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Analyzing Your Competition...

Have you thought about how you are going to manage through your competition in 2001? We’ve had a couple of great years – more work than people to do it; low interest rates; mild weather.

So what is your competition in the year to come? Is it the threat of a recession? Is it the slowdown that moves disposable income used for tree care into the “not going to happen column” for your clients? Is it the large tree care company that moved into your niche market with an established name? Is it the company across town that has a new Web site to attract clients? Is it the company that invests in new equipment, increasing productivity and safety? Is it the company that has figured out that a little attention to marketing other than the Yellow Pages and word of mouth can really increase its business? Is it the company that returns phone calls promptly or calls clients to tell them the schedule has changed unexpectedly? Is it the company that invests money in the professional development of its entire staff? Is it the company that promotes teamwork and respects what each person brings to the group? Is it the company that has figured out that diversity is something which can enrich the work, including finding new solutions and new employees?

Or is your biggest threat a concern for your competition instead of a focus on your own company?

Other than a recession, there isn’t anything in the list above that your company cannot put some time and attention into that wouldn’t effect extraordinary changes in the work practices of your team and the future position of your company. Even during a recession, good business practices can carry you through tough times. There isn’t anything in the list above that is not possible with some determination.

Watts Wacker & Jim Taylor in The Visionary’s Handbook state, “your biggest competitor is your own view of your future.” So what do you want for your company – or for your job experience if you’re not the owner or manager? Do you want to keep getting what you’ve gotten? If it has been good, do you want to get better? If it has not been so good, do you want something different? Each of us must stop and take a look at why we are not where we envisioned we would be in our companies or our careers. If honest, an internal look, though not always pleasant, can take us to entirely new places.

So where do you want to be at the end of 2001? Is it really the company across town that is your biggest challenge or is your challenge closer to home? Why not dream a little and take a few steps toward that dream? If you can see it, you can get there. Believe in yourself. It takes tremendous courage to be a business owner or manager. If you had the guts to get started and step out there, why not take the next step? The only thing between you and success is the fear of failure. Not stepping out leaves you with one choice – maintenance. Staying in the same place is no longer an option in business. It takes a little dreaming on a regular basis to stay in the ballgame. It’s just as easy to imagine a bright future as it is to reel off a list of reasons that you “can’t” get there. My second-grade teacher once told me there was no such word as “can’t.”

I still believe her.
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Cover Photo

Cover photo by Dr. Alex L. Shigo. In other countries, water reused from human waste systems is being used for irrigation of lawns, and, under certain restrictions, for irrigation of crops used for human food.

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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Water and Trees

By Dr. Alex L. Shigo

Water, water, everywhere, but only 0.05 percent to drink! Oceans cover 71 percent of the earth’s surface, but ocean water is too salty for people and trees. Many plants and a few species of trees do live in salty water. The salty water makes up 97 percent of the earth’s water. Of the remaining fresh 3 percent, 75 percent is in ice at the poles. The rest can be used for drinking. However, most of it is inaccessible groundwater. We are back to 0.05 percent available to us from lakes and streams.

We not only drink it; we wash in it, flush it, and use it for irrigation of grass, crops and trees as if it will never run out. In many places in the world, it has run out. As trees were cut the land heated. No clouds formed. No rain fell.

Water, trees and life

Arborists know about water best by its amounts in extremes: too much, too little. Too much brings floods, or when frozen, breakage. Too little brings droughts. Amounts of precipitation are out of human control. Humans do bring on tree problems when they water too much, or forget to water.

Stress is a condition where a system begins to operate near the limits for the way it is designed. Water is an essential for all life systems to survive. When too much or too little water is present, the tree system begins to operate near its limit for survival. Stress. Water-caused stress is a major predisposing factor for a long list of tree problems that could end in death. Root

A Plea for Modern Arboriculture

Years ago I predicted that in the 21st century, arboriculture would begin to split as more arborists moved from old arboriculture toward modern arboriculture. Old arboriculture will not go away. It is, and will be for many years, the dominant force for tree care.

New people are coming on the scenes, and the scenes, or demands of the marketplace, are changing rapidly. Survival of any individual or system depends directly on their ability to adjust to changes. The rate of adjustment defines the winners. Some arborists believe that chemistry is not arboriculture, and that it has no place in arboriculture. A few teachers have told me they do not use my book, Modern Arboriculture, because it contains some very simple chemistry, which is not arboriculture. Many teachers do understand chemistry but their schedules do not allow time to teach it. But, what about the arborists who are sick and tired of the same old stuff? They want something new and better. It will take time to bring modern arboriculture into full bloom. A better understanding of tree biology and chemistry is the basis for modern arboriculture. Sad, but biology and chemistry still frighten many people.

Here I give a brief glimpse of water, one of the most essential substances for trees and for all living things. To be an arborist and not have some understanding about water is unthinkable for me. I’m sure some arborists will not read this article. I’m also sure that others will not only read it, but chew it and study it. If you want more of this stuff, I should be pleased to give it. If not, so be it. I respect trees and arborists. I believe they deserve and need something new and better, not the same old stuff.
Water is held in clay soils. This can be very beneficial when in moderate amounts, but when too much water saturates the clay, problems start – usually root rots.

Water is held in clay soils. This can be very beneficial when in moderate amounts, but when too much water saturates the clay, problems start – usually root rots.

Water as a liquid dissolves many substances essential for the life of trees. Water transports the substances throughout the tree. Water is essential for photosynthesis and its end product, glucose. As bound water, it acts as a storage product. The way water changes from free to bound, and back again, is one the wondrous processes of nature.

What is water?

Water is a substance in which two hydrogen atoms bond in a unique way to one oxygen atom, hence, H₂O. The unique bonding is so spectacular that water takes on fascinating characteristics. It is the only substance on earth that occurs naturally as a liquid, gas or solid.

All water on earth originally came from rocks. As the extremely hot, young earth began to cool, gases such as oxygen and hydrogen escaped from rocks. They collected above the earth, and as some oxygen and hydrogen bonded, the rains came.

Your basic atom

Atom was the name given to the smallest bit of matter. The word means uncuttable. Of course we know now that atoms can be reduced or cut further.

There are 92 naturally occurring kinds of atoms. In elaborate laboratories, scientists have increased that number to 110, as of this writing.

An atom contains at least one central, positively charged body and one circling, negatively charged body. Every atom is unique in that the number of positive charges normally equals the number of negative charges. The positive bodies are protons, and the negative bodies are electrons. The circling nature of the electrons is often referred to as a negative cloud. All atoms except hydrogen have at least one neutron in their nucleus. The neutron has mass, but no charge. The hydrogen atom has one proton and one electron, but no neutron.

If the nucleus of an atom could be enlarged to about the size of a dime, the circling cloud of the electron or electrons would be nearly the size of a football field. Think about it. A half-inch cube of nuclear material would weigh about 10 million
tons. The figures lose their meaning because it is difficult for our minds to grasp these facts. In the end, we must remember the energy and matter are concepts, and that they are interchangeable.

More about hydrogen

Hydrogen is the most abundant atom in the universe. Because of its abundance on the sun, there is life on Earth. On the sun, the heat and pressures are so great that hydrogen atoms are fused to form helium atoms. In this fusion process, some matter is converted to enormous amounts of energy. The energy radiates from the sun as light. Chlorophyll in trees and other green plants traps some of the light energy that is ultimately used to form glucose. Carbon dioxide and water are key players in this process. This may be why water is often called the substance of life.

Hydrogen starts the many events that lead to water, energy and life. Hydrogen is a unique atom because it normally does not contain a neutron. To understand the ways of hydrogen’s single proton and electron is to understand much about chemistry, life and, here, trees.

The single electron rotates about the proton in a cloud that is commonly called a ring. The single ring of hydrogen could accommodate two electrons. But, if it did, this would unbalance the charges, and this won’t happen unless something forces it to. Normally the number of protons equals the numbers of electrons.

Models have been developed for atoms so that discussions about them could be easier. In the models, the first ring could have two electrons, and the second ring eight electrons. Of course the “real” nature of the atoms are replete with exceptions and strange characteristics. However, with water and hydrogen and oxygen, most of the model terms are applicable.

More about oxygen

Oxygen has eight protons and eight neutrons in its nucleus, and eight electrons in two rings. The first ring is saturated with two electrons and the second ring has six. It can hold eight electrons.

We breathe oxygen so it can combine with hydrogen “left over” from our energy-yielding processes. When it does connect or bond with hydrogen, we breathe it out as water vapor. It seems that we just cannot get away from water and life, and in this case, our own life.

Water is also essential for the life of trees, and trees provide arborists with the means of their life and business.

Oxygen is a product of photosynthesis. We say oxygen is given off to the air. In the process of photosynthesis – where carbon dioxide and water are the ingredients – the power for the process comes from the hydrogen in the water. In a sense, water is split, or to be more precise, the protons and electrons of the hydrogen atoms are separated. After many chemical processes, oxygen is released.

Oxygen becomes very essential in respiration. In this process, the energy stored...
in glucose is released to do the work of life. The products of respiration are carbon dioxide and water. Back to water again.

The processes of photosynthesis start with carbon dioxide and water, and, in the end, the processes of respiration end with the release of carbon dioxide and water. In all of this, the power of the sun is used to make life on Earth possible. Oxygen, carbon dioxide and water are the actors. They start and they finish still being the same actors ready to act again and again for continued new life.

Now if all of this does not "grab you" then there is no hope!

Bonding patterns

Atoms bond with other atoms to form dogs, cats, humans and trees. All life forms are made up of atoms bonded in unique ways, often in the form of electrically neutral molecules.

The strongest bonds are called covalent. With these bonds, two or more atoms share electron fields by actually penetrating one another’s fields. The next level of bonding is called ionic. Each atom or group of atoms here has a positive or negative charge. Such atoms or groups are called ions. Because unlike charges attract, ions of unlike charges bond, but do not penetrate each other’s electron field. We commonly call many of these ion combinations “salts.” Common table salt is really a crystal made up of sodium ions bonded to chloride ions. Table salt is not a molecule. When the crystals are poured into water, the ionic bonds separate. The same processes operate for commonly used fertilizers. They are salts. In water, their bonds are released.

In the third type of bonding, the atoms or groups come fairly close together, but do not touch. This bonding pattern is the weakest, yet this pattern is the major one that holds you and trees together. On a relative numerical basis, consider the holding power of these bonds to be about two or three; on the same scale, the covalent holding power between two nitrogen atoms in the air is about 190.

Yes, life forms are held together by these relatively weak bonding forces. If this were not so, processes of breakdown and buildup would not work. No recycling. No new life.

This third type of bonding brings us back to water, and its ingredients — oxygen and hydrogen. The third type of weak bonding is called hydrogen bonding. Because it is so important, some additional details should be given.

Hydrogen bonds

Hydrogen bonds are the unique features of water. In summary, oxygen has two positions for additional electrons in its second ring. Hydrogen has one electron in its single ring, but the ring can accommodate two electrons.

Two hydrogen atoms bond with a single oxygen atom to form a molecule called water. Each hydrogen atom bonds on the second ring of the oxygen atom where
there is a place for them. When the hydrogen atoms bond with the oxygen atom, a strange partnership takes place. Each hydrogen atom now has two electrons in its ring and the oxygen atom has electrons filling the two available positions on its second ring. Add to this the fact that the hydrogen atoms and the oxygen atom now have their rings saturated, yet the positive and negative charges of the molecule are balanced! What a process!

There is much more to this story of water. Oxygen "accepts" the electrons of the hydrogen atoms, but it pulls most of their electron clouds deep into its atom. Another way to say this is that the electrons of the hydrogen atoms spend much more time deep inside the oxygen atom's ring than they do rotating about the protons in the hydrogen atoms.

The hydrogen protons as a result are near the outer edge of their ring, with very little electron negative charge about them. The protons, being positive, exert their charges out from their position on their rings.

And, because the oxygen has absorbed most of the negative charges of the electrons of the hydrogen atoms, the side opposite the hydrogen atoms becomes weakly negative. So now one part of the water molecule has two weak positive points and the opposite side two weak negative points. Such a molecule is called a dipole. Water is a dipole.

Here is another way to view the water molecule. Imagine oxygen as a large clear ball. Now, mark four points on the ball all equidistant from each other. Make two points red and two green. Next, move the green points slightly away from each other, and move the red points slightly toward each other the same distance that you moved the green points. The two green points have weak negative charges, and the two red points have weak positive charges. The red points are positions where the hydrogen atoms are bonded to the oxygen. The exact points of red are the positions where the protons reside and are producing the weak positive charges. If you can imagine this three-dimensional model of water in your mind, many fascinating characteristics of water become easy to explain and understand.

**Cohesive water**

Water forms drops as it rains and falls on leaves and needles. If water is poured on a smooth glass surface, mounds will form. If you pour alcohol on the same surface, no mounds will form. Why? The answer: water has an abundance of hydrogen bonds; alcohol does not.

Back to our ball model. You can bond one water molecule with another molecule, or even bond four molecules with one molecule. However, you cannot have one water molecule bond its two positive sites with the two negative sites on another water molecule. Remember, the red dots are closer together than the green dots. You cannot fit two red dots over two green dots. Back again to four on one. It is possible for four molecules of water to align themselves in such a way that they bond one of their dots with a dot of a different color on the ball. As each molecule moves into position where its positive site bonds with a negative site of another molecule, an active dance goes on. If you can imagine it, every water molecule is "trying" to bond with another. The problem starts for the molecules when bonding partners position their other sites too close to similarly charged sites on the molecules. Remember, unlike charges do attract, but like charges repel. And, because the hydrogen bonds are such weak
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bonds, it does not take much to knock them apart. So, the wild dance goes on as molecules vie for positions only to be knocked out of place again and again.

