree Tools
WesSpur, LLC.
Western Tree Equipment & Repairs
SKIDSTEER LOADERS & IMPLEMENTS
Cleaves Company, Inc.
Deer Creek Equipment Inc.
Gyro-Trac, Inc.
ImpleMax Equipment Co., Inc.
Lund Tech, Inc.
Michigan Caterpillar

SNOW REMOVAL EQUIPMENT
American Arborist Supplies Inc.
Deer Creek Equipment Inc.
Echo Incorporated
J. P. Fuller, Inc.
The Grasshopper Company
Hawkensen Equipment Company, Inc.
Husqvarna Forest & Garden Company
Landscapers Supply Corporation
Lanphear Supply
Niemeyer Corporation
Pacific Arborist Supplies (Canada) Ltd.
Shindaiwa, Inc.

SPRAYERS & ACCESSORIES
American Arborist Supplies Inc.
B & G Equipment
Deer Creek Equipment Inc.
Echo Incorporated
ESSCO Distributors, Inc.
Forestry Suppliers, Inc.
J. P. Fuller, Inc.
Hawkensen Equipment Company, Inc.
John Bean Sprayers
Landscapers Supply Corporation
Lanphear Supply
Minnesota Wanner Company
Northeastern Associates
Pacific Arborist Supplies (Canada) Ltd.
Professional Tree Surgeons Supplies Inc.
Professional Tree & Turf Equipment
Rear’s Manufacturing Company
Robin Outdoor Power Equipment/
Carswell Import & Marketing Associates
Shelter Tree
Shindaiwa, Inc.
Southeastern Equipment Company
Tree Tools

STUMP CUTTERS
Carl W. Neutzel Services, Inc.
Danequip
Deer Creek Equipment Inc.
Excel Industries Inc.
Heckendorn Equipment Company
Husqvarna Forest & Garden Company
Levco Manufacturers, Inc.
Lyons Sawmill & Logging Equipment & Supplies, Inc.
Miller Machine Works
RAM Posiquip
Southeastern Equipment Company

STUMP CUTTERS, PTO
Miller Machine Works

STUMP CUTTER TEETH
Aerial Equipment, Inc.
American Arborist Supplies Inc.
Arborist Supply Company Inc.
Blue Ridge Arborist Supply
Border City Tool & Manufacturing Co.
J. P. Carlton Company, Div. DAF, Inc.
CEI
Cleaves Company, Inc.
Crane & Shovel Sales Corporation
ESSCO Distributors, Inc.
Fox Manufacturing, Inc.
Green Manufacturing Inc.
Karl Kuehmerling, Inc.
Lanphear Supply
Leonardi Manufacturing
Midwest Arborist Supplies
Northeastern Associates
Opdyke, Inc.
Pacific Arborist Supplies (Canada) Ltd.
Professional Tree Surgeons Supplies Inc.
Rayco Manufacturing, Inc.
Shelter Tree
Sherrill, Inc.
Sunrise Concepts, Inc.
Tree Tools
Vermeer Manufacturing Company
WesSpur, LLC
Western Tree Equipment & Repairs

SWEEPERS
Cleaves Company, Inc.
Deer Creek Equipment Inc.
J. P. Fuller, Inc.
Hawkensen Equipment Company, Inc.
Pacific Arborist Supplies (Canada) Ltd.
Shindaiwa, Inc.

TRAFFIC SAFETY
A & W Warehouse
Aerial Equipment, Inc.
American Arborist Supplies Inc.
American Safety Utility Corp.
Arbor Direct LLC
Ben Meadows Company
Bishop Company
Cleaves Company, Inc.
Deer Creek Equipment Inc.
ESSCO Distributors, Inc.
Federal Signal Corporation
Forestry Suppliers, Inc.
Green Mountain Outfitters
Karl Kuehmerling, Inc.
Kramer Equipment Company, Inc.
Landscapers Supply Corporation
Northeastern Associates
Pacific Arborist Supplies (Canada) Ltd.
Plastic Techniques Inc.
Safety Test & Equipment Company
Shelter Tree
Sherrill, Inc.
Sound Off Inc.
Tree Line Supply Company
Tree Tools
Western Tree Equipment & Repairs

TRAILERS/RAMPS
Carl W. Neutzel Services, Inc.
Deer Creek Equipment Inc.
Hawkensen Equipment Company, Inc.
Pacific Arborist Supplies (Canada) Ltd.

TREE SPADES
Ben Meadows Company
Concept Engineering Group, Inc. (CEG)
Deer Creek Equipment Inc.
Pacific Arborist Supplies (Canada) Ltd.
Safety Test & Equipment Company
Vermeer Manufacturing Company

TREE TRANSPLANTATION EQUIPMENT
Vermeer Manufacturing Company

TRENCHERS
Ben Meadows Company
Concept Engineering Group, Inc. (CEG)
Deer Creek Equipment Inc.
Opdyke, Inc.
Pacific Arborist Supplies (Canada) Ltd.
Vermeer Manufacturing Company

TRUCKS & TRUCK ACCESSORIES
American Truck & Trailer Body Co., Inc.
Arbortech
ASV, Inc. (All Season Vehicles)
CUES, Inc.
Forestry Equipment of Shelby, Inc.
Great Lakes Ford - Nissan/
Thayer Chevrolet - Toyota
**MINNESOTA WANNER COMPANY**

**MIRK INC./TOOMBS TRUCK & EQUIPMENT**

**OPDYKE, INC.**

**READING BODY WORKS, INC.**

**ROYAL TRUCK & EQUIPMENT INC.**

**SCHODORF TRUCK BODY & EQUIP. CO.**

**SOUND OFF INC.**

**SOUTHCORE INDUSTRIES**

**SOUTHEASTERN EQUIPMENT COMPANY**

**SPECIALIZED HYDRAULICS INC.**

**THAYER CHEVROLET TOYOTA**

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**TUB GRINDERS**

**BANDIT INDUSTRIES, INC.**

**MICHIGAN CATERPILLAR**

**VERMEER MANUFACTURING COMPANY**

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**USED EQUIPMENT**

**AERIAL EQUIPMENT, INC.**

**ALTEC INDUSTRIES, INC.**

**AMERICAN ARBORIST SUPPLIES INC.**

**CARL W. NEUTZEL SERVICES, INC.**

**CLEAVES COMPANY, INC.**

**DEER CREEK EQUIPMENT INC.**

**DUECO, INC.**

**ESSCO DISTRIBUTORS, INC.**

**GREAT LAKES FORD - NISSAN/THAYER CHEVROLET - TOYOTA**

**FORESTRY EQUIPMENT OF SHELBY, INC.**

**HAWKENSENV EQUIPMENT COMPANY, INC.**

**HOLLIE WOOD ENTERPRISES**

**KARI KUEMMERLING, INC.**

**LANPHEAR SUPPLY**

**MICHIGAN CATERPILLAR**

**MTI INSULATED PRODUCTS INC.**

**NESCO, INC.**

**OPDYKE, INC.**

**PROFESSIONAL TREE SURGEONS SUPPLIES INC.**

**ROYAL TRUCK & EQUIPMENT INC.**

**SCHODORF TRUCK BODY & EQUIP. CO.**

**SHELTER TREE**

**SHERRILL, INC.**

**SOUTHEASTERN EQUIPMENT COMPANY**

**SPECIALIZED HYDRAULICS INC.**

**THAYER CHEVROLET TOYOTA**

**TRUECO, INC.**

**VERMEER MANUFACTURING COMPANY**

**WESSPUR, LLC**

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**UTILITY CARTS**

**CUES, INC.**

**DEER CREEK EQUIPMENT INC.**

**HAWKENSENV EQUIPMENT COMPANY, INC.**

**K & R PRODUCTS**

**KRAMER EQUIPMENT COMPANY, INC.**

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**CHEMICALS**

**ADJUVANTS/MISC. CHEMICALS**

**BEN MEADOWS COMPANY**

**ESSCO DISTRIBUTORS, INC.**

**MIDWEST ARBORIST SUPPLIES**

**NU-ARBOR TREE & SHRUB CARE PRODUCTS**

**PLANT HEALTH CARE INC.**

**PROFESSIONAL TREE SURGEONS SUPPLIES INC.**

**REMKKE ENTERPRISES, INC.**

**SHELTER TREE**

**BIOINSECTICIDES**

**PLANT HEALTH CARE INC.**

**BIOPESTICIDES**

**ESSCO DISTRIBUTORS, INC.**

**GREENPRO SERVICES**

**MIDWEST ARBORIST SUPPLIES**

**PROFESSIONAL TREE SURGEONS SUPPLIES INC.**

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**FERTILIZATION SUPPLIES**

**A & F WAREHOUSE**

**AMERICAN ARBORIST SUPPLIES INC.**

**B & G EQUIPMENT**

**BEN MEADOWS COMPANY**

**CLEAVES COMPANY, INC.**

**CREATIVE SALES, INC. (CSI)**

**DEER CREEK EQUIPMENT INC.**

**ESSCO DISTRIBUTORS, INC.**

**FORREST LYTLE & SONS, INC.**

**GREENPRO SERVICES**

**KARI KUEMMERLING, INC.**

**LANDSCAPERS SUPPLY CORPORATION**

**LANPHEAR SUPPLY**

**J. J. MAUGET COMPANY**

**MIDWEST ARBORIST SUPPLIES**

**MONTEREY LAWN & GARDEN PRODUCTS, INC.**

**MOYER & SON, INC.**

**NORTHEAST SHADE TREE**

**NU-ARBOR TREE & SHRUB CARE PRODUCTS**

**PLANT HEALTH CARE INC.**

**PROFESSIONAL TREE SURGEONS SUPPLIES INC.**

**PROFESSIONAL TREE & TURF EQUIPMENT**

**RAINBOW TREECARE - SCIENTIFIC ADVANCEMENTS**

**REMKKE ENTERPRISES, INC.**

**SHELTER TREE**

**SHERRILL, INC.**

**TREE TOOLS**

**WILLMAN'S EARTH RESTORATION CO.**

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**FUNGICIDES**

**ARBORESSYSTEMS, LLC**

**BAYER CORPORATION, AG. DIVISION**

**CLEARY CHEMICAL**

**ESSCO DISTRIBUTORS, INC.**

**GROWTH PRODUCTS, LTD.**

**J. J. MAUGET COMPANY**

**MIDWEST ARBORIST SUPPLIES**

**MONTEREY LAWN & GARDEN PRODUCTS, INC.**

**NOVARTIS SPECIALTY PRODUCTS**

**PROFESSIONAL TREE SURGEONS SUPPLIES INC.**

**RAINBOW TREECARE - SCIENTIFIC ADVANCEMENTS**

**TREE TECH MICROINJECTION SYSTEMS**

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**GROWTH RETARDANTS/REGULATORS**

**AMVAC CHEMICAL**

**MONTEREY LAWN & GARDEN PRODUCTS, INC.**

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**HERBICIDES**

**BAYER CORPORATION, AG. DIVISION**

**BEN MEADOWS COMPANY**

**CLEARY CHEMICAL**

**DOW AGROSCIENCES**

**FORESTRY SUPPLIERS, INC.**

**LANDSCAPERS SUPPLY CORPORATION**

**MONTEREY LAWN & GARDEN PRODUCTS, INC.**

**NOVARTIS SPECIALTY PRODUCTS**

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**INSECTICIDES**

**ARBORESSYSTEMS, LLC**

**BAYER CORPORATION, AG. DIVISION**

**CLEARY CHEMICAL**

**CREATIVE SALES, INC. (CSI)**

**ESSCO DISTRIBUTORS, INC.**

**FMC CORPORATION - APG SPECIALTY PRODUCTS**

**LANDSCAPERS SUPPLY CORPORATION**

**J. J. MAUGET COMPANY**

**MIDWEST ARBORIST SUPPLIES**

**MONTEREY LAWN & GARDEN PRODUCTS, INC.**

**PROFESSIONAL TREE SURGEONS SUPPLIES INC.**

**RHONE-POULENC AG., INC.**

**TREE TECH MICROINJECTION SYSTEMS**

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**INTEGRATED PEST MANAGEMENT**

**PHERO TECH INC.**

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**MITICIDES**

**GWAN COMPANY**

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**REPELLENTS**

**BEN MEADOWS COMPANY**

**FORESTRY SUPPLIERS, INC.**

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**TCI PRODUCT DIRECTORY - JULY 1999 - 37**
PROFESSIONAL SERVICES

COMPUTER SOFTWARE/HARDWARE
ACRT, Inc.
Arbor Computer Systems
ArborCom Technologies
Creative Automation Solutions
Environmental Consultants, Inc.
Environmental Information & Design Inc.
Green Mountain Outfitters
Mobile Data Collection Corp.
Natural Path Forestry Consultants
Practical Solutions, Inc.
Service Communications Software
Tree Management Systems Inc.

CONSULTING - BUSINESS
Arbor Computer Systems
Creative Automation Solutions
DendroTech

CONSULTING - URBAN FORESTRY
Natural Path Forestry Consultants

EDUCATION/WORKSHOPS/REFERENCE INFORMATION
ACRT, Inc.
ArborCom Technologies
Arborist Skills, Inc.
Arborist Supply Company Inc.
ArborMaster™ Training, Inc.
Environmental Information & Design Inc.
Forest Applications Training, Inc.
Green Mountain Outfitters
Landscape Management
J.J. Mauget Company
National Arborist Association, Inc.
Natural Path Forestry Consultants
Rainbow Treecare - Scientific Advancements
Royal Horticultural Society
Sierra Moreno Mercantile Company
Tree Climbers International
Visual Education Productions

FINANCING
Altec Industries, Inc.
American Business Leasing Inc.
The Associates
First Sierra Financial Inc.
Greystone Financial Group, Inc.
OBL Financial Services Inc.
Oxford Capital
Progress Leasing/
Quaker State Leasing Company

GIS MAPPING
Natural Path Forestry Consultants

GOVERNMENTAL AFFAIRS
National Arborist Association, Inc.

INSURANCE
Albiez Insurance Agency, Inc.
Camberford Law PC
CNA Commercial Insurance
The Hartford
NRC Insurance Agency
Sol J. Oberman Insurance (CPCU)
Ogilvy Gilbert Norris & Hill Insurance
Robert Squillaire Insurance Agency

LEASE/RENTAL
American Business Leasing Inc.
The Associates
DUECO, Inc.
First Sierra Financial Inc.
Greystone Financial Group, Inc.
MIRK Inc./Toombs Truck & Equipment
Opdyke, Inc.
Progress Leasing/
Quaker State Leasing Company
Vermeer Manufacturing Company
Wood's C.R.W. Corporation

REPAIR/REBUILDING
Aerial Equipment, Inc.
American Arborist Supplies Inc.
Armstrong Hydraulic Repairs Inc.
Cleaves Company, Inc.
ESSCO Distributors, Inc.
GRA Services/Total Tree
Karl Kuenmerling, Inc.
Northeastern Associates
Pacific Arborist Supplies (Canada) Ltd.
Professional Tree & Turf Equipment
Royal Truck & Equipment Inc.
Shelter Tree
Specialized Hydraulics Inc.

Tree Tools
Vermeer Manufacturing Company
Zenith Cutter Company

REGULATORY COMPLIANCE
American Safety Utility Corp.
Green Mountain Outfitters
MIRK Inc./Toombs Truck & Equipment
National Arborist Association, Inc.

STAFFING
Prostaffing

TREE TRANSPLANTATION
Willman's Earth Restoration Co.

SUPPLIES

GENERAL ARBORIST SUPPLIES
A & F Warehouse
Aerial Equipment, Inc.
American Arborist Supplies Inc.
American Chainsaw & 2 Cycle Inc.
American Safety Utility Corp.
Arbor Direct LLC
Arborist Skills, Inc.
Arborist Supply Company Inc.
Arborist Supply Company Inc.
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Arborist Supply Company Inc.
CABLING & BRACING
A & F Warehouse
Aerial Equipment, Inc.
American Arborist Supplies Inc.
American Chainsaw & 2 Cycle Inc.
Arbor Direct LLC
Bartlett Manufacturing Company
Bishop Company
Blue Ridge Arborist Supply
Cleaves Company, Inc.
Deer Creek Equipment Inc.
ESSCO Distributors, Inc.
Fehr Brothers Industries
Fujikura Europe Limited
J.P. Fuller, Inc.
Karl Kuemmerling, Inc.
Kramer Equipment Company, Inc.
Landscapers Supply Corporation
Lanphear Supply
Midwest Arborist Supplies
New England Ropes, Inc.
Norwalk Power Equipment Company
Pacific Arborist Supplies (Canada) Ltd.
Petzel America
Pigeon Mountain Industries, Inc.
Professional Tree Surgeons Supplies Inc.
Professional Tree & Turf Equipment Safety Test & Equipment Company
Shelter Tree
Sherrill, Inc.
Tree Climbers International
Tree Line Supply Company
Tree Tools
Vermeer Manufacturing Company
Wall Safety Products
Weaver Leather, Inc.
Wellington Leisure Products
WestCoast Shoe Company/Wesco

DIAGNOSTIC TOOLS
A & F Warehouse
American Arborist Supplies Inc.
Bishop Company
DendroTech
Forestry Suppliers, Inc.
Fujikura Europe Limited
IML - Instrument Mechanic Labor, Inc.
Karl Kuemmerling, Inc.
Midwest Arborist Supplies

IRRIGATION/
AERATION PRODUCTS
A & F Warehouse
Ben Meadows Company
Deer Creek Equipment Inc.
Haimbaugh Enterprises Inc. - Tree Feeder Div.
Karl Kuemmerling, Inc.