The significance of this process for life and for trees specifically cannot be overrated. Cohesion makes it possible for water to cling within vessels and tracheids. The cohesive feature gives us raindrops and water as a liquid at temperatures below 100 degrees Celsius. Many liquids, alcohol included, form few hydrogen bonds. Ammonia, which weighs the same as water on a chemical scale, is a gas at normal temperatures—again because its molecules do not bond together as water molecules do.

Water from liquid to ice

As long as the dance goes on, liquid water exists. As temperatures begin to decrease, the pace of the dance decreases until, at 4 degrees Celsius, everyone gets a last chance to pick a bonding site. Because many of the molecules that would normally be in the middle of the group now move to outer positions to find a bonding partner, the volume or space occupied by the dancers increases. We say that as water's temperature drops near 4 degrees Celsius, expansion takes place. As water expands, bottles or even large rocks can be broken. The power of expanding water has been used by humans down through history. As a result of further cooling, the dance stops, as every molecule has a position. We call this state ice. Because ice is less dense than an equal volume of water, it floats—all because of hydrogen bonds. Some people have said that hydrogen bonds (icebergs) caused the sinking of the Titanic. Yes, water can be good, and it can be bad!

Bound Water

How do trees stay alive in areas of the world where winter temperatures are far below freezing? How do trees store water?

Every arborist needs to know something about those two questions, mainly because many of the major cities of the world are in areas where winters are cold. The simple answer again is hydrogen bonds. Let me explain.

Trees are made up mostly of cellulose. Cellulose is made up mostly of glucose units bonded in ways that cause the units to twist as a rope does. Water plays an important role here, but the details go far beyond the scope of this article. Suffice it to say, the removal of a water molecule between two glucose units results in the cellulose pattern. The twisting takes place because the glucose units must be in a very precise position to enable the water molecule's removal. My only point here is that water does play a major role in the formation of cellulose. The free water becomes available then to the tree.

Cellulose has many oxygen and hydrogen units as part of its makeup. In a sense, the oxygen-hydrogen units "stick
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out" from the glucose – now cellulose – molecule. Because each oxygen has a weak negative charge, the site could be a potential bonding site for a positive charge from a hydrogen atom that is part of water. The story continues with the same theme. As liquid water comes in contact with cellulose, some of the positive sites on the water molecule bond with the negative sites on the oxygen atoms that are part of the cellulose. A hydrogen bond again. As more liquid water comes into the same area, the water begins to bond with other water molecules as it normally does. Remember: Cellulose – especially cellulose in the middle layer of the second wall of fibers – is made up of many “ropes” of cellulose with some spaces in between. The water molecules with their hydrogen bonds soon start filling all the empty spaces. As the molecules of water squeeze into every available space, spaces soon become saturated. This point is called the fiber saturation point of wood, which is the point where all available spaces are taken by water.

This is usually the normal healthy condition of trees. When this condition exists, pathogens usually are not able to invade. So, water plays a major role as a preventative against many pathogens.

When water is bonded to the cellulose, the water is called bound water. Because it is bonded to the cellulose, it does not freeze as liquid water does. Remember, the bonding power of the hydrogen bond is very weak. It takes little to pull it apart. The bound water not only prevents freezing and acts to prevent pathogens from invading; the bound water also is a unique way for trees to store water.

**From flush to free water**

Trees store water as bound water and energy in starch and oils. When the flush for new growth starts, some of the stored starch in living parenchyma cells in wood and behind buds is converted back to glucose. Water plays a role here also, because to go from insoluble starch to glucose, a molecule of water must be chemically inserted back into each starch unit. As this process goes on, the glucose dissolves back into the free water. The glucose in the free water brings on a pull force that easily dislodges more stored bound water. In fact, this process triggers the entire process of liquid transport in trees. It starts the pumps. But, that’s another story about water.

Dr. Alex L. Shigo is the owner of Shigo & Trees, Associates in Durham, N.H. Special thanks to Dr. Charles Owens, professor of chemistry, for review of this paper and continuing advice on chemistry.
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Managing Debt

By Mary McVicker

Debt is a chameleon. It can be useful to a business or cripple its operations. Unhappily, forecasting the outcome can be problematic.

Good vs. bad debt

Debt management involves making some distinctions, particularly between "good" debt and "bad" debt. The distinctions aren't always clear - debt doesn't come with handy identifying labels.

Traditionalists might argue that all debt is bad, but that's too simplistic to be useful. Granted, cash is usually preferable to debt, but even that doesn't apply in all situations. Debt can help a business attain a useful goal, and it should add to the profitability of the business when used correctly.

For instance, when debt is incurred to buy equipment, that equipment is expected to contribute to the profitability of the business. It may expand the capabilities of the business or replace old equipment with something better. In either case, debt is obviously being used to enhance or support business operations, putting the business in a better position to generate profits.

Less obvious is the situation where debt is incurred to get the business through a tight spot. In that situation debt is being used for normal operating expenses. While this is sometimes necessary, it isn't the most desirable use of debt. The debt isn't working for the business or contributing to future profits; it's being used simply to maintain current operation. This doesn't mean that a business should never borrow money to meet its operating expenses. There are times when "simply" maintaining is an achievement in itself. However, a business that borrows regularly in order to meet operating expenses is not using debt effectively.

Clearly, then, in matters of using debt (as in murder mysteries), motive is an important factor. As an owner, you need to ask two critical questions:

1. Why is the business incurring this debt?
2. What will the debt enable the business to do?

Using debt effectively

Like verb tenses, debt comes in various categories of time frames, most notably "present" and "future." Debt incurred in the past is either paid off or has continued, and is now "present" debt. Past debt, even when paid off, can have a considerable impact on the present. Past debt has an unfortunate tendency to hang around too long, much like unwelcome guests. Let's consider decisions about incurring debt, then look at dealing with existing debt.

Debt can be thought of as a second-line resource for a business. A business that has a low ratio of debt has room to borrow. This borrowing capacity, or leverage, gives the business important flexibility in meeting its cash needs as well as taking advantage of opportunities. What are some of the uses of debt?

- Debt can finance the purchase of a productive asset that will contribute to a positive cash flow. Benefits can be both direct and indirect.
- Debt can facilitate growth in the business. This is one of the most common uses of debt.
- Debt can solve a cash flow problem. As was discussed earlier, this use needs to be undertaken carefully. Unless a business is extremely seasonal, businesses should avoid relying on debt to carry them through a cash flow pinch on a regular basis. However, debt is useful for providing a cushion for tight situations. A business that has borrowed as much as it can support is much more vulnerable to a negative change in cash flow than a business with room to borrow. The real usefulness of debt in this situation is its potential - the unused room to borrow. It's this potential that affects a business' vulnerability to problems.
- Debt can enable a business to achieve a profitable sales volume. Consider, for example, a business that's using all of its resources to break even. That business doesn't have the capacity to be profitable. Some borrowing, judiciously applied, might enable that business to generate enough of an increase in sales to result in a net profit.

Interest considerations

As a general rule, the benefit received from debt should be greater than the interest (and other costs) paid for the debt. That's one of those maxims that's easy to agree with but difficult to apply.

Estimating the "value" of benefits can be difficult, and you can make the analysis very complex. In most situations the most critical questions to address are whether the borrowing makes financial sense and the utility of results from incurring the debt.

Managing existing debt

Readers at this point might be thinking, "This all sounds wonderful, and I can see some potential for my business. But what about the debt I already have? How do I deal with the existing debt structure?"

Thinking about exciting future possibilities that managed debt can open up
is far more interesting than trying to figure out if there's anything to be done with the existing debt structure. Those considerations tend to become dreary immediately. However, prospects may be less grim than seems apparent. Obviously there are choice limitations with respect to existing debt. There may be several possibilities that will make existing debt more manageable.

The first step is often the most unpleasant. Look carefully at whether the proportion of debt is high in relation to equity. If so, the business needs to focus on reducing its reliance on debt. Too many businesses are undercapitalized, which means they rely too heavily on debt. Next, it's necessary to analyze the debt, looking at each one. Questions to consider include:

1. What was this debt incurred for? Does it serve a useful purpose to the business?
2. Is it contributing to revenue or has the debt outlived its usefulness?
3. What's the cost of this debt? How does this compare with the cost of other debt the business is carrying?
4. Do I consider this lender a resource of the business? Many businesses borrow from suppliers, carrying balances. Those suppliers are not only lenders, they are resources. Banks and financial institutions may also be considered as resources if the business has a good relationship with the institution or anticipates utilizing their lending services again. In contrast, a finance company that has high-cost loans is not a lender the business is likely to want to use again and isn't a good resource for the business.

The next step is to decide which debts the business should focus on. This doesn't mean paying off some debts at the expense of not keeping current on other payments. But many businesses are in a position to pay a little extra on one or two payments, which can make a difference in the course of a year. This is particularly true when the business needs to build some flexibility into its debt structure.

Reduce the most costly debts first. Next, get rid of the debt baggage — old debts that no longer have any utility. (Not only is this a good move financially, but it can give a significant psychological boost as well!)

Consider refinancing for lower interest rates or more favorable payment terms. You might want to seek professional advice; debt structure can be complicated, and the options offered by many banks can be bewildering.

Take control of your debt

Making distinctions underlies debt management. Some distinctions are conveniently obvious. An interest rate of 10.5 percent can be readily distinguished from a rate of 12 percent, for instance. Distinguishing between "good" debt and "bad" debt isn't always so easy, however. There's another critical distinction in management, one that involves intent. Either management manages debt, or debt manages the business. Who, or what, is in charge of your business?

Mary McVicker was a tax attorney before leaving to teach and write. She has been a small-business consultant and freelance writer in Brookfield, Ill., for more than 16 years.
The new TM-270 Series tree trimmer by MTI Insulated Products features a 270-degree upper-boom articulation and a lower-boom articulation of up to 135 degrees. These lifts are available in working heights from 58 feet up to approximately 65 feet. The TM-270 has a side reach of approximately 50 feet and the lower-boom articulation allows for easy bucket access from the ground. Standard features of the TM-270 Series include tool outlets at the platform, a 24-inch-by-30-inch one-man side hung platform with mechanical dump, and one-handle platform control mounted between the boom and bucket. For more information, contact Mobile Tool International at (303) 427-3700 or fax (303) 657-2205.

Dow AgroSciences and Brown Manufacturing Corp. have collaborated to create the Brown Brush Monitor, a specialty mower designed to combine mowing and herbicide treatment in a one-pass application. The mower's design separates the tasks of mowing and applying herbicide into two chambers. In the first chamber, the blades cut brush stems 2 to 3 inches in diameter or sapling trees up to 3 years old, depending on species. The mowed debris is then removed from the mower deck through a side door, allowing the herbicide chamber to treat the cut stubble. In the enclosed treatment chamber, herbicides are sprayed directly onto the stubble, and in a second phase, the system catches any unabsorbed herbicide and wipes it into the stubble. This eliminates waste and minimizes the amount of product applied. Because herbicides are applied during the mowing process, the Brown Brush Monitor provides low public visibility of chemical application. In addition, targeted herbicide applications reduce overall treatment needs and eliminate brownout.

California recently approved registration for Tempo SC Ultra Insecticide from Bayer Corp. A water-based, advanced-generation pyrethroid, Tempo SC Ultra provides knockdown and control of more than 60 indoor and outdoor pests. Tempo SC Ultra contains beta-cyfluthrin rather than cyfluthrin. In addition, Tempo SC Ultra has a low odor and less visible residue. Tempo SC Ultra is available in a 240-ml tip-and-pour bottle and also a 900-ml bottle to allow for easy mixing. For more information, call Sara Buck at (800) 767-5021, Ext. 1299.

Include Software Corp. has announced its release of Minnow, a field data and timecard collection software application designed for the green industry and hand-held personal digital assistants (PDAs). With Minnow, work crews can enter time card and site information into PDA devices at the work site, then transfer the collected data to the Include Asset accounting and payroll desktop software to generate complete, detailed timecards, site service and materials details. When an estimate becomes a sold job, Include Asset can automatically create purchase orders, materials lists, job schedules and accounts receivable invoices. Minnow can be used with any hand-held PDA device that runs the 3Com Palm Computing operating system, version 3.0 or higher. For more information, call (800) 475-0311, fax (301) 776-7409 or go to www.include.com.
Perkins has extended its recently launched 400 Series with the introduction of a 3-cylinder, 34 horsepower 25.1 kW, 403C-15 model. The 403C-15 has a 3.3 dB(A) reduction in noise levels at full load, while delivering 7 percent more power and a productive 10 percent higher torque. It also improves upon fuel consumption of its predecessor and adds simple service procedures to a huge 500-hour service interval. All hook-up points are the same as the previous 100 Series engine, making upgrades to the 403C-15 simple. The 400 Series family of diesel engines is set to take over from the seven-model 100 Series range of 0.5- to 2.2-liter, water-cooled 2-, 3- and 4-cylinder engines, which will continue in production until 2004. The 400 Series is designed to benefit compact construction equipment, fork lift trucks, compressors and gen sets as well as lawn and turf machines with lower noise and cost of ownership, better power to weight, smaller package size and greater performance. For more information, contact Perkins Engines, Inc., based in suburban Detroit, or a dealer.

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Daloz Safety (formerly Wilson Safety) has introduced two new communication earmuffs: the Bilsom 777 transceiver and the 799 electo FM stereo radio earmuffs. The Bilsom 777 muff has a detachable cord and also offers users the opportunity to purchase specific adapters to match their two-way radio brand. The Bilsom 777 muff is designed for environments where two-way communication is not possible without reducing or attenuating the noise. It replaces the microphone and speaker in a portable radio and has a built-in dynamic receiver and a gooseneck noise-canceling boom microphone. Both muffs are part of the lightweight Bilsom 700 Series. For more information, contact Elizabeth A. Antry, director of marketing communications, at (800) 345-4112 or at www.cdaloz.com.