NATURAL HOMEOPATHIC REMEDIES
American Arborist Supplies Inc.
Plant Health Care Inc.
SelfHEAL, Inc./Oral Ivy™

OFFICE SUPPLIES
Arbor Computer Systems
Green Mountain Outfitters

PERSONAL PROTECTIVE EQUIPMENT
A & F Warehouse
Aerial Equipment, Inc.
American Arborist Supplies Inc.
American Chainsaw & 2 Cycle Inc.
American Safety Utility Corp.
Arbor Direct LLC
Arborist Supply Company Inc.
Ben Meadows Company
Bishop Company
Buckingham Mfg. Company, Inc.
Cleaves Company, Inc.
Deer Creek Equipment Inc.
Forestry Suppliers, Inc.
Fujikura Europe Limited

CLOTHING
A & F Warehouse
Agape Designs
American Arborist Supplies Inc.
American Chainsaw & 2 Cycle Inc.
American Safety Utility Corp.
Arborwear Inc.
Cleaves Company, Inc.
Deer Creek Equipment Inc.
Forest Lytle & Sons, Inc.
Green Mountain Outfitters
Karl Kuemmerling, Inc.
Pacific Arborist Supplies (Canada) Ltd.
SawJammer Company
Tree Tools
Vermeer Manufacturing Company

WESTCOAST SHOE COMPANY/WESCO

Wall Safety Products/Div. Wall Industries
Weaver Leather, Inc.
WesSpur, LLC
Willman's Earth Restoration Co.

TCI PRODUCT DIRECTORY - JULY 1999 - 39
Green Mountain Outfitters

Husqvarna Forest & Garden Company

Karl Kuehmerling, Inc.

Kramer Equipment Company, Inc.

National Arborist Association, Inc.

Pacific Arborist Supplies (Canada) Ltd.

Petzel America

Pigeon Mountain Industries, Inc.

Plastic Techniques Inc.

Professional Tree Surgeons Supplies Inc.

SawJoamer Company

Safety Test & Equipment Company

Sherrill, Inc.

Tree Line Supply Company

Tree Tools

Vermeer Manufacturing Company

WesSpur, LLC

Western Tree Equipment & Repairs

ROOT BARRIERS

American Arborist Supplies Inc.

Ben Meadows Company

Bishop Company

Deep Root Partners, L.P.

Pacific Arborist Supplies (Canada) Ltd.

Reemay Corporation / Bio Barrier

Tree Tools

WesSpur, LLC

Western Tree Equipment & Repairs

ROPE

A & F Warehouse

Aerial Equipment, Inc.

American Arborist Supplies Inc.

American Chainsaw & 2 Cycle Inc.

The American Group - Samson Div.

American Safety Utility Corp.

Arbor Direct LLC

Bartlett Manufacturing Company

Bashlin Industries Inc.

Ben Meadows Company

Bishop Company

Blue Ridge Arborist Supply

Buccaneer Rope Company

Cleaves Company, Inc.

Climb Axe, Ltd.

Columbian Rope Company

Cutter’s Choice

Deer Creek Equipment Inc.

ESSCO Distributors, Inc.

Forestry Suppliers, Inc.

J.P. Fuller, Inc.

Hollie Wood Enterprises

Karl Kuehmerling, Inc.

Kramer Equipment Company, Inc.

Landscapers Supply Corporation

Lanphear Supply

Midwest Arborist Supplies

New England Ropes, Inc.

Niemeyer Corporation

Norwalk Power Equipment Company

Pacific Arborist Supplies (Canada) Ltd.

Petzel America

Pigeon Mountain Industries, Inc.

Professional Tree Surgeons Supplies Inc.

Professional Tree & Turf Equipment

Safety Test & Equipment Company

Shelter Tree

Sherrill, Inc.

Sylvan Arborists Supplies

Tree Line Supply Company

Tree Tools

Vermeer Manufacturing Company

Wall Safety Products

Wellington Leisure Products

Yale Cordage, Inc.

POISON IVY PROTECTION

Aerial Equipment, Inc.

American Arborist Supplies Inc.

Ben Meadows Company

Cleaves Company, Inc.

Forestry Suppliers, Inc.

SelfHEAL, Inc./Oral Ivy™

Western Tree Equipment & Repairs

PRUNING SUPPLIES

American Chainsaw & 2 Cycle Inc.

American Safety Utility Corp.

Arbor Direct LLC

Arborist Supply Company Inc.

Bartlett Manufacturing Company

Bashlin Industries Inc.

Blue Ridge Arborist Supply

Cutter’s Choice

Fanno Saw Works

Fujikura Europe Limited

Green Mountain Outfitters

Growtech, Inc.

Hollie Wood Enterprises

Jameson Corporation

Kramer Equipment Company, Inc.

Landscapers Supply Corporation

Fred Marvin Associates

National Arborist Association, Inc.

Oregon Cutting Systems Div Blount, Inc.

The Peavey Manufacturing Company

Safety Test & Equipment Company

Shelter Tree

Takagi Tools, Inc.

Tree Line Supply Company

Vaca Shears

Wellington Leisure Products

Western Tree Equipment & Repairs

SOIL AMENDMENTS

A & F Warehouse

American Arborist Supplies Inc.

AMVAC Chemical

Ben Meadows Company

ESSCO Distributors, Inc.

GreenPro Services

Haimbaugh Enterprises Inc. - Tree Feeder Div.

Lanphear Supply

J.J. Mauget Company

Midwest Arborist Supplies

Professional Tree Surgeons Supplies Inc.

Sherrill, Inc.

Tree Line Supply Company

Tree Tech Microinjection Systems

Tree Tools

TREES FEDERATION

American Arborist Supplies Inc.

American Chainsaw & 2 Cycle Inc.

ArborSystems, LLC

Ben Meadows Company

Cleaves Company, Inc.

Creative Sales, Inc. (CSI)

ESSCO Distributors, Inc.

GreenPro Services

Grow Gun Corporation

Haimbaugh Enterprises Inc. - Tree Feeder Div.

Lanphear Supply

Northeast Shade Tree

Professional Tree Surgeons Supplies Inc.

Sherrill, Inc.

Tree Line Supply Company

Tree Tech Microinjection Systems

Tree Tools

TREE PROTECTORS

A & F Warehouse

American Arborist Supplies Inc.

American Chainsaw & 2 Cycle Inc.

Ben Meadows Company

Cleaves Company, Inc.

Deep Root Partners, L.P.

Deer Creek Equipment Inc.

Forestry Suppliers, Inc.

Landscapers Supply Corporation

Pacific Arborist Supplies (Canada) Ltd.

Tree Tools

Vermeer Manufacturing Company

Wall Safety Products

TCI PRODUCT DIRECTORY - JULY 1999 - 40
Born in 1938.

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Contact: Penny Allanson-Bailey

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E-Mail: sales@bashlin.com
Web: http://www.bashlin.com
Contact: Rod Paul

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Fax: 816-241-4735
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Contact: Kristin Tichenor

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Contact: Bryan Marcinko

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Contact: Gustavo Mendoza

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Contact: Roger Mellick
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E-Mail: cleanair@enginaire.com
Contact: Bill Decker

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Phone: 248-399-3142
Contact: Tom Trimble

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Contact: Anthony DeMarco
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10350 Evendale Drive
Cincinnati, OH 45241
Toll-Free: 800-528-3113
Phone: 513-956-5700
Fax: 513-956-5701
E-mail: Fecon@Fuse.net
Web Site: http://www.Fecon.com
Contact: John Heekin

**Federal Signal Corporation**
2645 Federal Signal Drive
University Park, IL 60466
Toll-Free: 800-824-0254
Phone: 708-534-3400
Fax #1: 800-682-8022
Fax #2: 708-534-7035
E-Mail: amberinfo@fedsig.com
Contact: Mr. Jan Mol

**First Sierra Financial Inc.**
Chase Tower
600 Travis Street, Suite 6920
Houston, TX 77002
Toll-Free: 800-745-9292 x 3249
Phone: 713-332-0088 x 3249
Fax: 713-221-1818
Contact: David Bethea
THE EXPERTS IN GREEN INDUSTRY
FINANCING NATIONWIDE! Specializes in leasing/financing of new and used equipment to help your business grow. Special programs available. Up to $75,000 without financial statements. Call for your quick and easy pre-approval.

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**FMC Corporation - APG Specialty Products**
1735 Market Street
Philadelphia, PA 19103
Toll-Free: 800-321-1FMC (1362)
Phone: 215-299-6410
Fax: 215-299-6100
Contact: Arden Bull

**Foley Engines**
200 Summer Street
Worcester, MA 01604
Phone: 508-753-2979
Fax: 508-799-2276
Jay Foley

**Ford Power Products**
28333 Telegraph Road, Ste. 300
Southfield, MI 48034
Toll-Free: 800-833-4773
Phone: 248-945-4380
Fax: 248-945-4391
E-Mail: jandres@ford.com
Contact: John Andres

**Forest Applications Training, Inc.**
9137 Ridge Road
PO Box 1048
Hiram, GA 30141-1048
Phone: 770-943-4745
Fax: 770-439-6620
E-Mail: info@forestapps.com
Web Site: http://www.forestapps.com
Contact: Tim Ard

**Forrest Lyle & Sons, Inc.**
740 West Galbraith Road
Cincinnati, OH 45231
Phone: 513-521-1464
Fax: 513-521-0779
Contact: Peggy J. Lytle

**Fox Manufacturing, Inc.**
PO Box 6
Lowell, IN 46356
Phone: 219-696-1440
Fax: 219-696-8107
E-Mail: fox@netntico.net
Contact: Dan Fox

**Fordyce Equipment of Shelby, Inc.**
2510 Taylor Road
Shelby, NC 28152
Phone #1: 704-487-7245
Evening: 704-905-4661
Fax: 704-482-4685
E-Mail: FESC@Shelby.net
Contact: Stephen Barkwell
With over 400 units in stock, Forestry Equipment of Shelby is one of the largest dealers of new and used bucket trucks, wood chippers and specialty equipment. Your complete one-stop source for quality new and used arborist equipment.

See our ad in 4-color Product Directory.

**Fujikura Europe Limited**
Brook Lane
Westbury Wiltshire BA134ES
England
Phone: 011-441-37-382-5582
Fax: 011-441-37-382-5824
Contact: Phil Wade
(D/S) J. P. Fuller Inc.
1812 Crain Highway
Glen Burnie, MD 21061
Toll-Free: 800-932-5095
Phone: 410-766-5120
Fax: 410-761-5119
Contact: Marc Lombardi

(D/M) GNC Industries
1808 Airport Road
Pocahontas, AR 72455
Toll-Free: 800-462-2005
Phone: 870-248-9901
Fax: 870-248-9905
E-Mail: cindy@gnc-industries.com
Web: http://www.gnc@industries.com
Contact: James Jaeger

(D/M) Gowan Company
PO Box 5569
Yuma, AZ 85366-5569
Phone: 520-783-8844
Fax: 520-343-9255
Contact: Rick Carter

(M) GRA Services/Total Tree
5020 East Second Street
Edmond, OK 73034
Phone: 405-330-2395
Fax: 405-330-1397
Contact: Douglas Reeves

(M) The Grasshopper Company
PO Box 637
105 Old 87 Highway
Moundridge, KS 67107
Phone: 316-345-8621
Fax: 316-345-2301
E-Mail: info@grasshoppermower.com
Web: http://www.grasshoppermower.com
Contact: Connie Estep

(M) Gravely Division of Ariens
655 West Ryan Street
Brillion, WI 54110
Phone: 920-756-2141
Fax: 920-756-2407
E-Mail: kwiseman@ariens.com
Web: http://www.gravely.com
Contact: Kevin Wiseman

(M) Green Manufacturing, Inc.
36427 Sibley Road
PO Box 640
Boston, MA 02164-0640
Toll-Free: 888-1-GREEN (888-814-7336)
Phone: 734-753-5200
Fax: 734-753-5226
E-Mail: green@cdlcorp.com
Web: http://www.greenmanufacturing.com
Contact: Kevin Green
With GREENTEETH™, you can rotate or completely replace every tooth on the entire wheel in a matter of minutes using only a 3\(\frac{1}{4}\)" wrench!

(D/S) Green Mountain Outfitters
PO Box 4193
Winston-Salem, NC 27115
Toll-Free: 800-929-1948
Phone: 336-767-7700
Fax: 336-767-8802
Contact: Drew Suelzer

(D/M) The Green Oil Company, Inc.
1013 Union Meeting Road
PO Box 577
Blue Bell, PA 19422
Toll-Free: 888-542-8584
Phone: 215-542-8584
Fax: 215-646-0151
E-Mail: ira.pierce@cenet.org
Web: http://www.cerf.org/greenoil
Contact: Ira Pierce
For safe alternatives to toxic petroleum lubricants, call The Green Oil Company today for hydraulic fluids, bar and chain oils, greases, turf lawn mower hydraulic fluid and compressor oil, all environmentally and toxicologically safe!

(M) Greenlee Fairmont
4455 Boeing Drive
Rockford, IL 61109
Phone: 815-397-7070
Fax: 815-397-8289
E-Mail: fulfill@greenlee.textron.com
Web: http://www.greenlee.textron.com
Contact: Sandy Turner
Greenlee Fairmont manufactures a complete line of hydraulically-powered tree trimming and cutting equipment used by leading tree services worldwide. Offering hand-held chain saws, pole saws and drills and bits. Fairmont products perform reliably in all weather extremes. Catalog available.

(D/M) GreenPro Services
380 South Franklin Street
Hempstead, NY 11550
Toll-Free: 800-645-6464
Phone: 516-538-6464
Fax: 516-538-2042
Contact: Robert R. Riley

Affiliated Location
450 South, 300 East
Emery, UT 84522
Toll-Free: 800-585-7959
Phone: 435-286-2424
Fax: 435-286-2229
See our ads in 4-color Product Directory.

(S) Greystone Financial Group, Inc.
PO Box 1447
West Chester, PA 19380
Toll-Free: 888-718-1500
Phone: 610-738-7100
Fax: 610-738-0871
E-Mail: Gstonefin@aol.com
Contact: Bruce Krah

(M) Grow Gun Corporation
5322 Howell Street
Arvada, CO 80002
Phone: 303-278-9112
Fax: 303-279-5101
E-Mail: growgun@denver.inf.net
Web: http://www.denver.inf.net\-growgun
(D) Growtech, Inc.
1724 Elmhurst Road
Elk Grove Village, IL 60007-5909
Toll-Free: 800-204-GROW (4769)
Phone: 847-427-1377
Fax: 847-427-1455
E-Mail: info@growtech-inc.com
Web: http://www.growtech-inc.com
Contact: Val Box

Featuring: ARS brand and other fine professional pruning tools. Ergonomically designed, lightweight, easy-to-use. Arborists' folding and straight saws, pole saws, long-reach pruners, hand pruners, hedge shears, loppers, horticultural and flower knives, scissors and accessories. See our ad in 4-color Product Directory.

(D/M/S) Growth Products, Ltd
PO Box 1259
White Plains, NY 10602
Toll-Free: 800-648-7626
Phone: 914-428-1316
Fax: 914-428-2780
E-Mail: info@growthproducts.com
Web: http://www.growthproducts.com
Contacts: Nicole Campbell, Nancy Bassanese

Growth Products provides the arborist with a complete line of professional liquid fertilizer, micronutrients and natural organics for every season. Each product contains our exclusive methylene urea—a slow-release nitrogen source. Please call for more information. See our ad in 4-color Product Directory.

(M) Gyro-Trac, Inc.
398 Route 138
Forestville, QC G0T 1E0
Canada
Toll-Free: 888-490-TRAC (8722)
Phone: 418-565-3808
Fax: 418-565-3833
E-Mail #1: gyrotrac@globetrotter.ac.ca
E-Mail #2: bert@netc.net
Web: http://www.gyrotrac.com
Contact: Eric Berthelot

See our ad in 4-color Product Directory.

(M) Haimbaugh Enterprises Inc. / Tree Feeder Div.
2392 North Boeing Drive
Warsaw, IN 46580
Toll-Free: 800-822-TREE (8733)
Phone #: 219-269-5888
Phone #: 219-267-7666
Fax #: 219-269-1047
Fax #: 219-269-3628
E-Mail: dclee@compuserve.com
Web: http://www.treefeeder.com
Contact: D. C. Dan Lee

Manufacturers of "Tree Feeder-The Fertilizer Is In The Tube." In four sizes, for new tree transplants. Irrigation water into the tube carries water and 5-15-5 fertilizer directly down to the root, where it is needed most! See our ad in 4-color Product Directory.

(S) The Hartford
Hartford Plaza, T-18 Programs Unit
Hartford, CT 06115
Toll-Free: 800-533-7824
Phone: 860-547-4277
Fax: 860-547-6649
Web: http://www.thehartford.com
Contacts: Mike Rook, Billy Boguski, Joe Brophy, Jenny Mortell, Lisa Doherty

NAA-endorsed Property and Casualty Insurance Program offering a variety of coverages, including Pesticide and Herbicide Applicator Coverage and Workers' Compensation (in most states). Available through your local agent. See our ad in 4-color Product Directory.

(D) Hawkensen Equipment Co., Inc.
PO Box 766, Rte. 25
Plymouth, NH 03264
Toll-Free: 800-299-8970
Phone: 603-536-2433
Fax: 603-536-3958
E-Mail: hawkensen@aol.com
Contacts: Steve L. Huss, Custer Reed

Large selection of new Brush Bandit chippers always in stock. Always several good used chippers on hand. Husqvarna, STIHL, Kubota, John Deere. See our ad in 4-color Product Directory.

(M) Heckendorn Equipment Company
PO Box 134
Peabody, KS 66866
Toll-Free: 800-835-7805
Contact: Mary Caldwell

(D) Hollie Wood Enterprises
11 Noyes Street
Norton, MA 02766
Phone: 508-222-9350
Fax: 508-222-5254
Contact: Steaven Zumalt

See our ad in 4-color Product Directory.