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Spectro 9OWDG label OK'd in California

Cleary’s Spectro 9OWDG Turf and Ornamental Fungicide has been accepted for use in California. Spectro 9OWDG is a combination product of chlorothalonil and thiophanate-methyl in a 4-to-1 ratio. This combination has both contact and systemic properties for control of turf and ornamental diseases.

Labeled use sites include golf courses, commercial lawns, sod farms, greenhouses, nurseries, interiorscapes and landscapes. Cleary Chemical markets products in the turf, ornamental and PCO areas with name-brand products such as 3336, Protect, FirstStep fungicides, Ornamental Fungicide has been accepted for use in California.

Robert Vermeer New Chairman of EMI

Robert L. (Bob) Vermeer, CEO and chairman of the Board for Vermeer Manufacturing Co., in Pella, Iowa, was elected the 2000-01 chairman of the Equipment Manufacturers Institute (EMI) during its 107th annual convention.

Vermeer has served on the Institute’s Board of Directors since 1995, during which time he served as EMI’s vice chairman, second vice chairman and a member of the Executive Committee.

November 1 also marked the transition date for other EMI officers. Joining Vermeer as newly elected EMI officers are: Gary MacDonald, executive vice president of MacDon Industries Ltd., Winnipeg, Manitoba, Canada, as vice chairman; and David Woods, chief operating officer of Charles Machine Works Inc., Perry, Okla., as second vice chairman and a member of the Executive Committee.

Pioneer Joins The Care of Trees

The Care of Trees family of companies has announced Pioneer Tree Experts, of Malvern, Pa., has joined the organization. Pioneer is now Pioneer the Care of Trees and is a sister office to the recently opened Philadelphia regional office called Alpine the Care of Trees.

Scott Jamieson, president of The Care of Trees, has announced that the Pioneer team decided to join The Care of Trees, he said.

In addition to Pioneer the Care of Trees, subsidiaries include Hendricksen The Care of Trees, serving greater metropolitan Chicago; Alpine The Care of Trees, serving Connecticut, New Jersey, greater metropolitan New York City and Philadelphia; and The Care of Trees serving greater metropolitan Washington, D.C., Maryland and Virginia.

Lewis Tree Service 100% employee-owned

Lewis Tree Service Inc. has announced that the Lewis Tree Service Employee Stock Ownership Plan has purchased the remaining 650,000 outstanding shares of the company’s common stock. The stock purchase makes Lewis one of the largest 100 percent ESOP-owned companies in the United States. Financing for the stock purchase was provided by M&T Bank.

Lewis provides vegetation management services to utilities and governments. Lewis currently has more than 1,200 employees and operates in 12 states, mostly in the eastern United States. Headquartered in Rochester, N.Y., Lewis has a regional office in Chase City, Va.

For more information, call (716) 436-3208 or go to www.lewistree.com.
Helpful Hints

Before leaving the yard

By: Jeffrey Lee, Branch Management, Riverside, CA (909) 276-8060
Sponsored by The Bishop Company for the advancement of our industry.

In the past in these pages, we introduced you to veteran tree guy Big Al Fontaine and his Number 1 man, Max Bunyan. The following are a few of Al and Max’s favorite helpful hints before leaving the yard:

• **Address and map** - In addition to “telling the crew where to go,” it is always a nice idea to put it in writing. Refer to the good old map and include an address (complete with cross streets and city).

• **Job description (work order)** - An outline of the work to be done is pretty handy, especially when the work calls for specialty equipment, such as rigging equipment, stump grinders, and let’s not forget that big bad chain saw with the menacing 60-inch guide bar!

• **Vehicle inspection** - Most states require that two-ton trucks be inspected daily. Keep a logbook in the glove box (or somewhere handy) and make that daily entry. It’s critical not only for making it to the jobsite, but to protect your own people and the innocent public from your huge bone-crushing truck and chipper if a mechanical failure should occur.

• **Eat something** - The internal machine will only work when you have fuel to burn. Tree work is tough stuff and sometimes the morning coffee doesn’t go as far as you’d wish. Grab a little something on the way in to the yard or on the way to the jobsite.

• **Show up prepared for work** - Sometimes we arrive at work with our mind or body at a less-than-perfect condition. Remember, we are working to provide for our families. This work is not easy (if it were easy, everyone would be doing it!). Consider your clients, coworkers and employer, and show up focused, healthy and ready to go.

• **Safety equipment checklist** - Be sure all safety equipment is on board and in excellent condition: Hard hats, climbing equipment, road cones and signs, and tire chocks, etc. Keep a simple list available to “check off” items to be sure they are all included and stored in the appropriate place.

• **Confirm with client** - Whoops!! Check the schedule. Call the client to confirm everyone’s expectations. It is not only embarrassing to show up and remove the wrong tree, but it could be potentially costly and end with litigation. Maintain professionalism, and keep the scope of work clear—and in writing. That creates an environment that everyone will benefit from.

• **Communication equipment** - Without a source of communication, it may be difficult to have updated information, or (if something dreadful falls into our laps) an emergency response. Be sure that radios and cellular phones are charged and in the truck. Keep in mind, though, that not all geographic areas support such technology, and batteries do die. It is a good idea to establish a “back up.” Outfit trucks with prepaid calling cards ($5 should do it), so if there is a problem with the “communicator,” there is usually a phone booth just around the corner.

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Are you familiar with the American National Standards Institute (ANSI) Z133.1 Standard for tree care practices and do you follow its requirements? The “Z,” as it is reverently referred to by those in the know, has been the standard for tree care safety for 30 years.

In that time, Z133 has continued to evolve and improve. So, too, has the profession’s familiarity with it. I hasten to add that by no means is the profession or the Standard at a point where either can afford to rest on its laurels.

I need to point out that the comments in this article represent my opinion, not the official interpretation of the ASC Z133 Committee.

Due to be published early this year, Z133 has gone through some rather significant revisions of late. The purpose of this article is to make you aware of the more significant changes, as well as the reasons they were made. I will separate those reasons into three broad categories:

- The Struggle for Recognition and Acceptance
- Embracing New Techniques and Equipment
- Raising the Bar for Safety

The Struggle . . .

The arborist profession continues to suffer from an identity crisis that manifests itself in many ways. The example most relevant to this conversation is that regulatory agencies such as OSHA, insurance companies and even contract managers fail to realize that we’re a “grown-up” industry whose leaders are well aware of the problems we face and responsible enough to do something about them. Instead, these groups persist in trying to make us fit into boxes created for other groups.

The new Z133 helps us assert our identity. Thus, for the first time, it defines arboriculture as “the art, science, technology and business of utility, commercial and municipal tree care,” and arborist as, “an individual engaged in the profession of arboriculture.”

The Standard recognizes that as professionals, we have to exercise discretion in some situations. Thus it says, “This Standard may require situational modifications in response to personnel emergencies and is not intended to limit the options available to emergency responders.” It also recognizes that we all must take personal responsibility for safety when it says, “Each employee shall comply with the appropriate federal or state occupational safety and health standards and all rules, regulations and orders that are applicable to his/her own actions and conduct.”

As a matter of fact, the arborist profession has developed enough of a name for itself that it is deserving of its own type of rope, henceforth referred to in Z133 as arborist climbing line. Identified by the manufacturer as suitable for tree climbing, arborist climbing lines are half-inch diameter, made of synthetic fiber, with a minimum nominal breaking strength of 5,400 pounds and a maximum working elongation below 7 percent.

That having been said, the revised Standard acknowledges that, “In arboricultural operations not subject to regulations that supersede Z133.1, a line of less than one-half-inch diameter may be used, provided the employer can demonstrate it does not create a safety hazard for the arborist.” In other words, Z133 recognizes that innovation has brought us new, proven techniques that force some of us to look outside the box.

New techniques and equipment . . .

The Z133 Standard was last published seven years ago. We are not exactly a high-tech industry, where today’s PC is tomorrow’s doorstop, but for us change has occurred relatively quickly since the “Z” was last brought up to date.

The revision is current with today’s philosophies and mindsets. In one part it says, “Communications shall be established be-
The 335XPT arborist saw, built for life in the trees. It's 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. Plus, its snag-free shape and built-in rope ring make it a cinch to haul up. Nobody is more committed to the arborist than Husqvarna. We offer a full line of specially designed safety gear and are proud to sponsor ArborMaster training programs. To find the nearest Husqvarna Power Retailer, see your Yellow Pages under "Saws" or visit our website at www.husqvarna.com.

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between the arborists aloft and the arborists and other workers on the ground before cutting and dropping limbs. The command 'stand clear' from aloft, and response 'all clear' from the ground are terms that may be used for this purpose.” The Standard recognizes that poor communication has been the downfall of many an arborist, and it is giving credence to the so-called “command and response” system that has only recently come to the forefront. The concept pops up again in the tree removal section, where the Standard admonishes the saw operator and the rest of the crew to communicate.

The Standard recognizes the various labor/equipment/life-saving gadgets introduced to the industry in the past 10 years. It begins by defining, in alphabetical order, the ascender, positive-locking carabiner and Prusik loop. It validates the Blake's hitch and split tail for use in climbing.

It recognizes both the full-body harness/fall-arrest lanyard and the body belt and lanyard as suitable fall protection in a bucket truck, choosing to emphasize that it is less important which you choose, but that “fall protection shall be worn when working aloft.”

The Standard introduces the concept of being “secured,” describing the arborist who is safeguarded from unintended movement by a climbing system that is attached to the arborist and connected to a tree or other stable support. Examples of being secured include but are not limited to: being tied in, using a work-positioning lanyard, being on belay, or using a Prusik loop or ascenders while ascending.

There are some significant changes in the area of connections for climbers. Carabiners used in securing the arborist climbing line and/or the work-positioning lanyard to the arborist climbing saddle shall be of the self-closing positive-locking type, with a minimum tensile strength of 5,000 pounds. Rope snaps used in climbing now must be the self-closing, locking type (as opposed to simply self-closing) with a minimum tensile strength of 5,000 pounds.

Do you know the difference between a conventional, a Humboldt and an open-face notch? Can you think of an example of where one would be preferable over the other two? The Standard provides a full description, illustrations and even specifications for making the back cut: “With a conventional notch or Humboldt notch (between 45 and 70 degrees), the back cut shall be 1 to 2 inches above the apex of the notch to provide an adequate platform to prevent kickback of the tree or trunk. With an open-face notch (greater than 70 degrees), the back cut should be at the same level as the apex of the notch.”

Some of you are yawning right now, because these cuts are as old as the cross-cut saw. Still, the inclusion of all three in most arborists’ mental toolboxes is a
relatively recent event.

Finally, there are a number of new informative annexes. Annex C lists general safety procedures that apply to all tree work for the control of hazardous energy. Annex E is a green log weight chart, providing weight-per-cubic-foot values for almost 60 species of tree. Annex F covers the impact of OSHA and ANSI standards upon municipal forestry departments. It lists the states under federal OSHA enforcement, states with OSHA-approved state plans, and states with unapproved plans, and also highlights which states have safety laws applicable to state and local government employees. In addition, it lists the states where violation of a standard is considered negligence; states where violation of a standard is considered evidence of negligence; and states that are undecided on the issue.

Raising the bar for safety

The arborist profession has made great strides in safety, but we need to press forward diligently. In a typical year, 25 people lose their lives in this profession while many others sustain injuries. Through this Standard, we can communicate and encourage the best practices and raise the bar for safety. I am sure that the thought present in the minds of the ASC Z133 Committee members in this cycle of revision was no different from that of members during previous revisions: “We have to do even better.”

Many of the changes in the new Z133 bring greater specificity to its requirements. This will help everyone, including the folks at OSHA, to better understand how the committee intended the Standard to be applied.

Here are some of the new “Shall” requirements:

♦ Clothing and footwear appropriate to the known job hazards shall be approved by the employer and worn by the employee.

♦ Chain-saw-resistant leg protection shall be worn while operating a chain saw during ground operations.

♦ Training shall be provided in emergency response procedures appropriate and applicable to the work to be performed.

♦ Line clearance shall not be performed during adverse weather conditions such as thunderstorms, high winds, and snow and ice storms.

♦ Qualified line-clearance arborists and qualified line-clearance arborist trainees performing line clearance in the aftermath of a storm or under similar conditions shall be trained in the special hazards associated with this type of work.

♦ Line-clearance operations shall be suspended when storm work or emergency conditions develop involving energized electrical conductors. Electrical system owners/operators shall be notified immediately.
Arborists, workers and mechanics shall not, under any circumstances, reach into the infeed hopper when the cutter disc or rotary drum or feed rollers are moving.

Arborists operating cranes should take particular note of the brand-new section on cranes, reproduced in full below. The part in italics was the only requirement conveyed in the 1994 revision of Z133:

"Riding the load line of a crane while it is under load tension shall be prohibited, except for circumstances outlined [below].

"A qualified arborist may be hoisted into position utilizing the crane, provided that he/she is tied in with an arborist climbing line and arborist saddle meeting the requirements of this Standard and secured to a designated anchor point on the boom or line. The following procedures shall be followed when an arborist is to be lifted by a crane:

"The person specifically responsible for the work shall only authorize the use of a crane when he/she has determined that it is the safest and most practical way to perform the work or gain access to the tree. Such authorization should be made in writing and be retained at the job site.

"The crane operator shall be familiar with the potential hazards and operational techniques encountered in tree work.

"The arborist climbing line shall be secured to the crane in such a way that it does not interfere with the function of any damage-prevention or warning device on the crane, and so that no part of the crane compromises the climbing line or any other component of the climbing system.

"The crane operator and the person responsible for the work to be performed shall meet prior to the work to review procedures to be followed. If the work involves a signal person and/or arborist being lifted in addition to the person responsible for the work, they shall participate in the review.

"Communication between the crane operator and the arborist being lifted shall be maintained either directly or through the appointed signal person.