(D) Holt Company of Ohio
PO Box 28525
5252 Walcutt Court
Columbus, OH 43228
Phone: 614-878-2287
Fax: 614-851-5015
Contact: Dwight Dana

See our ad in 4-color Product Directory.

(D/M) Husqvarna Forest & Garden Company
9006-J Perimeter Woods Drive
Charlotte, NC 28216
Toll-Free: 800-GET-SAWS (438-7297)
Phone: 704-597-5000
Fax: 704-599-4302
Web: http://www.husqvarna.com
Contact: Barbara Paez

Manufactures and markets a complete line of arborist chain saws, clearing saws, cut-off saws and lawn and garden products including mowers, tractors, tillers, edgers, brush cutters, grass trimmers, and blowers. Also makes a line of protective apparel and accessories. See our ad in 4-color Product Directory.

(M) IML - Instrument Mechanic Labor, Inc.
3015 Canton Road, Ste. 14
Marietta, GA 30066
Toll-Free: 888-514-8851
Phone: 770-514-8851
Fax: 770-514-8851
E-Mail: sales@imlusa.com
Web: http://www.imlusa.com
Contacts: Oliver Hein, Chris Wilhelm

See our ad in 4-color Product Directory.
(M) **ImpleMax Equipment Co., Inc.**
PO Box 549
Bozeman, MT 59771-0549
Toll-Free: 800-587-6656
Phone: 406-587-2662
Fax: 406-587-2808
E-Mail: sales@implemax.com
Web: http://www.implemax.com
Contact: Will Callahan
Manufactures a variety of grapples and grapple/winch options that fit your large or small tractors and skidsteers for quick handling of logs, brush and woody debris. Attachments increase crew efficiency and company profitability.
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(M) **Jameson Corporation**
1451 Old North Main Street
PO Box 1030
Clove, SC 29710
Toll-Free: 800-346-1956
Web: http://www.jamesoncorp.com
Contact: Randy Campbell
Jameson manufactures and distributes a professional line of fiberglass pruner poles and accessories. High-grade line of boom-mount tool holders and aerial bucket hydraulic saw scabbards.
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(M) **Independent Protection Company**
1603-09 South Main Street
PO Box 537
Goshen, IN 46526
Toll-Free: 800-860-8388
Phone: 219-533-4116
Fax: 219-534-3719
E-Mail: Info@IPCLP.com
Web: http://www.IPCLP.com
Contacts: Robert E. Cripe, Rob Cripe
Lightning protection equipment for trees, golf shelters and buildings related to recreation: to prevent damage and personal injury.
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(M) **John Bean Sprayers**
PO Box 1404
La Grange, GA 30241-0029
Toll-Free: 800-241-2308
Phone: 706-882-8161
Fax: 706-882-0052
E-Mail: johnbean@durand-wayland.com
Contact: Ray Perry
*See our ad in 4-color Product Directory.*

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(M) **Kawasaki Motors Corporation, USA**
P0 Box 25252
Santa Ana, CA 92799-5252
Phone: 714-861-5000
Web: http://www.kawasaki.com
Kawasaki MULE Utility Vehicles can handle up to 803 pounds of cargo and 1200 pounds towing with gas engines. The Diesel MULE can carry 1100 pounds and tow 1200 pounds. For a dealer near you, call 888-KAW-MULE (529-0853).
*See our ad in 4-color Product Directory.*

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(D) **Landscapers Supply Corporation**
750 Chestnut Ridge Road
Spring Valley, NY 10977-0459
Toll-Free: 800-222-4303
Phone: 914-356-8300
Fax: 914-356-8693
Contact: Michael Febbie
(D) Lanphear Supply, Div. of Forest City Tree Protection Co.
1884 South Green Road
South Euclid, OH 44121
Toll-Free: 800-332-TREE (8733)
Phone: 216-381-1704
Fax: 216-381-5309
E-Mail: drj3@ix.netcom.com
Contact: Lauren Lanphear

(D) Lawn Equipment Parts Company
PO Box 39
Landisville, PA 17538
Toll-Free: 800-236-9329
Fax: 800-825-8825
Contact: Barry Knauer

(M) Leonardi Manufacturing
2728 Erie Drive
Weedsport, NY 13166-9505
Toll-Free: 800-537-2552
Phone: 315-834-6611
Fax: 315-834-9220
Three new items: Tomahawk® Teeth, Ultimate Pocket®, Bolts with newly-designed head and threads. All built to give you the highest performance on the market.
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(M) Levco Manufacturers, Inc.
PO Box 1026
Wynne, AR 72396
Toll-Free: 800-524-9252
Phone: 870-238-8126
Fax: 870-238-8124
E-Mail: Levcoi@aol.com
Web: http://www.Levco.com
Contact: Pam Hollan

(M) Lund Tech, Inc.
PO Box 375
Belleville, MI 48112-0375
Toll-Free: 888-891-1511
Phone: 734-461-9394
Fax: 734-461-9381
Web: http://www.grappleattachment.com
Contact: Erik Lund

(D) Lyons Sawmill & Logging Equipment & Supplies, Inc.
Rte. 15 North
PO Drawer 135
Allenwood, PA 17810
Phone: 570-538-2504
Fax: 570-538-3859
Contact: Dave Fetzer

(M) Fred Marvin Associates
1968 Englewood Avenue
Akron, OH 44312
Toll-Free: 800-540-6680
E-Mail: fma@pruner.com
Web: http://www.pruner.com
Contact: Jeff Mussay
Manufacturer of pole pruners and saws since 1943.
See our ad in 4-color Product Directory.

(M) J. J. Maugt Company
5435 Peck Road
Arcadia, CA 91006-5847
Toll-Free: 800-TREES-RX (873-3779)
Phone: 626-444-1057
Fax: 626-444-7414
E-Mail: maugt@maugt.com
Web: http://www.maugt.com
Contacts: Nate Dodds, Dale Dodds
See our ads in 4-color Product Directory.

(D/M) Michigan Caterpillar
24800 Novi Road
Novi, MI 48375
Phone: 248-349-4800
Fax: 248-349-6048
Contact: Bill Parker

(M) Miller Machine Works
3309 East Washington
Frankfort, IN 46041
Phone: 765-659-1524
Fax: 765-659-1524
Contact: Jeff Craft
Stump grinding attachments for use on tractors and skidsteer loaders. Models available from 24 hp compact tractors to 150 hp land-clearing machines. Also, a heavy-duty skidsteer unit for larger skidsteer loaders.
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(D/M) Minnesota Wanner Company
5145 Eden Avenue South
Minneapolis, MN 55436
Toll-Free Number: 800-247-4998
Phone: 612-929-1070
Contact: Tom Wanner

(D/M) MIRK Inc/Toombs Truck & Equipment Co. Inc.
7629 Chippewa Road
Orrville, OH 44667
Phone: 330-669-2000
Fax: 330-669-3732
Contact: Richard Thut

(S) Mobile Data Collection Corp
1511 Ensign, Side B
Normal, IL 61761
Toll-Free: 888-737-8775
Phone: 309-452-3539
Fax: 309-452-3539
Web #1: http://www.servicetracker.com
Web #2: http://www.servicetracker.com
Contact: Todd Reinhart
Mobile Tool International Inc/Holm
5600 West 88th Avenue
Denver, CO 80030-9986
Toll-Free: 800-521-5351
Phone: 303-657-2590
Fax: 303-657-2505
Web: http://www.mobiletool.com
Contact: Al Rocke

Monterey Lawn & Garden Products, Inc.
3654 South Willow Avenue
PO Box 35000
Fresno, CA 93745-3500
Phone: 559-499-2100
Fax: 599-499-1015
Web: http://www.montereylawngarden.com
Contact: W. T. Thomson
Floret Fruit Eliminator prevents nuisance fruit on your ornamental trees and controls leafy and dwarf mistletoe. Formulated for both the commercial applicator and the homeowner.

Mortar, Inc.
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Winn, MI 48896-1000
Toll-Free: 800-362-9010
Phone: 517-866-2381
Fax: 517-866-2280
E-Mail: morbark@worldnet.att.net
Web: http://www.morbark.com
Contacts: Neil Shumacher, Mark Rau
Morbark manufactures 9 models of high-quality, technically advanced, handfed brush chippers to fit every arborist's needs. For over 40 years, Morbark has been a leader in wood waste processing, recycling and forestry equipment and provides you with an extensive background in quality manufactured equipment.

New England Ropes, Inc.
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Toll-Free: 800-333-6679
Phone: 678-678-8200
Fax: 678-679-2363
E-Mail: NEROPES@NEROPES.com
Web: http://www.NEROPES.com
Contact: Howard Wright
Rope manufacturer - spliced goods, braided and three-stranded climbing and bull ropes for the professional arborist.