"The crane shall be supported on a firm surface and maintained in a level position. The crane operator shall use blocking or other means if necessary so that the support medium does not exceed its load-bearing capabilities. When provided, outriggers shall be extended and properly set. Lifting of arborists shall not be permitted when the crane is supported solely on its tires.

"The crane operator shall test the adequacy of footing prior to any lifting. A green log weight chart should be available to the crew.

"The lifting and supporting shall be made under controlled conditions and under the direction of the arborist or an appointed signal person.

"The crane operator shall remain at the controls when the arborist is attached to the crane.

"The crane boom and load line shall be moved in a slow, controlled, cautious manner with no sudden movements when the arborist is attached. The lifting or lowering speed shall not exceed 100 feet per minute. The crane shall be operated so that lowering is power-controlled.

"The crane carrier shall not travel at any time while the arborist is attached.

"The arborist shall be detached from the crane any time it is under load tension. EXCEPTION: The person specifically responsible for the work shall only allow the arborist to remain attached to the crane while it is under load when it is determined that all reasonably possible alternative methods are inaccessible and attachment
to the subject tree would create a greater safety risk due to its hazardous condition. Possible alternative methods include, but are not limited to:

- securing to the tree and detaching from the crane before it comes under load;
- use of a second crane;
- use of an aerial lift device;
- use of an adjacent tree."

Another recurring theme in the new Z133 is the replacement of "Should" requirements with "Shall, with exceptions" requirements, such as in the statement immediately above. This removes all vagueness when you apply the requirement. Here are a few more examples:

- Chain saws weighing more than 15 pounds (6.8 kilograms service weight) shall be supported by a separate line or tool lanyard when used in trees, except when work is performed in an aerial device. EXCEPTION: This requirement does not apply during topping and removal operations where no supporting limb will be available.

- Chain saws shall be held with the thumbs and fingers of both hands encircling the handles during operation. EXCEPTION: The employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in that particular situation. This exception should not apply to lightweight chain saws (under 15 pounds) when used in a tree.

- Arborists shall use a second point of attachment (work-positioning lanyard or double-crotch rope) when operating chain saws in a tree, unless the employer demonstrates that a greater hazard is posed by using a second point of attachment while operating chain saws in that particular situation.

- Equipment used to secure an arborist in the tree or from the bucket shall not be used for anything other than its intended purpose. EXCEPTION: The arborist climbing line may be used to raise and lower tools."

- Arborists shall be tied-in or secured while ascending the tree and remain tied-in or secured until the work is completed and they have returned to the ground.

EXCEPTIONS: While ascending a ladder to gain access to a tree, however, arborists shall not work from or leave the ladder until they are tied-in or secured.

- While ascending a tree where the density of branches growing from the stem prevents the arborist from crotchting the arborist climbing line or work-positioning lanyard through the branches, then and only then, is the three-point climbing technique acceptable.

- When a pull line is being used, workers not involved in removing a tree or trunk shall be clear by a minimum of one tree length, unless it is necessary to have a team of employees involved in the removal operation.

- Workers not directly involved in manual land-clearing operations shall be at least two tree lengths away from the tree or trunk being dropped. EXCEPTION: The presence of site restrictions, such as waterways or cliffs. Other arborists and workers shall be beyond the trees’ striking range and as close to twice the height as practicable.

Statistically, the big three killers in arboriculture are electrocutions, falls and struck-by’s. Recognizing that our woes come primarily from these accident categories and a few others, the Standard’s writers beefed up the corresponding sections of the Standard. But first, recognizing that accidents of all kinds are caused when there is a lack of awareness of hazards at the work site, the committee has included job briefing language in Z133.

The Standard defines a job briefing as “the communication of, at a minimum, the hazards associated with the job, work procedures, and control measures.”

Figure 2 – A Humboldt notch is a directional felling cut into the side of a tree facing the intended direction of fall. It consists of a horizontal face cut and an angled cut below it, creating a notch roughly 45 degrees. A Humboldt cut is usually reserved for larger trees on steep slopes.
Here is a synopsis of the new language to help arborists avoid the “big three” hazards:

- Electrical shock may occur during a ground fault simply by standing near the grounding object with one’s feet apart. With step potential, a person could be at risk of injury during an electrical fault simply by standing near the grounding point or points.
- Manual pole pruners, pole saws, and other similar tools with poles made of metal or other conductive material shall not be used in line-clearance operations or in other operations where electrical hazards exist. Tools shall be equipped with wooden or nonmetallic poles and the actuating cord shall be made of non-conducting material.
- A visual hazard assessment including the root collar shall be performed prior to climbing, entering or performing any work in the tree.
- If ascenders are used, the arborist must be tied-in to the ascender with an arborist climbing line, climbing hitch, and arborist saddle.
- Arborists shall have a minimum of two means of being secured available while working aloft, for example, an arborist climbing line or a work-positioning lanyard.
- When it is necessary to shorten or remove branches before dropping the tree, the arborist shall attempt to determine if the tree can withstand the strain of the lowering procedures. If not, other means of removing the tree should be considered.
- Before beginning any tree-removal operation, the chain saw operator and/or crew leader shall carefully consider loose limbs, chunks, or other overhead material; and size and terrain characteristics immediately move a safe distance away from the tree or trunk on the planned escape route.

What I have covered is by no means every last change in the new Z133 Standard. I urge you to obtain a copy of the new Standard when it comes out, put it to good use in your operation, and let your ASC Z133 Committee members know how they can enhance the next revision of the “Z.”

Peter Gerstenberger is vice president of business management, safety and education for the National Arborist Association.

The ANSI Z133 Standard is available through the National Arborist Association (1-800-733-2622; www.natlarb.com) and the International Society of Arboriculture (1-888-ISA-TREE; www.isa-arbor.com) The ISA is the Secretariat for Z133.
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WO# 5386
Deciding when to buy your first bucket truck is a huge decision. To decide you must ask yourself:

♦ is there a market for the truck in your location?
♦ can you afford the payments on the loan?
♦ is buying a bucket truck part of the defined goals of your company?

Here are some numbers to start with. Assume that $45,000 is the minimum you would spend on a good used bucket truck; $60,000 is the amount you would spend on a later model used truck; and $80,000 is about the least amount you would spend for a new one.

Two things stand out from the charts below. One is that

Example 1: Bank Loan. Typical customer: In business five to 20 years with good credit.

<table>
<thead>
<tr>
<th>Price</th>
<th>Down Payment</th>
<th>Loan Amount</th>
<th>Term</th>
<th>Interest*</th>
<th>Monthly Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>$45,000</td>
<td>$9,000</td>
<td>$36,000</td>
<td>5 years</td>
<td>10%</td>
<td>$765</td>
</tr>
<tr>
<td>$60,000</td>
<td>$12,000</td>
<td>$48,000</td>
<td>5 years</td>
<td>10%</td>
<td>$1020</td>
</tr>
<tr>
<td>$80,000</td>
<td>$16,000</td>
<td>$64,000</td>
<td>7 years</td>
<td>10%</td>
<td>$1062</td>
</tr>
</tbody>
</table>

Example 2: Finance and leasing company simple interest loan. Typical customer: In business three to 10 years, with a fair amount of debt on the books.

<table>
<thead>
<tr>
<th>Price</th>
<th>Down Payment</th>
<th>Loan Amount</th>
<th>Term</th>
<th>Interest*</th>
<th>Monthly Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>$45,000</td>
<td>$4,500</td>
<td>$40,500</td>
<td>4 years</td>
<td>12%</td>
<td>$1,066</td>
</tr>
<tr>
<td>$60,000</td>
<td>$6,000</td>
<td>$54,000</td>
<td>4 years</td>
<td>12%</td>
<td>$1,422</td>
</tr>
<tr>
<td>$80,000</td>
<td>$8,000</td>
<td>$72,000</td>
<td>6 years</td>
<td>12%</td>
<td>$1,407</td>
</tr>
</tbody>
</table>

Example 3: Finance and leasing company higher risk loan. Typical customer: Newer company, in business about two years with some challenged credit.

<table>
<thead>
<tr>
<th>Price</th>
<th>Down Payment</th>
<th>Loan Amount</th>
<th>Term</th>
<th>Interest*</th>
<th>Monthly Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>$45,000</td>
<td>$9,000</td>
<td>$36,000</td>
<td>3 years</td>
<td>12.75%</td>
<td>$1,208</td>
</tr>
<tr>
<td>$60,000</td>
<td>$12,000</td>
<td>$48,000</td>
<td>4 years</td>
<td>12.75%</td>
<td>$1,281</td>
</tr>
<tr>
<td>$80,000</td>
<td>$16,000</td>
<td>$64,000</td>
<td>5 years</td>
<td>12.75%</td>
<td>$1,448</td>
</tr>
</tbody>
</table>

* Interest rates will vary. In Examples 1 and 2, companies with good credit should obtain lower rates from banks and leasing companies. In Example 3, companies with very challenged credit could find rates substantially higher.
banks offer lower interest rates but require higher deposits. A good community bank should always be part of finding the right source for financing. Independent leasing companies charge higher interest rates but require a much smaller deposit, so you don't use up as much cash on the down payment. According to David Silverman, vice president of the Union Bank in Morrisville, Vt., even though banks are a great place for companies with established credit, leasing companies associated with new truck dealers often have contracts a bank can't touch. That's because a profit is built into the retail price of the truck to help pay for the financing.

The second important point of note is that the monthly payments for a used $60,000 truck and a new $80,000 truck are about the same. The $80,000 truck, however, has two extra years on the note. Therefore, if you are willing to make payments for those two extra years, it might make sense to go with the new truck.

With a newer truck you will have fewer breakdowns, less labor downtime, and a warranty. Keep in mind, however, the difference in cost is not $20,000. When you add the total interest costs paid over the additional two years, the difference between the two trucks is $32,008. Business owners and managers then need to ask, is an extra $32,008 over seven years (or $4,571 per year) worth the reduced hassles and lower downtime? Maybe.

Part of the decision will rest on the mechanical condition of the used $60,000 truck. But you also have to consider some technological and warranty advantages a new truck gives you. Bill LaSalle at CUES Inc., an Amherst, N.H., company that specializes in truck equipment and aerial devices, points out that a new truck typically has a one-year mechanical warranty and 10-year structural warranty. New trucks also have the latest innovations, such as impregnated bearings (no greasing), more maneuverable buckets, chain drives instead of cable drives in the leveling mecha-
nism, and improved boom construction, which increases the weight rating from 300 to 400 pounds.

LaSalle notes there are two types of bucket trucks on the market, and buyers need to decide which is best for their uses. A rear-mounted truck, which reaches off the back axle, is lighter, shorter and easier to maneuver. This truck gives the operator increased reach over front-mounted buckets, but its lack of a chip box means you will need a second truck. Rear-mounted trucks account for about 30 percent of CUES' sales. The other type – the standard, or front-mounted, bucket truck – comes with a chip box that allows for limbing and chipping. The downside is the reduced reach from the front bucket location (and the fact that the ground crew is closer to falling limbs).

Another economic point to note is the difficulty in comparing terms and rates. Banks and leasing companies often have different requirements for down payments, rates and the number of years on the loan. For instance, one leasing company might quote you $1,000 per month for four years on a truck. A second company might offer $900 per month but on five years. How then do you figure out which one is the better deal? Often, leasing companies will not give you the rate they charge readily, and trying to calculate the rate on your own is difficult. Instead, Bill Donovan at OBL Financial Services in Hinsdale, Ill., recommends you determine the net value.

For a list of manufacturers and dealers of new and used lifts, as well as a roster of companies offering financing, go to www.natlarb.com for NAA Member and Industry Web site links. Call 800-733-2622 for a directory of all NAA Associate Members.

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<tr>
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<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>12BM 120</td>
<td>1/2&quot; Black-Max 120ft Hank</td>
<td>$69.95</td>
</tr>
<tr>
<td>12BM 150</td>
<td>1/2&quot; Black-Max 150ft Hank</td>
<td>$79.95</td>
</tr>
<tr>
<td>12BM 600</td>
<td>1/2&quot; Black-Max 600ft Reel</td>
<td>$299.95</td>
</tr>
</tbody>
</table>

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The net value

The net value, Donovan explains, is one of the best tools for deciding which type of financing a company should use, because you figure out what your total interest payment will be based on the different offers you get. This is not as difficult as it seems.

First, let's assume you are going to buy that $60,000 used truck because it is in great shape. Here is what you do:

Assume Company A offers you a rate of 10.5 percent for three years (36 months). That would leave you with payments of $2,347 per month.

You talk to Company B, explain the deal the first company offered, and they also offer you a 10.5 percent rate, but for five years (60 months). The monthly payments are now $1,502. That is an amazing $845 less per month, and though it is for a longer period, at first glance it might seem like a much better deal. Not necessarily so.

Here's why:

$1,502 \times 60 \text{ months} = 90,120 \text{ minus } 60,000 \text{ (the price of the truck)} = 30,120 \text{ in total interest payments}$

$2,347 \times 36 \text{ months} = 84,492 \text{ minus } 60,000 \text{ (the price of the truck)} = 24,492 \text{ in total interest payments}$

Therefore, even though your payments are a lot lower with the 60-month deal, you are actually paying $5,628 more for the same used truck.

Here again a person has to make a tough decision. One scenario has lower payments, protecting cash flow, but the truck is more expensive. The other scenario has higher payments, forcing you to generate a lot of business to cover that $2,347 a month, but you are going to spend a lot less money over the life of the loan.

There are other major factors to consider when buying that first bucket truck, and they have as much to do with personal priorities as with financial issues. They include: the size of your company, the people who will be running the truck, your age and the age of your employees, the needs of present customers, and possibly most important: the direction you want your company to go in.

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Howard Eckel, a retired operations manager at Davey Tree and now a consultant to the green industry, and Steven Barkwell, the general manager of Forestry Equipment of Shelby, N.C.

Eckel was the operations manager during the five year period when Davey Tree grew their sales volume from $50 million per year to $129 million. Barkwell has been in the business for more than 15 years selling bucket and chip trucks.

According to Eckel, the key question to ask yourself is: What business do you want to be in? If you buy a bucket truck, are you going to be able to keep it busy all the time or is it going to sit in your yard two or three days a week? He explains, "You've got to run the numbers, and when you do, you see that you've got to get billable hours on it."

For instance, a new $80,000 bucket truck financed over seven years costs almost $11,500 per year in depreciation. There are 2,080 billable hours per year, but figuring in bad weather and downtime, that number is probably closer to 1,850 hours. Divide $11,500 by 1,850, and you find the truck costs you $6.22 per hour, or about $50 per day, or $250 or week. That means if your new bucket truck is sitting in your yard two days a week, it costs you $400 per month. "Factor in the cost of insuring, registering, repair-
According to Eckel, the key question to ask yourself is: What business do you want to be in? If you buy a bucket truck, are you going to be able to keep it busy all the time or is it going to sit in your yard two or three days a week? He explains, 'You've got to run the numbers, and when you do, you see that you've got to get billable hours on it.'

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Prepare to purchase

To sum things up:

♦ First, reconsider your company’s goals and if a bucket truck will help it meet those goals.

♦ Then, decide new or used. New trucks tend to go to the established and stable companies; used trucks to the more aggressive, younger operations.

♦ When choosing a finance company, don’t decide based on monthly payments alone; calculate the net value.

♦ Most important, according to Eckel, if you are going to buy your first bucket truck, you have to make sure you don’t get yourself into financial trouble. “Buy the truck on paper,” said Eckel, “and run it through last year’s numbers. Nobody ever does this and they should.” This way, you will find out if last year’s sales will pay for the truck. If they don’t, then you have to give serious consideration as to whether you can afford the truck.

At the very least, you need to find improved revenue sources for it. If the cost of the truck does work on last year’s numbers, then you are well on your way to increased efficiency in your tree care operation.

Michael Roche is a certified arborist and owner of Stowe Tree and Landscape Service in Stowe, Vt.
Let us begin in the middle of things, with two men alone on a tract of damaged land in western North Carolina. The year is 1892. One man is young and healthy; he is a forester, hired to work on the land. The second man, also young, is enormously rich. Together, they inspect the damaged land; then they look up at a house that is being built. It is an astonishing structure — only a rich person could build it.

The rest of this story occurs within the set of circumstances just described. Two friends: one a forester, the other, a wealthy young man, inspecting first a large tract of land, then an astonishing limestone palace. The first young man is Gifford Pinchot, the first American to be trained professionally as a forester. The fellow with him is George Washington Vanderbilt. As an old man, Pinchot wrote a description of Vanderbilt as he was when the building of the mansion, called Biltmore, was progressing: “George was a lover of art and of the outdoors, a slim, simple and rather shy young man... Biltmore was his heart’s delight.”

Vanderbilt first came to Asheville, N.C., in 1887. A scholar who spoke eight languages, he chose architect Richard Morris Hunt to construct for him “the greatest castle in America.”

Already famous as the first American to graduate from the Ecole de Beaux Arts in Paris, Hunt gave Vanderbilt, after enormous time and expense, the grand chateau he wanted. Built in the French Renaissance style of the mid-16th century, Biltmore was patterned after castles in France’s Loire valley. Surrounding the castle was the Biltmore Estate, which covered more than 7,000 acres of land on both sides of the French Broad River. Prior to its acquisition by Vanderbilt, the land had been mostly woods, used for sawlogs, fuel wood and fencing. Much of the land was in deplorable condition.

In 1889, Gifford Pinchot, age 24, graduated from Yale University. After graduating, he sought advice about getting a forestry education from Bernhard Fernow, a forester of German extraction, who had been appointed chief of the U.S. Department of Agriculture’s Division of Forestry three years previously.

Fernow advised the young man to further his education in Europe, since no American university at the time offered a forestry curriculum of technical caliber. Pinchot left for Europe in October 1889. There he met the renowned German forester Sir Dietrich Brandis, who, until 1883, had been inspector general of the Imperial Forest Service of India. At his suggestion, Pinchot enrolled in the National School of Forestry in Nancy, France.

The school was a logical choice, since Pinchot was of French ancestry and could speak the language. After a period of study at Nancy, Pinchot made a tour with Brandis through the forests of Germany and Switzerland. After returning to America, Pinchot received an offer from Fernow to become his assistant in the U.S. Division of Forestry at an annual salary of $1,600. Pinchot declined the offer and chose instead to supervise the development of 5,000 acres of land as an experimental demonstration of practical forest management on Vanderbilt’s estate near Asheville.

The first experiment of its kind in America, it had been suggested by Frederick Olmsted, the distinguished landscape architect Vanderbilt had hired to develop Biltmore into “the finest country estate in America.” Weakened by old age, Olmsted saw in the Biltmore project a chance to complete his “greatest work of art.” A social democrat who believed that land, if used harmoniously with the urban environment, could do much to relieve social ills...
brought about by overcrowding, Olmsted had designed some of America’s most magnificent parks, including Central Park in New York City.

The problem facing urban planners, Olmsted believed, was a simple one. Parks and landscapes should be designed in pastoral settings so natural and beautiful that the eye of the beholder would essentially be fooled. The landscaping of the Biltmore Estate would be one of Olmsted’s lasting achievements. The estate would forever be safe from urban encroachment, protected by an approach road that would help prepare visitors by exposing them to miles of carefully laid-out pastoral scenes. (One thing Pinchot learned early on was that in America, an effective forester must not blame farmers who unintentionally damage their land – or very rich young men who want to build elaborate palaces. He may have learned some part of this lesson from Olmsted.)

An admirer of Olmsted’s ideas, Pinchot quickly accepted Vanderbilt’s offer. The salary was $2,500, plus travel expenses; in addition, the French-trained forester was provided a home and a horse. Pinchot arrived at Biltmore on Groundhog Day in 1892 and began his work with gusto. Following a thorough study of the large wooded estate, he set out to prove that scientific management of a forest could produce both a financial profit and a sustained yield of trees.

One of his most difficult tasks was to convince the resident lumberman of the need to save those young trees that would furnish the next crop. On Pinchot’s orders, Vanderbilt’s forestland, contrary to prevailing practices at that time, was not stripped. Only trees marked by Pinchot were felled, and they were dropped in the direction that would do the least damage to young seedlings. Larger trees were saved at regularly spaced intervals to provide seed for future crops.

At the end of his first year of managing the Biltmore forestry tract, Pinchot satisfied himself that the project was paying. According to his accounting, the total expenditures were $10,103.63. The income was only $4,616.19, but the value of the cut wood on hand (most of which was used on the estate) was $6,708, showing a “Balance in our favor” of $1,220.56.

After two years as Vanderbilt’s forester, Pinchot “began to chafe at carrying the growing routine alone.” In 1893, under an arrangement with Vanderbilt that permitted him to engage in outside consulting work, Pinchot opened an office in New York City. Having persuaded Vanderbilt of the need to employ a permanent resident forester, Pinchot sought the advice of his former mentor, Sir Dietrich Brandis. As Pinchot himself was the sole American with technical forestry training, it
was necessary to look elsewhere for a suitable replacement. Sir Dietrich recommended Carl Alvin Schenck, to whom Vanderbilt offered the job in 1895.

Born in 1868 in Darmstadt, Germany, Schenck studied at German universities from 1886 to 1890; he then entered the German State forestry service. Schenck received a Doctorate of Philosophy degree from the University of Giessen in 1894. His salary at Biltmore was to be $2,500; additionally, he was provided with a house and two saddle horses.

In *The Biltmore Story*, edited by Ovid Butler, Schenck tells of his successes and failures in attempting to practice profitable forestry in North Carolina. As a Ph.D., an Army officer on reserve duty and a European of considerable energy, Schenck was perhaps fated to make mistakes in dealing with local mountaineers and others who stood between him and the prompt attainment of his goals. Nonetheless, both Pinchot and Schenck made great contributions in introducing scientific forestry to America.

Some original structures remain, others have been re-created, including a commissary, blacksmith shop and student living quarters. Knowledgeable living history interpreters weave baskets, tend a vegetable garden and boil loggers’ shirts.

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The Biltmore Forestry School

Seemingly by chance, an event occurred in 1895 that was to have interesting consequences. Twenty miles from Biltmore was another estate where a young college graduate named Overton Price resided. He, too, wanted to be a forester, but since there were no American schools of forestry, Price asked Schenck for permission to work for him as an unpaid apprentice.

Schenck agreed; he then later accepted a second apprentice named E.M. Griffith. Later, Price became second in command of the U.S. Forest Service; Griffith became state forester of Wisconsin. Schenck established a formal school in 1898; that year, a catalog was issued. Heretofore, instruction on an informal basis had been given the young men who assisted him in managing Biltmore Forest. But with an increase in the number of applicants for training, Schenck arranged the combined work and instruction in an organized curriculum. The
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Biltmore Forestry School was born.

It offered a one-year curriculum. Classroom courses in theoretical forestry subjects were supplemented by field instruction. The degree awarded was Bachelor of Forestry. A stern taskmaster, Schenck lectured his students in a rough-sawn classroom in the morning and trained them in the field all afternoon. Students learned to protect and preserve, as well as to harvest. They cut timber, planted seedlings and nurtured overcut, eroded lands. After sundown, students returned, exhausted, to scattered cabins and farmhouses.

Schenck’s students were, in effect, apprentice-foresters who performed such technical chores as surveying, making growth studies and laying out roads, and in general preparing themselves through practical experience for employment by the forest products industry. During its existence, the Biltmore Forestry School gave instruction to about 350 students. Among its instructors were Homer D. House, a botanist; Clifton D. Howe, later dean of the Faculty of Forestry at the University of Toronto; and numerous short-term visiting scientists who lectured on forest entomology, geology, forest pathology, wood utilization and other subjects adjunctive to forestry.

Schenck left Biltmore in 1909 and went on active duty with the German army during World War I. The school continued in existence four years longer without a fixed headquarters until it ceased operations in 1913.

On July 11, 1968, President Lyndon Johnson approved an act of Congress that authorized creation of the Cradle of Forestry in America, now a National Historic Site. Located in the Pisgah National Forest of North Carolina, 20 miles southwest of Asheville, the area of 6,500 acres includes the site of the Biltmore Forestry School, where the first technical instruction in forestry was offered in America. Also commemorated by this law is the beginning of scientific forest management.

Today, the site features a Forest Discovery Center complete with a film that describes how the Biltmore Forestry School came into existence. The exhibit area includes displays that trace a century of forest conservation practices. One involves a helicopter nose cone and cockpit where visitors sit, and, by eavesdropping on recorded two-way radio conversations, experience modern fire fighting techniques. Another display sports a giant tree model that one can climb under, into, and up to learn how various plants and animals use roots, limbs and holes in trunks to survive. Footpaths throughout the campus lead visitors to a vintage sawmill, steam logging locomotive and forestry tools.

Some original structures remain, including one forest ranger’s house built in a study, decorative style that was imported from Germany’s Black Forest. Other structures have been re-created, including a commissary, blacksmith shop and student living quarters. Knowledgeable interpreters liven up the site from spring to fall. In the den of one former ranger’s dwelling, Vera Canster stitches quilts and aprons, while in the kitchen, Barbara Miller bakes biscuits in a cast-iron Dutch oven over a wood fire. Other living history interpreters weave baskets, tend a vegetable garden and boil plaid loggers’ shirts clean.

The Cradle of Forestry National Historic Site is located at 1002 Pisgah Highway, Pisgah Forest, NC 28768. The Web site is www.cradleofforestry.com.

Some of the sights along the Biltmore Campus guided trail.
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Stay Out of Court: Learn From the Experience of Others

Has a client unhappy with your work ever hauled you into court? Have you ever removed a tree from a client’s property only to find it wasn’t on your client’s property?

These and other vagaries of life in the world of arboriculture are the subjects of a new book, Tree Law Cases in the USA, by Lew Bloch.

Bloch, a consulting arborist and landscape architect, is known throughout the world of arboriculture as one of the authors of the Guide for Plant Appraisal, as well as a contributing writer to TCI magazine and other publications. Tree Law Cases is a compilation of verdicts from jurisdictions around the country. Bloch doesn’t waste much paper explaining or interpreting case law. Instead, he offers brief descriptions of the case and the outcome. As a result, this book doesn’t purport to render legal opinions. Its value is in alerting arborists to the potential liability of their work. And since the summaries aren’t written by lawyers, they are short, clear and understandable.

The book is organized into 10 general areas:
- Boundary & Borderline Trees
- Trespassing Cases
- Cases Involving Roots
- Real Estate Cases
- View Cases
- Municipality & Public Highway Cases
- Utility Company Cases

Purvis v Hanna (1996)

A coast live oak tree and a row of approximately 14 eucalyptus trees grew on or near the boundary line between the two parties. The Hannas hired an arborist to prune the trees because the branches grew onto their property, and obtained a permit from the City of Glendale to prune the oak tree.

However, the permit provided that only branches of 2 inches or less could be pruned. The Purvises did not object to the initial round of pruning, but the pruning became objectionable when the arborist allegedly began to prune the trees on the Purvis property, and when the arborist began making “topping” cuts.

The city alleged that the Hannas had violated the permit by pruning oak limbs larger than 2 inches. Apparently, the city and the Hannas entered into an agreement under which the Hannas paid restitution or a small fine for the alleged permit violation. The Purvises filed a lawsuit against the Hannas and the arborist for trespass and negligence.

The arborist testified that he initially pruned the trees to industry standards, but the Hannas believed the trees were not being pruned enough and would not pay the arborist unless he pruned the trees further.

Because the arborist was a “friendly witness,” the Purvises dismissed their lawsuit against him. The Purvises arborist determined that the trees had been diminished in value by $22,850, and that it would cost $12,300 to perform the pruning necessary to correct the topping cuts.