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848 Airport Road
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Toll-Free: 800-333-6679
Phone: 678-678-8200
Fax: 678-679-2363
E-Mail: NEROPES@NEROPES.com
Web: http://www.NEROPES.com
Contact: Howard Wright
Rope manufacturer - spliced goods, braided and three-stranded climbing and bull ropes for the professional arborist.

National Arborist Association
Route 101, The Meeting Place Mall
PO Box 1094
Amherst, NH 03031-1094
Toll-Free: 800-733-2622
Phone: 603-673-3311
Fax: 603-672-2613
E-Mail: naa@natlarb.com
Web: http://www.natlarb.com
See our ad in 4-color Product Directory.

National Path Forestry Consultants
PO Box 7723
Missoula, MT 59807-7723
Phone: 406-721-3263
Fax: 406-543-2295
E-Mail: natpath@naturalpath.com
Web #1: http://www.naturalpath.com
Web #2: http://www.montana.com/natpath
Contact: Mark Duntemann
Nature's PRO (see GreenPro Services)

NESCIO, Inc.
3112 East State Road 124
Bluffton, IN 46714
Toll-Free: 800-252-0043
Phone: 219-824-6340
Fax: 219-824-6350
E-Mail: nesco@nescosales.com
Web: http://www.nescosales.com
Contact: Rob Troxel

TCI PRODUCT DIRECTORY - JULY 1999 - 55
North Coast Engines, Inc./Crane & Shovel Sales Corp.
26781 Cannon Road
Cleveland, OH 44146
Toll-Free: 800-600-2624
Phone: 440-439-3056
Fax: 440-439-6222
Contact: Richard Kuhn
Perkins replacement engines, new or remanufactured. Overhaul kits, parts and filters for your Perkins powered equipment.
See our ad in 4-color Product Directory.

North Coast Engines, Inc./Crane & Shovel Sales Corp.
26781 Cannon Road
Cleveland, OH 44146
Toll-Free: 800-600-2624
Phone: 440-439-3056
Fax: 440-439-6222
Contact: Richard Kuhn
Perkins replacement engines, new or remanufactured. Overhaul kits, parts and filters for your Perkins powered equipment.
See our ad in 4-color Product Directory.

Northeast Shade Tree
100 Albany Street
PO Box 4434
Portsmouth, NH 03802-4434
Toll-Free: 800-841-2498
Phone: 603-436-4804
Fax: 603-436-1493
Contact: Jeffrey W. Ott
We carry a complete line of professional tree and turf equipment such as climbing gear, saws, ropes, safety supplies and brush chippers. Our inventory includes the latest in rigging supports and lowering devices. Northeastern also manufactures custom and standard built tree and turf sprayers designed to suit your company’s PHC needs.
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Northeastern Associates
19 “H” Commerce Road
Fairfield, NJ 07004
Toll-Free: 800-261-SPRAY (7772)
Phone: 973-227-0359
Fax: 973-227-0865
Contact: Karen Dujets
We carry a complete line of professional tree and turf equipment such as climbing gear, saws, ropes, safety supplies and brush chippers. Our inventory includes the latest in rigging supports and lowering devices. Northeastern also manufactures custom and standard built tree and turf sprayers designed to suit your company’s PHC needs.
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Norwalk Power Equipment Co.
12194 East Firestone Boulevard
Norwalk, CA 90650
Phone: 562-868-5615
Fax: 562-863-1296
E-Mail: npeco@aol.com
Contact: Scott Deeth

North Coast Engines, Inc./Crane & Shovel Sales Corp.
26781 Cannon Road
Cleveland, OH 44146
Toll-Free: 800-600-2624
Phone: 440-439-3056
Fax: 440-439-6222
Contact: Richard Kuhn
Perkins replacement engines, new or remanufactured. Overhaul kits, parts and filters for your Perkins powered equipment.
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Toll-Free: 800-600-2624
Phone: 440-439-3056
Fax: 440-439-6222
Contact: Richard Kuhn
Perkins replacement engines, new or remanufactured. Overhaul kits, parts and filters for your Perkins powered equipment.
See our ad in 4-color Product Directory.
(D) Pacific Arborist Supplies, Ltd.
154 Riverside Drive
North Vancouver, BC V7H 1T9
Toll-Free: 888-996-2299
Phone: 604-929-6133
Fax: 604-929-4617
Contact: Bill Stuart
Distributes and markets, across Canada, a complete line of arborist and landscape equipment from major manufacturers including Yale Cordage, Greenland Environmentally Safe Lubricants, Bashlin, Buckingham, Weaver, Peavey, Fanno, Corona, Felco, Echo, Shindaiwa, Jameson, Gravely, Marvin, Peltor, Viberg, Sawjammer, PMI Petzl, Kong, CMI, Deep Root, Alpine Machine, Green Manufacturing and Samson. Contact them for a free catalog.

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526 Main Road
PO Box 129
Eddington, ME 04429-0129
Toll-Free: 888-244-0955
Phone #1: 207-843-7861
Phone #2: 207-843-6778
Fax: 207-843-5005
E-Mail: peavey@mint.net
Web: http://www.peaveymfg.com
Contact: Rodney Buswell
See our ad in 4-color Product Directory.

(M) Perkins Engines, Inc.
26200 Town Center Drive,
Ste. 280
Novi, MI 48375
Toll-Free: 888-PERK-ENG (737-5364)
Contact: Michael Reinhart

(D) Petzel America
Freeport Center, Building M-7
PO Box 160447
Clearfield, UT 84016
Phone: 801-327-3805
Fax: 801-327-3806
E-Mail: info@petzl.com
Contact: Mark “Roody” Rasmussen

(M) Phero Tech Inc.
7572 Progress Way
Delta, B.C.
Canada, V4G 1E9
Phone: 604 940 9944
Fax: 604 940 9433
E-Mail: sales@pherotech.com
Web: www.pherotech.com
Contact: Bruce Thomson

(M) Pigeon Mountain Industries, Inc.
PO Box 803
Lafayette, GA 30728
Toll-Free: 800-282-7673
Phone: 706-764-1437
Fax: 706-764-1531
E-Mail: info@pmirope.com
Web: http://www.pmirope.com
Contact: Steve Hudson

(D) Pitt Auto Electric Company
2900 Stayton Street
Pittsburgh, PA 15212
Toll-Free: 800-245-0711
Phone: 412-766-9112 x124
Fax #1: 800-551-5908
Fax #2: 412-766-3229
E-Mail: info@pittauto.com
Web: http://www.pittauto.com
Contact: Chris Collins

(D/M) Plant Health Care Inc.
440 William Pitt Way
Pittsburgh, PA 15238
Toll-Free: 800-421-9051
Phone: 412-826-5488
Fax: 412-826-5445
E-Mail: www@planthealthcare.com
Web: http://www.planthealthcare.com
Contact: Holly Cyphers
PHC, Inc. is a microbial company specializing in the development of mycorrhizal fungi and beneficial bacteria and bio-insecticide products. Sold under the MycorTree™ Mycor™, Biopak™, Crymax™ and Compete™ brand names. See our ad in 4-color Product Directory.

(D) Plantoil, Ltd.
1-11 Glenthorne Road
London, GBR.
England W6 0LF
Phone: 011-441-81-748-9898
Fax: 011-441-81-748-4250
Contact: Jeremy Pilch

(M) Plastic Techniques Inc.
PO Box 250
Goffstown, NH 03045
Phone: 603-645-6800
Fax: 603-623-0918

(M) Polecat Industries, Inc.
14141 SW 142nd Street
Miami, FL 33186
Toll-Free: 800-876-5322
Phone: 305-254-8999
Fax: 305-254-3889
Contact: Ray Garrett
Self-propelled aerial lift. See our ad in 4-color Product Directory.

(M) Poulan Weed-Eater / PoulanPRO
3933 Taylor Road
Shortsville, NY 14548
Toll-Free: 800-452-2827
Phone: 716-289-3396
Fax: 716-289-8370
Contact: Bob Good
(D) Power Great Lakes, Inc.  
655 Wheat Lane  
Wood Dale, IL 60191  
Toll-Free: 800-551-2938  
Phone: 630-350-9400  
Fax: 630-350-9900  
Web: http://www.powergreatlakes.com  
Contact: Gary Winemaster

(S) Practical Solutions, Inc  
PO Box 128  
Worthington, OH 43085-0128  
Phone: 614-436-9066  
Fax: 614-888-5315  
Contact: Mr. A. Mans Franke

(M) Preformed Line Products  
PO Box 91129  
Cleveland, OH 44101-1129  
Phone: 440-461-5200  
Fax: 440-442-8816  
E-Mail: inquiries@preformed.com  
Web: http://www.preformed.com  
Contact: Ronald Wozny

(D) Professional Tree & Turf Equipment  
6945 Indiana Court #400  
Arvada, CO 80007  
Toll-Free: 800-237-7785  
Phone: 303-422-7608  
Fax: 303-421-4142  
E-Mail: PTTE@worldnet.att.net  
Contact: Steven Tangsrud