The Hanna’s arborist determined that the trees had previously been topped and that the Hanna’s pruning had not harmed the trees. Both parties agreed to submit to an independent arborist who would render a binding, non-appealable decision regarding whether the trees were damaged and the amount of damages, if any.

This independent arborist determined that the trees had been reduced in value and damaged by the pruning operations, and that corrective pruning was needed. She awarded the Purvises $21,054.

After this decision, the Hannas sued the tree contractor, alleging that they hired them to prune the trees in a professional manner. They further alleged that this resulted in their being liable to the Purvises.

As of the publishing of California Arboriculture Law, this suit was still pending.

Los Angeles Superior Court
Reprinted from California Arboriculture Law by Randall S. Stamen
Easements & Rights-of-Way
Negligence Cases
Safety-Related Cases

Bloch starts with probably the most contentious area of tree law—boundary and borderline trees. Raging arguments between neighbors have provided more than a few gray hairs for arborists, since a rational settlement tends to take a back seat to emotion. Too often, the arborist is caught in the middle of the battle. (See sidebar.)

Bloch is careful to warn readers not to rely on the verdicts presented in his book. Case law varies from state to state, and no two cases are exactly alike. Nevertheless, commercial arborists should exercise extreme caution before pruning or removing trees near property lines, amply illustrated in an important and sometimes humorous chapter. As Bloch points out in his book, "It is wise to obtain such requests in writing from the tree’s owner. Arborists should advise clients on the potential negative effect of pruning to tree health and structural stability."

Of course, boundary trees pose one set of challenges. What about a tree whose roots are causing damage to a sidewalk? A case of interest only to the municipality, you may think? Well, think again. Owners of property have a duty and a legal liability to manage damage from roots outside of their properties. According to the court’s finding in Jones v. Deefer, sidewalk disputes may involve public or private parties.

"An owner owes a duty to the public entity to maintain the sidewalk in front of his or her property. When the public entity routinely performs major maintenance on the trees, it is the public entity’s duty to ensure the trees do not cause sidewalk defects. If the public entity did not routinely perform such maintenance, it is the owner’s duty to ensure that the trees do not cause sidewalk defects."

While commercial arborists will find cases of value in this book, consulting arborists, municipal arborists, utilities and property managers make up the bulk of the litigants.

Utilities, with their deep pockets, are an obvious target for lawyers. Is the utility responsible when a child is electrocuted while climbing a tree? Could the tree contractor be held liable?

Cities and towns are frequent defendants when people are injured by falling limbs and heaved sidewalks, or killed when vegetation obscures a Stop sign. Any public employee responsible for the care and maintenance of trees should consider this book a must-read. The sheer variety of mishaps that people blame on government gives one pause over the future of our urban forest. Any tree with the slightest hazard potential could be slated for removal if too many lawsuits succeed. A city can’t be sued for a tree that has been removed, although the stump remains a liability for the more litigious members of society.

Another fertile area for conflict is joint property owned or managed by homeowners associations. Some trees may not be trimmed. Others, by covenant, may have to be topped or removed to preserve someone’s view.

The combatants in most cases hire consulting arborists who battle over tree health and replacement values. Overall, the stories in Tree Law Cases make interesting reading for everyone involved in caring for trees.
In order to increase efficiency and effectiveness, minimize environmental risk and maximize potential profit, there’s a bit more involved in putting a spray rig on the road than turning the key and stepping on the gas pedal.

Effective pesticide application relies on three main elements. These include the proper components of a sprayer system, calibration of that equipment to ensure the system is functioning at peak efficiency, and correct techniques in ensuring that the material is correctly applied to the target. Each of these has to work in perfect harmony to achieve the desired goals.

When things go wrong, entire operations can come to a screeching halt. On one nightmarish day several years ago, we had two units in the water in perfectly calm weather during the height of the gypsy moth season because each crew had lost the cap that holds the disc onto the spray gun. To add insult to injury, by the time we located the spare parts, the wind had kicked up and the day was lost.

From humbling experiences such as this, I’ve worked with others in putting together a list of necessary items to make for a successful operation.

**The spray truck**

When putting together the truck, there are a lot of components you have to consider. For convenience, I like my vehicles to have an automatic transmission. They are more forgiving when you’re driving down the road, trying to look at the contract to see where you’re going, read a map and eat lunch all at the same time.

When determining the weight rating of the truck you need, the gross vehicle weight is what you really need to worry about. My truck weighs about 8,200 pounds. A 1,000-gallon sprayer weighs about 3,500 pounds. A 1,000-gallon tank holds 8,000 pounds of water. You have toolboxes, hose and hose reels, and all the tools and materials that go with pesticide application.
You'd better have a truck that will hold 23,000 pounds by the time all is said and done. I have seen trucks that are undersized for the weight they're expected to carry.

Your truck should be set up for the way in which you want to operate. I have always felt that a rig should be versatile - one that will allow you to do everything that needs to be done when you're on the property. All controls and hoses should be on the curbside for ease of use. In this industry, travel time and setup time are profit killers. If we can eliminate or reduce these, we make more profit - which is not a dirty word, by the way.

My firm uses two rigs. The first rig does a lot of tall tree spraying. It's set up very nicely for that purpose, but it is versatile enough to spray smaller material, and even fertilize.

The tanks

There are several basic components of a spray unit. One is the tanks. My tall tree unit has three compartmented tanks. Each tank is about 330 gallons. The engine, the pump and all the valves are inside. I can close and lock the doors at night.

The flexibility is key. I can have three different materials mixed up in three different tanks using the same pump. I can have fertilizer in one tank, oil in a second tank and fresh water in a third. I don't have to mix up 1,000 gallons of any one material. I can mix in small doses if I want to, which again adds to the unit's versatility. In addition to spraying out large quantities of a single material, our trucks use them repeatedly, we can mix up small amounts needed for individual clients.

One drawback of this system is that it is possible to forget what is in each tank, so I've placed identification tags on each one. At the end of the day, the applicator writes the contents of each tank on a little toe tag. Monday morning when we come in, we have an idea of what we have. This is a critical step because the applicator on the truck Monday may not be the one who was on it Friday.

We have a 500-gallon nurse tank, two 50-gallon side tanks and one 100-gallon tank on the other side.

This unit has clear rubber hoses attached to each tank that aid in measuring how much material was used on a job. This works really well for about the first week of the season, until you actually put something in the tank and can't read the gauge any longer. We change them quite frequently so we can gauge how much material we're using. This becomes important when you have to fill out all your paperwork at the end of the day.

Hose reels

Now the hose reels. Each unit has three hose reels. I have them stacked vertically so they take up less space. Two of the reels are fitted with half-inch hose, which is suitable for small- to medium-size plants. One reel with 100 feet of 1-inch hose coupled to 200 feet of three-quarter-inch hose is reserved for the largest trees.

(Incidentally, the National Arborist Association publishes the “On Target” series of videos that overviews spray rig components, proper calibration and application techniques. In addition to providing a lot of other good information, these videos explain why it is beneficial to use larger diameter spray hose.)

Do you use fire hydrants to fill your spray tanks? Do you fill at the office? Are you sumping out of streams and rivers? Regardless of how you fill, it takes time. My company fills from hydrants. The filling apparatus is mounted right on the truck. We can fill 1,000 gallons in under 10 minutes with the hydrants. In this and other aspects of the operation, I've tried to simplify and streamline as much as possible.

If one company has an incident, the whole industry is painted with the same brush! Let's work together to keep all of our noses clean.

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If one company has an incident, the whole industry is painted with the same brush! Let's work together to keep all of our noses clean.
Matching Pump and Job

Match the pump on your unit to the type of spraying you do. My tall tree rig is relatively simple. There is one 60-gpm hydraulic pump powered by a 65-horsepower engine.

My IPM rig has three pumps and three engines. It has two 5-gpm diaphragm pumps powered by 8-horsepower engines. The only reason I went with an 8-horsepower engine is because it has an electric start. I thought it was much easier to push that button than to make a crank pull. These little pumps will hit 35 to 40 feet with the Bean 785 gun on a half-inch hose. The unit also has a 40-gpm diaphragm pump with a 35-horsepower engine for larger trees.

A word on plumbing: It’s very helpful when setting up a sprayer to have everything at eye level so you don’t have to get off the ground except to mix materials, and some new rigs even eliminate that. It’s a safety consideration. It’s a fatigue consideration. Clamoring onto a truck 40 times a day to engage the pressure relief valves is wasted effort.

Quality spray guns are a must. I believe in having at least one spare of each type of gun on our trucks. Although they are pretty durable, they can malfunction from time to time. It’s nice to have some spares on hand.

There are proper and improper ways to store your guns. I’ve seen trucks driving down the road dripping chemical, with the unsecured gun just flopping off the side of the truck. It looks terrible and creates a negative public image. Remember: We’re all in the image business and we should be concerned. If one company has an incident, the whole industry is painted with the same brush! Let’s work together.

We lock our spray guns down on the truck and have a spray gun holster device that was built specifically for our units. The gun slips in and is secured. Another method we have found effective is to place the gun in the bucket.

Other considerations

Besides these major components of a spray rig, there are many more items to consider that are important to a successful operation.

Storage - It is extremely helpful to have clean, secure storage areas that are large enough to place all your materials beyond the public’s view.

Regulated items - On every truck we are regulated. There are certain things we have to have on the truck - obviously, you need the name of the company and the city from which you operate. If you’re crossing state lines, you have to have a Department of Transportation license number. In Maryland, we’re required to have our Pesticide Applicators number on the side of the truck. Since we fill out of hydrants, we have to have a permit. In our case, the permit is issued by the Washington Suburban Sanitation Commission. Also, the commission inspects our trucks once a year to make certain we have the anti-siphoning device up there.

Depending on the compounds you use, the DOT may require placarding or marking. Certain materials we use require marking on the side of the truck when they contain more than 1 pound of active ingredient. Two materials that quickly come to mind are Dursban and Diazinon, though neither will be available for much longer. Your trucks must be marked for those materials.

A word of note: Stainless steel tanks and magnetic markers don’t work together. I found that out the hard way. Also, any gasoline container larger than...
1 quart has to be marked and has to be DOT-approved. It is advisable to carry shipping papers of all the pesticide materials you carry on your truck. The NAA has samples that are available to you.

We also carry MSDS sheets and sample labels for all the materials that we apply. You never know when you’re going to need something. Also, we carry materials in containers with the manufacturer’s label – we don’t use service containers.

**Personal protective gear** - Rubber latex gloves are the first item of gear we put on when we get out of the truck. They don’t have to be expensive. In fact, we use throwaways that last for three or four days.

Rubber boots are essential. Leather soaks up materials. When we’re out doing a pesticide treatment, rubber boots are required. Ours cost less than $20 a pair and are good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season. Actually, the Odor-eaters that we have to put in them end up being good for a season.

I prefer a full-brim hard hat. The Smokey Bear types offer the back of your neck a little more protection.

Tyvek suits are good to have. There are certain times of the year that you want to have this kind of protection. We have two or three of these that are wrapped up under the seats.

Respirators and goggles are important, and may be required by the product label when mixing and loading. It’s very easy for material to splash out of the tank.

I’ve also found it valuable to carry a change of clothes.

A well-stocked first aid kit is also a must.

**Posting and notification** - The State of Maryland requires us to put a sign in people’s yards upon completion of an application. This posting can be done either in the front lawn by the principal place of access or where the material was actually applied. I’ve always been of the opinion that if I’m spraying a tree in the middle of the back yard, posting a sign at that point provides the most beneficial information.

How many times have you seen signs in January notifying of application made in October? We make a point of picking the signs up as well, even though we are not required to do so.

We have consumer information that we have to give to our clients. It includes a list of precautionary statements for the chemicals that we use.

We have fitted our trucks with wind gauges because after each application we are technically supposed to record how hard the wind was blowing.

We also clock in at what time we get to our client’s property and what time we left. If there is ever any controversy, we can document when we arrived.

**Other equipment** - Every morning we inspect our trucks before we go out. We walk around them, kick the tires, check the lights, check the horn, check the windshield wipers, check the oil – everything that is required. In the evening we do the same thing. We fill out a little form and one copy goes to the office and the other one remains in the truck. We also carry the Safety Regulations Guide Book with us. This comes in handy because you can’t remember all the regulations. A couple years ago, our truck broke down. It doesn’t happen often. I knew that we were supposed to put triangles out but were at a loss as to how close to the truck

“An extremely important document that should be carried on each truck is a procedures manual. At a minimum, this should contain safe operating procedures, details on spill control, insurance information, tips on client relations, and emergency information.”
they were to be placed. I thumbed through the book and found information on where to place the triangles. I don’t think it made much difference but at least I put them out at the proper distances.

We also carry a little certificate that says: “Our truck is under a Programmed Maintenance program and it’s inspected every 12,000 miles or once a year.”

We carry a manifest on our trucks that states all the materials that we have on our trucks that given day. It lists the amounts and the type of container that they are in. The manifest should be within arm’s reach of the driver. If you’re ever in an accident and the emergency response team wants to know what you have, this little manifest can save everyone a lot of grief.

Cones are not required, but we have them on our trucks. When we stop along the street, we take them out and put one in back of the truck and one in front of the truck to let people know we’re there.

A little strobe light on the top of the truck could be helpful, but we do not have that yet. I can’t tell you how many times I’ve been spraying street trees when along drives Mrs. Smith, drinking her cup of coffee, oblivious to everything. Try as I might to wave her off, her car gets soaked. Having some sort of warning light up on top might help.

Spray rigs do get wet from time to time, so I’ve placed anti-skid devices, adhesive backed strips, on all step surfaces of the trucks. These things are great. Stainless steel gets slippery, as any metal does, so having some kind of strips on the side certainly helps that.

If you stop on a hill, it ‘t takes a second or so to set wheel chocks. A lot of trucks have built-in compartments where you can put the chocks.

An extremely important document that should be carried on each truck is a procedures manual. At a minimum, this should contain safe operating procedures, details on spill control, insurance information, tips on client relations, and emergency information. This manual might take a little while to develop, but is nice to have on the truck for routine operations as well as emergencies.

We also carry a vial of change. It can be nice to have when you forget your lunch money. More important, it’s indispensable when you need to make a telephone call.

Keep emergency phone numbers in the truck cab. The sticker we use is available through the NAA. It lists doctors, hospitals, the department of agriculture pesticides division, etc., and our office phone number – many employees never call their own office and don’t know the number. We place our stickers on the dashboard or in the glove box.

We carry spill kits that consist of absorbent pillows, flagging tape to cordon off a spill area, and a shovel.

You should carry insurance forms in case you’re ever involved in an automobile accident. They fit in the glove box and take your operator step by step through what he needs to do.

We carry five gallons of fresh water on our trucks. It’s important for drinking and for flushing foreign matter out of your eyes.

We keep lunches in airtight containers. Small coolers are great for this purpose;
lunch boxes and paper bags are not.

We carry enough pesticides for one day's operation. There's no sense in filling that box with 20 gallons of concentrate if you'll only use two.

Six years ago, I purchased several hundred gallons of horticultural oil in 2 1/2-gallon plastic containers. We now buy our oil in 55-gallon drums and then break it down into the 2 1/2-gallon containers. This container has about a 3-inch diameter opening. You can empty this into the tank in about six seconds. It is fast, convenient and easy.

You need various mixing devices. Measuring cups and spoons are essential.

We have a little pan underneath our filter. When the filter clogs, you open it up and everything runs out. A small roasting pan catches all the stuff.

All our spray trucks also carry pruning tools, such as hand saw, folding hand saw and hand clips. A lot of times during an IPM visit, there is no sense in spraying the plant if you can clip out the bug. That's my philosophy. We carry the tools needed for mechanical control. We also carry a sectional pole clip on the truck. It makes for great applications.

A flashlight, soap and paper towels are part of our standard equipment.

Our applicators don't claim to know everything they might see in the field, so we put reference books in our trucks—a insect book and a landscape IPM book.

We carry a garden hose for washing off and a tarp for covering up. How many times have you gone to a client's property and not been able to spray because the family car is parked underneath the tree?

Don't leave the office without maps. On our contracts, we cross-reference the job with a map coordinate so that the applicator can quickly find the work site.

Of course, you cannot leave the shop without contracts for a day's worth of spraying. On the contract we list the target pest and the target itself.

We carry a small hand sprayer on the truck—even our big trucks. If you have to go to the back 40 and you only have one or two azaleas, there is no sense in dragging hose 300 hundred feet.

We also have a fertilizer gun on our trucks, particularly in the spring and in the fall. There are many times when the morning weather is calm. Everything is going great until the wind kicks up. You might as well have your applicator switch to fertilizing at that time.

We carry a complete tool box with everything we might need if we break down. We have spare everything.

The most important part of your spray operation is your applicator. Even if everything else on your truck is substandard, I suggest that you have an applicator who is trained, who is responsible, who knows how to communicate with the public, and who knows what he's doing with the materials. This person is going to save you more time, money and aggravation than anything else that I have discussed. Where do you find such a person? That's the topic of another article.

Paul Wolfe is the owner of Integrated Plant Care in Rockville, Md. He is past president of the National Arborist Association and Maryland Arborist Association.
often wonder why the crew doing the work does not consistently perform the work at or above the expectations of the client. Is it the crew leader, one of the crew members, the client or the salesman? Most of the time the salesman sets the expectations, over-promises (in the sales process), under-delivers (in the execution of work). As business owners and managers, we set the standards by which we operate. The standards we use to meet or exceed client expectations are a reflection of the company and its leadership.

A300 standards, running a business, and making the sale all go hand in hand. Expectations are the basis of all businesses and industries. Companies that set high expectations/standards for quality have a better opportunity to achieve those expectations than companies that do not. Industries that have standards/expectations will bring a level of professionalism to all companies within that industry. Standards become minimum expectations for an industry, a company, a salesman or a crew to operate. Whether a company's goal is to be the lowest price or the highest quality (it can't be both), certain standards or expectations must be met, consistently.

The industry standard for tree care operations is the A300. What standard does your company use? Our company has many very qualified people I am proud to work with, many whose knowledge and opinion I often trust more than my own. They have helped frame my, as well as the industry's perspective on arboriculture. But they are each just one person within one company. They are not representing the 16 different organizations as the A300 committee. For this reason, our company has adopted the A300 standard as the standard of tree care operations. When we use the A300 standard, we are setting a consistent expectation with the manager, salesman, client and crew. We do not need to reinvent wording for our salesman to use and we will not have to create our own standards. The work has been done. All that needs to happen is for our salesmen to use the A300 wording when writing contracts/work orders. This can, and does, save much confusion. Using consistent standards allows us to focus on clients, employees and making profits, and allows us to spend less time figuring out why there are inconsistencies within our tree care operations. Using common language and standards as a basis of operation reduces confusion and provides management with more time to identify and remedy areas for improvement.

Standards are only as good as the people who write them. The A300 committee does not live in a vacuum. And for this reason the committee is always seeking input and feedback on the standards. The pruning standard is up for review and is open for public comment. Please write or e-mail the NAA, attention Bob Rouse (Rouse@natarb.com), and the A300 committee will review your comments and respond back to you directly.

The standards that are currently available through the NAA or ISA, entitled "Tree, shrub and other Woody Plant Maintenance - Standard Practices," are:
- Pruning
- Fertilization
- Support systems - cabling and bracing
- A standard for lightning protection will be released in the near future.

For ordering information, contact the NAA at 800-733-2622.

Ron Rubin is the National Arborist Association Representative to A300 Committee.
GUIDE FOR PLANT APPRAISAL
9th Edition

The new edition you've been waiting for has arrived! This is a must-have for the consulting arborist!

New in the 9th Edition
Replacement Cost and Trunk Formula Methods – In the 9th edition of the Guide for Plant Appraisal, the most significant procedural change is that in both methods, the costs of the replacement tree and its installation are adjusted by the Species rating.

Condition – Tree structure is given more emphasis in the Condition rating.

Location – The rating of a Site is to consider its relative real-estate value on a percentage basis, not strictly monetarily, in relation to the city, area, and/or region in which it is located, as well as its visual and functional values.

Easements and Rights of Way – Plant appraisal needs to consider the extent of the owner's rights on easements and rights of way.

A More Proactive Approach – Appraising the value of plants before they are lost or damaged is recommended.

Authored by the Council of Tree and Landscape Appraisers, this publication is intended to provide the professional plant appraiser with information to properly determine the size, species, condition, and location factors that influence the value of plants. Not only can it be used for the valuation of plant casualties, but also for insurance purposes, real-estate transactions, plant condemnations, and tree inventories.

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A Time for Excellence

Awards Categories
The awards categories are:
• Grand Award
• Award of Distinction
• Honorable Mention

These are the three general award categories. More than one award of equal value may be given in each of the three classes, when warranted.
• Heritage Award
• Arbor Day Award

These are stand-alone awards. In order to qualify for these awards, the project must be of Grand Award quality. A single project may win multiple awards.

Excellence in Arboriculture Awards will honor the best practices in tree care... this year at TCI EXPO in Columbus!

Awards Classifications
The classifications for the 2001 Excellence in Arboriculture Awards are:

Tree Maintenance: This breaks down into four subcategories: Residential under $10,000; residential over $10,000; commercial under $10,000; commercial over $10,000.

Heritage: Pro bono tree maintenance for trees that are of historic interest or significance

Arbor Day: Pro bono tree maintenance for trees in connection with Arbor Day activities

Tree Relocation: Unique tree moving projects

Construction Site Preservation: Planning and other activities that increase the survival of significant trees on a construction site.

Technical Rigging: Exceptional projects incorporating rigging for removal techniques.

Trees of Hawaii was honored for improving the health and aesthetics of this historic Indian Banyan tree.

Want to enter?

Call the NAA at (800) 733-2622 and request an entry packet. Excellence in Arboriculture is open to all NAA Active Member companies in good standing. Deadline for entries is May 1.
What has your tree care company achieved this year?

Did you save a historic tree from an otherwise untimely death on the town square? Perhaps you helped enhance the ambience of a newly constructed shopping mall by incorporating surrounding trees' natural beauty into the building's tiled floors and glassed-in atrium. Or maybe you successfully tackled a daunting task of moving a tree from one site to another?

Whatever greatness you and your employees have achieved, it should not go unrecognized. And the industry's premier showcase for commercial tree care work is the National Arborist Association's Excellence in Arboriculture Awards, presented in partnership with The Hartford. The awards honor the best of the best in companies of all sizes, recognizing the finest work done in an industry where only the highest standards are acceptable. Excellence in Arboriculture Awards salute NAA members who wish to highlight their company's achievements in preserving the high standards of the tree care industry while taking a creative approach to a unique project.

The awards take into consideration adherence to A300 standards, sensitivity to detail, and challenges involved in the project. In addition, the judges consider the overall appearance of the final project, the impact of the finished product to the tree, and the finished product vs. the tree(s) prior to the start of the project.

In November, all qualified entries will be showcased in an audio/visual presentation at TCI EXPO in Columbus, Ohio.

Trees of Hawaii won three awards at last year's Excellence in Arboriculture program – and company president Abner Undan said he plans to enter again this year.

"I think this is the ultimate recognition we could possibly get, having a national organization like the NAA recognize the quality of the work we do," Undan says. Employees of Trees of Hawaii are encouraged by the awards, he adds. "Their work is recognized."

Customers, likewise, can make note of the awards in the company's brochure. But perhaps most important, Undan points out, is that the awards Trees of Hawaii won for its care of Banyan trees is also a public service message. As a result of these awards, people are aware of the proper care of Banyan trees.

"We have to take the lead to show people how it's done!" stresses Undan.
Don’t Get Sued for Workplace Violence

By Phillip M. Perry

HOW WELL DO YOU KNOW YOUR CO-WORKERS?
The recent mass shooting at Edgewater Technologies in Massachusetts is every employer’s worst nightmare. Less extreme situations occur every day.

Has the following ever happened to you? The worker you fired yesterday calls from home. He’s bending your ear about how his co-workers “always had it in for me.” Then he says something that makes your blood run cold: “I have a gun. I ought to bring it to work and take care of my problems.”

How do you respond? When your heart beats fast, your mind reels and you’re dizzy with fear. It’s not easy to know what to do. You do know that making the wrong decision risks the lives of your employees. You’ve seen the recent headlines about disgruntled individuals killing co-workers in cities as far-flung as Atlanta and Honolulu. The scene just described is not just a story: It actually happened to an employer in Michigan. Later in this article, the attorney whose client received the call offers advice on what to do. See how his suggestions compare with your response.

If you’re like most employers, workplace violence has become a top-of-mind issue — and not only for the human cost when disgruntled individuals shoot guns to “even scores.” Relatives of victims often target employers with costly lawsuits. The legal system is not friendly to employers who should have seen signs of pending violence but failed to act.

“Courts are treating these lawsuits more seriously because of the increase in the number of incidents,” cautions Timothy Bland, an attorney at the Memphis, Tenn., law firm Ford & Harrison, and a specialist in employment law and workplace violence. “In a recent North Carolina case, for example, a court awarded a $7.9 million judgment against an employer when a worker killed two fellow employees.”

You can take steps to keep your employees out of harm’s way and your business out of bankruptcy court. Here’s some help. In this article, attorneys who specialize in defending employers against workplace violence lawsuits offer guidance on how to reduce the risk of assaults by responding adequately to early signs of trouble.

Establish a zero-tolerance policy

Most employment law attorneys suggest employers institute a zero-tolerance policy that mandates immediate termination for an act or threat of violence. Whether it’s a punch toward a supervisor or a fistfight between workers, physical aggression cannot be tolerated. “You need to discharge individuals who commit assault,” says Louis C. Rabaut, an employment law specialist at Warner Norcross & Judd in Grand Rapids, Mich. “If you fail to do so, and they later do something worse, the court will deem you to have had notice of violent tendencies.”

Juries often say things like: “They knew this guy was going to go off because of his behavior. No one did anything about it.”

Rabaut recalls a Wisconsin case where a dispute arose between two employees. “All through the day they were yelling at each other,” he says. “Finally one employee threw a rag at the other, who responded with a slap.”

The employer fired both workers. The employees’ resulting lawsuit for wrongful termination failed, because of the changing climate of the courts. “There is much more acceptance by judges and juries that employers have to be a lot less tolerant about violence,” says Rabaut.

Threats to commit violence, whether against a co-worker or a supervisor, must also cause termination under a zero-tolerance policy — even if nothing comes of the threat. If an employee says, “I’m going to beat you up after work,” most people would recognize the inherent threat. But what about more veiled threats, such as:

Fending Off Lawsuits

For employers who want to reduce their risk of workplace assaults and resulting lawsuits, times are getting tougher. “Traditionally, many employers thought they could safely ignore the need for a security program,” says Norman D. Bates, a Sudbury, Mass.-based attorney who counsels businesses nationwide on reducing liability for workplace violence. The rise in incidents of serious assaults has changed the world dramatically.

“The old attitude expressed by ‘that’s why we have insurance,’ doesn’t cut it anymore,” he says. “Today’s employees want to know you have a security plan to protect them. And insurance policies are not only getting more expensive, but many exclude injuries from assault and battery. Now businesses are required to purchase separate policies for such perils as stabbing, shooting and rape.”