(D) Professional Tree Surgeons Supplies Inc.  
580 West Hoffman Avenue  
Lindenhurst, NY 11757  
Toll-Free: 800-TREE-203 (873-3203)  
Phone: 516-957-0301  
Fax: 516-957-6109  
Contact: Al Lane

(S) Progress Leasing/Quaker State Leasing Company  
4 Sentry Parkway  
PO Box 3036  
Blue Bell, PA 19422  
Toll-Free: 888-670-2265  
Phone: 610-940-3962  
Fax: 610-630-9097  
E-Mail: h.scott@erols.com  
Web: PROGRESS-ONLINE.COM  
Contact: Scott Hillman

(S) Prostaffing  
Bishop Street, Suite 420  
Honolulu, HI 96813  
Phone: 808-524-1733  
Fax: 808-523-3435  
Contact: Joan C. Kitchen

(M) Quality Metal Products  
846 I-20 West  
Clyde, TX 79510  
Phone: 915-893-5551  
Fax: 915-893-2249  
Contact: Bruce Reeves

(D/S) Rainbow Treecare - Scientific Advancements  
2239 Edgewood Avenue  
St. Louis Park, MN 55426  
Toll-Free: 877-272-6747  
Phone: 612-922-3810  
Fax: 612-252-4720  
E-Mail: tprosser@rainbowtreecare.com  
Web: http://www.rainbowtreecare.com  
Contacts: Tom Prosser, Jim Zwack

(M) RAM Posiquip  
1525 23rd Avenue  
Rockford, IL 61104  
Phone: 815-963-0924  
Fax: 815-963-9469  
Contact: Jodi Schlosberg

(M) Rayco Manufacturing, Inc.  
4255 Lincoln Way East  
Wooster, OH 44691-9954  
Toll-Free: 800-392-2686 (US & Canada)  
Phone: 330-264-8699  
Fax: 330-264-3697  
E-Mail: rayco@raycomfg.com  
Web: http://www.raycomfg.com  
Contact: Jake Stout

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(M) Reemay Corporation / Bio Barrier  
70 Old Hickory Boulevard  
PO Box 511  
Old Hickory, TN 37138-3651  
Toll-Free: 800-284-2780  
Phone: 615-847-7000  
Fax: 615-847-7068  
E-Mail: beddins@reemay.com  
Web: http://www.reemay.com  
Contact: Greg Coles

See our ad in 4-color Product Directory.
(M) Remke Enterprises, Inc.
4807 Woodward Avenue
PO Box 9357
Downers Grove, IL 60515
Phone: 630-810-1662
Fax: 630-810-0947
E-Mail: REMKEDG@AOL.COM
Contact: Jim Lutz

See our ad in 4-color Product Directory.

(R) Rhone-Poulec Ag., Inc.
2 T.W. Alexander Street
PO Box 1201
Research Triangle Park, NC 27709
Phone: 919-549-2172
Fax: 919-549-4664
Contact: Dick Lehman

(D) Robin Outdoor Power Equipment/ Carswell Import & Marketing Associates
PO Box 16221
Winston-Salem, NC 27115
Phone: 336-767-9432
Fax: 336-767-8802
Contact: Drew Suelzer

See our ad in 4-color Product Directory.

(R) Roots, Inc.
3120 Weatherford Road
Independence, MO 64055
Toll-Free: 800-342-6173
Phone: 816-254-6000
Fax: 816-254-1408
E-Mail: rootsadver@aol.com

Manufacturers of: 1-2-3, roots®, ironROOTS®, Agriplex®, NitroN2®, Lawnplex®, Fe8% Chelated Iron, DryROOTS®, mychorrizal ROOTS, ironROOTS® with EctoMychorriza, Root Dip Gel, and Transplant One-Step.
See our ad in 4-color Product Directory.

(S) Royal Horticultural Society
Woking, Wisley Gardens
Surrey, England GU23 6QB
Phone: 011-44-148-322-4234
Fax: 011-44-148-321-1750
Contact: Paul Goacher

(M) Royal Truck & Equipment Inc.
6910 Rte. 309
Coopersburg, PA 18036
Toll-Free: 800-283-4090 (outside PA)
Phone: 610-282-4090
Fax: 610-282-8986
Contact: Steve Haman

See our ad in 4-color Product Directory.

(R) Schodorf Truck Body & Equipment Company
885 Harmon Avenue
Columbus, OH 43223
Toll-Free: 800-288-0992
Phone: 614-228-6793
Fax: 614-228-6775
E-Mail: Forestry@schodorftruck.com
Web: http://www.schodorftruck.com
Contact: Paul Schodorf, Mike Cassidy
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(D) SelfHEAL, Inc./Oral Ivy™
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Phone #1: 570-389-1814
Phone #2: 570-389-1040
Fax: 570-389-0126
E-Mail: Romill@aol.com
Web: http://oralivy.com
Contact: Bob Miller

See our ad in 4-color Product Directory.

(M) Service Communication Software
7400 Industrial Parkway
Plain City, OH 43064
Toll-Free: 888-PICK-SCS (742-5727)
Phone: 614-873-6706
Fax: 614-873-4168
E-Mail: SALES@PICKSCS.COM
Web: http://www.PICKSCS.COM
Contact: Richard Deering

See our ad in 4-color Product Directory.

(D) Shelter Tree
60 John Dietsch Boulevard
North Attleboro, MA 02763
Toll-Free: 800-720-8733
Phone: 508-699-6550
Fax: 508-699-6570
Contact: George Mellick
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See our ad in 4-color Product Directory.
(D) Sherrill, Inc.
3101 Cedar Park Road
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Toll-Free: 800-525-8873
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Fax: 336-378-1096
E-Mail: sherrillarbor@att.net
Web: http://www.wtsherrill.com
Contact: Tobe Sherrill
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(M) Shindaiwa, Inc.
11975 SW Herman Road
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Toll-Free: 800-521-7733
Phone: 503-692-3070
Fax: 503-692-6696
E-Mail: info@shindaiwa.com
Web: http://www.shindaiwa.com
Contact: Richard P. GoForth
Shindaiwa, Inc. is a long-time proven supplier to the arborist industry. We manufacture Limb-inator brush chipper knives for all machine parts. We manufacture in the U.S. Call for information.
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(D/M) Superior Diesel Inc.
PO Box 1187
1632 North Stevens Street
Rhinelander, WI 54501
Phone: 715-369-5900
Fax: 715 369 5918
Contact: Kenneth Mitchell
For more information about Sun- rise Concepts’ Stump Grinder and our FREE PARTS program, call toll-free: 877-469-4295.
See our ad in 4-color Product Directory.

(M) Sound Off Inc.
PO Box 206
Hudsonville, MI 49426
Toll-Free: 800-338-7337
Phone: 616-669-0230
Fax: 616-669-3475
E-Mail: soi-sales@soundoffinc.com
Web: http://www.soundoffinc.com
South Off, Inc. is an Emergency Lighting and Electronic Systems manufacturer. We offer a variety of Vehicle Lighting equipment which includes: strobe and halogen beacon lights, DOT rear-mounted lighthheads, Traffic Master directional light bars and many truck warning light sizes and configurations.

(M) Southco Industries
1840 East Dixon Boulevard
Shelby, NC 28150
Toll-Free: 800-331-7655
Phone: 704-482-1477
Fax: 704-482-2015
E-Mail: Southco@Shelby.net
Contact: Richard P. GoForth
Southco Industries is an Emergency Lighting and Electronic Systems manufacturer. We offer a variety of Vehicle Lighting equipment which includes: strobe and halogen beacon lights, DOT rear-mounted lighthheads, Traffic Master directional light bars and many truck warning light sizes and configurations.

(M) Sunrise Concepts, Inc.
PO Box 21
Hudsonville, MI 49426-2015
Toll-Free: 800-G0-STIHL (457-8445)
Phone: 757-486-9158
Fax: 800-786-6384
E-Mail: sales@SUNRISECONCEPTS.com
Contact: George Wasser
Sunrise Concepts’ Stump Grinder and our FREE PARTS program, call toll-free: 877-469-4295.
See our ad in 4-color Product Directory.

(D/M) Sylvan Arborist Supplies
Hengest Farm, Woedmansterne Lane
Barnstead Surrey UK M7 3EY
England
Phone: 011-441-73-735-3386
Fax: 011-441-73-735-3382
E-Mail: N.R.B@btinternet.com
Contact: Nick Beardmore
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(D) Takagi Tools Inc
337-A Figueroa Street
Wilmington, CA 49
Toll-Free: 800-777-5538
Phone: 310-513-1113
Fax: 310-513-2199
Contact: Tish Nakayama

(M) Tanaka
22461 72nd Avenue South
Building #3
Kent, WA 98032
Phone: 253-395-3900
Fax: 253-395-4245
E-Mail #1: support@tanaka-ism.com
E-Mail #2: tanamerica@aol.com
Web: http://www.tanakapowerequipment.com
Contact: Steve Hall

(M) Terex Telelect Inc.
PO Box 1150
600 Oakwood Road
Watertown, SD 57201
Phone: 605-882-4000
Fax: 605-882-1842
E-Mail: treemail@dailypost.com
Contact: Tommy Nix

(D) Thayer Chevrolet Toyota
1225 North Main
Bowling Green, OH 43402
PO Box 385
Bowling Green, OH 43402
Phone: 419-353-5751
Fax: 419-352-0460
E-Mail: ptthayer@thayerbg.com
Contact: Paul Thayer

(Affiliated Location)
Great Lakes Ford-Nissan
18039 North Dixie Highway
PO Box 365
Bowling Green, OH 43402
Phone: 419-353-5271
Fax: 419-353-1238
E-Mail: greatlak@wcnet.org
Contact: Paul Thayer

(D/M) Tilton Equipment Company
PO Box 68
Rye, NH 03870
Toll-Free: 800-447-1152
Phone: 603-964-9450
Fax: 603-964-9380
Web: http://www.tiltonequipment.com
Contact: D. Tilton, Jr.

(M) Timberwolf Manufacturing Corp.
118 Spruce Street
Rutland, VT 05701
Toll-Free: 800-340-4386
Phone: 802-775-4227
Fax: 802-773-1275
E-Mail: twolf@sover.net
Web: http://www.timberwolfcorp.com
Contact: Allan Doaner
Quality processors, splitters and conveyors. See our ad in 4-color Product Directory.

(S) Tree Climbers International
628 West College Avenue
Decatur, GA 30030
Phone: 404-377-9663
E-Mail: treeman@mindspring.com
Web: http://www.treeclimbing.com
Contact: Peter Jenkins

(D) Tree Line Supply Company
1660 Collier Road
Akron, OH 44320
Toll-Free: 888-873-3546 (OH only)
Phone: 330-864-0342
Fax: 330-864-0771
Contact: Richard Woods

(D) Tree Management Systems, Inc.
4257 West Delap Road
Ellettsville, IN 47429
Toll-Free: 800-933-1955
Phone: 812-876-7664
Fax: 812-876-3565
E-Mail: ttms@turftree.com
Web: http://www.turftree.com
Contact: Jon V. Gamer
ArborGold 2000 software—business management software designed specifically for tree care companies. Also introducing Plant Health Care software. See our ad in 4-color Product Directory.

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Fax: 732-634-5379
Contact: Christina Augustyn
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(M) TreeSource Inc.
310 Maryland Avenue, Ste. 202
Easton, MD 21601
Toll-Free: 877-24-TREES (248-7337)
Phone: 410-822-5596
Fax: 410-820-4797
E-Mail: treesource@friend.ly.net
Contact: Celia West

Tree Tools
17425 SW Pilkington
Lake Oswego, OR 97035-5357
Toll-Free: 800-635-TREE (8733)
Phone: 503-635-0063
Fax: 503-635-0084
E-Mail: info@tree_tools.com
Web: http://www.tree_tools.com/climb
Contact: Larry Campbell

(S) TreePro Direct™
PO Box 39
Woodbridge, NJ 07095
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Phone: 732-634-8400
Fax: 732-634-5379
Contact: Christina Augustyn
Low cost insurance program for arborists and landscape companies. Flexible payment plans available, dedicated loss control and claims service. Please call for more details. See our ad in 4-color Product Directory.
(D) Trueco, Inc.
115 Longbranch Road
Kings Mountain, NC 28086
Toll-Free: 800-642-5438
Phone: 704-739-9591
Fax: 704-739-1401
E-Mail: trueco@shelby.net
Web: http://www.TRUECO.com
Contact: Butch Trice

(V) Vaca Shears
3049 South Golden State F. R.
Fresno, CA 93725
Phone: 559-266-8231
Fax: 559-266-3407
E-Mail: vacashear@aol.com
Web: http://www.vacashears.com
Contact: Dennis Dadian

(M) Vermeer Manufacturing Company
Box 200
Pella, IA 50219
Toll-Free: 888-837-6337
Phone: 515-628-3141
Fax: 515-621-7734
Web: http://www.vermeer.com
See our ad in 4-color Product Directory.

(M) VERSALIFT, TIME Mfg. Co.
7601 Imperial Drive
PO Box 20368
Waco, TX 76702
Phone: 254-399-2100
Fax: 254-399-2651
E-Mail #1: danas@timemfg.com
E-Mail #2: jadre@timemfg.com
Web: http://www.versalift.com
Contacts: Dana Scudder, Jack Evans
The complete line of VERSALIFT aerial devices from 29' to 65' includes articulated overcenter and articulated non-overcenter aerial devices, telescopic and telescopic/articulated aerial devices, as well as digger derricks for the Power, Telephone, Cable, TV, and Tree Care industry.
See our ad in 4-color Product Directory.

(S) Visual Education Productions
1020 SE Loop 289
Lubbock, TX 79404
Toll-Free: 800-922-9965
E-Mail: cv@cev-inc.com
Contact: Alison Johnson cc: NAA
Producers of Multimedia in several horticultural areas: safety, ID, landscaping, pruning and growing.

(W) Wall Safety Products/
Div. Wall Industries
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Kannapolis, NC 28072
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Phone: 704-785-8484
Fax: 704-785-8486
Web: http://www.wallrope.com
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Toll-Free: 800-932-8371
Phone: 330-674-7548
Fax: 330-674-0330
Contact: J. Daniel Matthews
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Bellingham, WA 98226
Toll-Free: 800-268-2141
Phone: 360-734-5242
Fax: 360-733-6311
E-Mail: wesspur@wesspur.com
Web: http://www.nas.com/wesspur
Contact: Carla Benson
Affiliated Locations
1. WesSpur, LLC
1105-140th Avenue Court East
Sumner, WA 98390
Contact: Tim Cornwell
2. WesSpur, LLC
4000 NE Columbia Boulevard
Portland, OR 97211
Contact: Donn Wangerin
The No. 1 source for climbing & rigging gear. For a free catalog, call 1-800-845-1213

(M) West Coast Shoe Company/
WESCO
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52828 NW Shoe Factory Road
Scappoose, OR 97056-0607
Toll-Free: 800-326-2711 (US & Canada)
Phone: 503-543-7114
Fax: 503-543-7110
E-Mail: boots@westcoastshoe.com
Web: http://westcoastshoe.com
Contact: Roberta Shoemaker
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(D) Western Tree Equipment & Repairs
11530 “B” Elks Circle
Rancho Cordova, CA 95742-7357
Toll-Free: 800-94-ARBOR (942-7267)
Phone: 916-852-8900
Fax: 916-852-5800
E-Mail: west8733@aol.com
Contacts: Kathryn D'Angelo, Lew Fleming
Dependable and fast service of all quality arborist supplies. Our goal is to get your order out.

See our ad in 4-color Product Directory.

(M) Willman’s Earth Restoration Company/The Troubled Soils Co., Inc.
75 Daggett Street, Daggett Square
New Haven, CT 06519
Toll-Free: 800-770-5010
Phone #1: 203-782-5944
Phone #2: 203-821-2398
Fax: 203-782-1616
E-Mail: treacyfa@ix.netcom.com
Web: http://www.willmanearthdoctor.com
Contact: Ed Willman, Joe Martin

See our ad in 4-color Product Directory.

(M) Wis-Con Total Power Corporation
3409 Democrat Road
PO Box 181160
Memphis, TN 38118-1160
Toll-Free: 800-932-2858 x4086
Phone: 901-365-3600
Fax: 901-369-4050
Web: http://www.totalpower.com
Contact: Dell Roberts

See our ad in 4-color Product Directory.

(M) Wood-Mizer Products Inc.
8180 West 10th Street
Indianapolis, IN 46214
Toll-Free: 800-553-0182
Phone: 317-271-1542 x1164
Fax: 317-273-7024
E-Mail: woodmizer@woodmizer.com
Web: http://www.woodmizer.com
Contact: Kevin Corder

See our ad in 4-color Product Directory.

(M) Wood/Chuck Chipper Corporation
PO Drawer 400
Shelby, NC 28151
Toll-Free: 800-269-5188
Phone: 704-482-4356
Fax: 704-482-7349
E-Mail: woodchuck@shelby.net
Web: http://www.woodchuckchipper.com
See our ad in 4-color Product Directory.

(M) X3 SawChain/Div. Wilson Hardware Co., Inc.
812 Monroe Avenue
Rochester, NY 14607
Toll-Free: 800-560-9035
Phone: 716-473-5962
Fax: 716-473-5631
Contact: Dave Durand

See our ad in 4-color Product Directory.

(M) Yale Cordage
26 Morin Street
PO Box 3820
Biddeford, ME 04005
Toll-Free: 800-255-9253
Phone: 207-282-3396
Fax: 207-282-4620
Web: http://www.yalecordage.com
Contact: Dick Hildebrand
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(M) Zenith Cutter Company
PO Box 2252
5200 Zenith Parkway
Rockford, IL 61131-0252
Toll-Free: 800-223-5202
Phone: 815-282-5200
Fax: 815-282-5232
Web: http://www.zenithcutter.com
Contact: Bob Jennings
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