Employers can be sued on numerous grounds, such as negligent hiring (failure to screen out risky job candidates), negligent supervision (failure to keep personnel from engaging in practices dangerous to others) and negligent retention (failure to terminate individuals who pose a danger to co-workers.) They need to design security programs that include good personnel policies, such as adequate pre-employment screening, good training and supervision of people, and enlightened policies and procedures. With the greater risks inherent in the world of work, it’s no wonder violence has become a top-of-mind issue for employers. Experts have found over the past 20 years that the single greatest motivator for employers to upgrade security has been the fear of a lawsuit.
“Employees who kill their supervisors have the right idea.”

“I’m afraid I’m going to lose control, and I have guns.”

“I am going to come in and have a Twinkie day.” (The last refers to the “Twinkie defense,” in which an accused murderer claimed he was mentally unbalanced after eating foods with high sugar content.)

Words have power. There is no longer a defense that “it was only talk.”

“Let employees know that saying something is as bad as if they had done something,” Rabaut recommends. “If someone says, ‘I ought to settle this with my AK-47,’ that employee should be terminated.”

Respond to early signs of trouble

What about events that are less extreme but may foreshadow trouble down the road? We ran this question by Teresa L. Butler, a partner at the Atlanta law firm of Littler Mendelson, the nation’s largest employment law firm.

“A zero-tolerance policy does not mean you fire every person for starting down the path,” she explains. “It means you will act appropriately.”

While violence or direct threats spark immediate discharge, any number of lesser acts can trigger a system of progressive discipline that may include administrative leave and mandatory psychological evaluation and counseling. Some activities might appear to border on violence. For example, an employee might toss a pile of papers onto the floor, stomp around and scream, “This place stinks!”

Butler suggests that in such a situation an employer should approach the person and inquire as to what can be done. It’s not so much workplace violence as a disruptive activity. On a more serious level, an employee who damages property may or may not be seen as committing an act of violence.

“It’s a close call,” admits Bland. “Look at the context of why the employee did what he did. Maybe he got some terrible news and knocked a computer off a desk. But if it’s a senseless act, then it could call for immediate termination.”

An act that might trigger counseling would be a feud between two workers. While no threats are made and no fight breaks out, you should reduce tensions before they escalate into a fight that requires discharge.

“You want to resolve differences with a mediation session or even refer them to an outside counselor,” urges Marc Ragovin, a partner in the employment group at New York City-based Gibney, Anthony & Flaherty. “Airing grievances may diffuse the volatile situation.”

Employees who commit such acts may be required to make an appointment with a professional counselor. If you do not have an Employee Assistance Program (EAP), look for a suitable alternative. Many communities have psychiatric hospitals with outpatient clinics and staff counselors trained in workplace issues. Your local police department might also offer referrals. When referring to a counselor, avoid saying anything that would spark a lawsuit for discrimination under the Americans with Disabilities Act or state laws.

“Employees have to be careful not to attribute someone’s violence to a condition that may be viewed as a disability or a mental impairment,” cautions Ragovin. “You may get into an area where you perceive a person is disabled.”

Pin the reason for the referral on the behavior of the employee rather than a characteristic of the individual. Avoid saying “You need the help of a psychiatrist,” or “You have a mental problem.” Instead, use words such as: “Because of your recent actions [...] describe them in detail [...] you are required to make an appointment with [...]” The prudent employer tries to diffuse stressful situations by setting up a dialog.

“Keep an open line of communication,” says Ragovin. “A serious incident might not occur if a troubled employee has a way to talk and lets feelings be known rather than taking them out on someone else.”

“I call the combination of a zero-tolerance policy and progressive discipline the ‘iron fist and velvet glove approach,’” Rabaut explains. Together, these two magic missiles of the disciplinary arsenal carry a safety payload: they seek out and cool down workplace hot spots before wildfires break out.

“People who engage in this type behavior typically don’t just snap,” notes Butler. “In many cases there were signs that – if noticed and managed properly – could have minimized the risk of what happened.”

Tread carefully on the gray areas

Suppose an employee tells you: “You’d better not treat me like this.” Is it a threat or a harmless escape valve for workplace pressure? If you think this comes down to a judgment call, you’re right. But words are only part of communication. Consider other factors, such as tone of voice and how the individual presented himself when speaking the words.

“An employee can mutter something in a non-threatening way, or he can move close to you and scream it while jabbing a finger in your face,” says Butler. “You have to add these human and subjective interpretations to conduct.”

Even if the behavior was somewhat aggressive, Butler feels it might be appropriate to limit your response to mandated counseling if no direct threat was made. But if the situation escalates, you might need to fire the individual both for being threatening and also for being insubordinate and not interacting in a productive manner with his supervisor.

What about humor that includes a violent threat? Do you ignore it, or yank the Joker from the workplace deck? While some attorneys counsel discharge, oth-
hedge their bets.

"It's almost impossible to give a bright line rule," admits Bland. "A lot of times, threats are made in jest or as part of normal conversation. Those can be dealt with through progressive discipline. But if someone makes a specific threat and there is no evidence they are not serious, they should be discharged."

Gray areas may also arise when local culture, often in an industrial setting, allows for a certain level of violence.

"In an ideal world we would like to see people terminated as soon as they exhibit violent behavior," counsels Butler. "But sometimes a decision hinges on culture and history. You may have an employer who has lots of that type of problem, and, as a practical matter, terminations might be impossible."

Attorneys advise trusting your own instincts when doubt casts a shadow across the workplace landscape. If you feel afraid, something is amiss. You are in management because you have some level of good judgment. So trust your gut; don't overanalyze. And judgment calls are, indeed, often required. These are very fact-specific situations. It's tough to draw up absolute rules.

One final point: Having a policy is not enough. You must tell employees the rules of the game. Failing to do so can be dangerous and costly. Consider that firing an individual for making a threat is risky enough, since the termination itself might be a trip wire for violence. But your risk is increased many times over if the terminated individual feels as though you are picking on him because you never informed him of your policies.

When terror calls

Now let's return to the scene that opened this article. How would you handle the individual who called and threatened to use a gun to solve his problems? For an answer we turned to Rabaut, who was the attorney for the Michigan employer who actually received the call. In the real-world event that inspired our anecdote, the employer called Rabaut, who, in turn, called the former employee.

"In a situation like this, you want to keep the individual where he is, talking on the phone as long as you can," says Rabaut. He suggests using open-ended queries such as "Tell me why you are upset," and "Are you sure there's nothing we can do to help you?"

While Rabaut kept the individual talking, he had a colleague call police, who sent cruisers to the business location as well as to the former employee's home to make an arrest. Rabaut suggests a similar course of action if you find yourself in such a situation.

Let the police know you have a former employee on the line threatening to kill people, and give them his location. Whether the police will arrest an individual solely on the basis of a threat depends on policies in your region. At the very least, however, they will send officers to your place of business. In Rabaut's situation, the arrest was made.

"Getting the man into custody let him see his threats were being met with force," explains Rabaut. "We then filed for a temporary restraining order to keep him away from the business premises."

A sheriff went to the man's home and served him with the order, which also mandated a court appearance. During his hearing, the judge reinforced the terms of the restraining order. Intimidated by early action by the police and firm instructions from the legal system, the threatening individual caused no further harm.

"Being hauled into court before a judge often has a sobering effect on people," notes Rabaut. While this story had a happy ending, in the best of all worlds you will identify and defuse anger before it escalates into a situation as frightening as this one. But whether you are dealing with a threat or an actual act of violence, you can't hide and pretend nothing is amiss.

"Once something happens, you have to act quickly and do whatever you must in terms of discipline," concludes Ragovin. "It can only lead to more trouble if you don't."

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New Rule for Federal Contracts

Federal contracts will have to consider a prospective contractor's record of compliance with labor, safety and several other non-procurement-related laws under a rule promulgated Dec. 20, 2000.

The rule, which went into effect Jan. 19, amends the Federal Acquisition Regulation (FAR) and implements what the Clinton administration views as a statutory requirement that federal contracts be awarded only to "responsible sources." Responsibility has been defined by Congress to include a satisfactory "record of integrity and business ethics."

Any evaluation of a prospective contractor's record in this regard "necessarily needs to include an evaluation of its record of compliance with laws and regulations," stated the Federal Acquisition Regulatory Council, a group of government agency representatives that approves federal procurement rules, in the preamble to the new rule.

The final rule requires contracting officers to consider compliance with tax, labor and employment, environmental, antitrust, and consumer protection laws when evaluating a prospective contractor's responsibility. However, the final rule provides greater clarification for contracting officers and additional procedural protections for prospective contractors, the FAR Council said.

The final rule:
- advises contracting officers to focus not on isolated violations of law but rather on "evidence of repeated, pervasive, or significant violations";
- contains a hierarchy of offenses applicable to violations of tax, labor, antitrust, environmental, and consumer protection laws; and
- requires a prospective contractor to check a box to certify that it has/has not been convicted of, had a civil judgment rendered against it, or been indicted for specified offenses within the preceding three years.

Business and industry groups, which have strongly opposed the contractor responsibility rule since it was first proposed, immediately said they plan to file a lawsuit to keep the rule from going into effect. Industry has argued vigorously from the onset that any linkage of contract awards and violations of non-procurement-related laws will result in the "blacklisting" of contractors for reasons that have no bearing on their ability to perform.

In addition to business opposition to the rule, Defense Department rule writers last fall joined the General Services Administration and the Environmental Protection Agency in urging the FAR Council to withdraw the rule. They warned that it would delay the procurement process and require contracting officials to make judgments outside their expertise.

Optimism on Transportation

Bush selected veteran legislator Norman Y. Mineta to be Secretary of Transportation. Mineta is well-known from his days as a member of the House Transportation Committee, including a stint as chairman. In that job, Mineta was instrumental in seeing that private carriers were relieved from state economic regulations. Mineta just finished serving as Secretary of Commerce in the Clinton administration.

Mineta is a liberal on social issues who nonetheless has many friends in the business community and has a reputation for pragmatism and reaching across party lines.

Peter Gerstenberger is vice president of business management, safety and education for the National Arborist Association.
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Department of Parks, Recreation and Properties

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TREE CARE INDUSTRY - FEBRUARY 2001
Never Too Safe

From suburban Georgia comes a tragic reminder that safety begins long before the chain saws start.

A 48-year-old arborist was killed when an apparently dead maple he had been called to inspect and price for removal fell on him in the Ansley Park neighborhood.

According to the Atlanta Journal-Constitution, independent arborist John Kealey was one of three arborists slated to provide an estimate for removing the tree that day.

The woman who had called the tree professionals told the newspaper that the tree fell without warning.

"There was no cracking sound saying, 'This tree is coming down,' " Barbara Seymour was quoted as saying. Seymour, who said two other arborists were scheduled to see the tree and give prices later in the morning, was knocked to the ground by the tree's branches and suffered only minor bruises, scratches and a sore back.

Kealey, who had not yet touched the tree, was pronounced dead on the scene.

The accident happened in a neighborhood of homes built around 1910, the newspaper said, and occurred just minutes after a soaking rainstorm left the area.

Help, Please

Tree care officials in Seattle are hoping the public can help them keep some of the 26,000 trees planned as part of a celebration of the Year 2000 from dying.

The Seattle Times said the so-called Millennium Trees were planted across the city but are now too much for already stretched maintenance crews to properly water and mulch. The city, however, has reportedly had good response from residents, who have been informally adopting trees in many neighborhoods.

Fuzzy Tree Math

Officials in Danville, Calif., think they have found the answer to a particularly sensitive issue: What to do with a historic oak tree that arborists have deemed unsafe. After two months of deliberation, the Town Council voted to spend $76,000 to build steel braces to hold up the massive tree, according to the Contra Costa Times.

Pegged at 300 years old, the tree became an issue for the town after arborist warned that it had root rot and could pose a danger. But when the tree survived a windy rainstorm, officials who had supported removing the tree reversed position in favor of the steel braces.

Though some council members still have concerns about the safety of the tree — and the potential extra liability the town may incur after propping it up — one councilor said the investment of $76,000 was worthwhile.

After all, he argued, if the tree is 300 years old, that comes to just $250 a year.
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<td>22. DICA Marketing Co.</td>
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<td>58. Schodorf Truck Body &amp; Equip. Company</td>
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<td>24. Forestek</td>
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<td>60. Southco Industries, Inc</td>
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<td>25. Forestry Equipment of Shelby, Inc</td>
<td>72</td>
<td>61. Swinger</td>
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<td>27. Good Tree Care Company</td>
<td>64</td>
<td>63. Tamarack Clearing Inc</td>
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<td>28. Husqvarna</td>
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<td>30. ImpMax Equipment Company, Inc</td>
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<td>66. Timberwolf Manufacturing Corporation</td>
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<td>31. Independent Protection Company</td>
<td>28</td>
<td>67. Tree Tech Microinjection Systems</td>
<td>42</td>
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<td>32. International Society of Arboriculture</td>
<td>55</td>
<td>68. Trucks &amp; Parts of Tampa</td>
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<td>33. Jameson Corporation</td>
<td>44</td>
<td>69. Trueco, Inc</td>
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<td>34. Lewis Utility Truck Sales, Inc</td>
<td>67</td>
<td>70. V &amp; H Inc</td>
<td>19</td>
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<td>35. MAT-3, Inc</td>
<td>Inside Back Cover</td>
<td>71. Western Tree Equipment &amp; Repairs</td>
<td>75</td>
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<td>36. Mickey's Truck &amp; Equipment Sales, Inc</td>
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<td>72. Yale Cordage Inc</td>
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<td>37. Miller Machine Works</td>
<td>57</td>
<td>73. Zenith Cutter Company</td>
<td>62</td>
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“Yard of the Month” Idea Flourishes

By Steve Sandfort

W

e who practice tree care in the urban forest often have the pleasure of working with community volunteers. They are the cream of the crop. Fine folks, Joe Money is a perfect example.

Joe grew up and then raised his own family in his home on Junietta Street, a one-block residential street with a historic firehouse on the corner. While walking his dog one day, Joe critically studied the various properties and thought, “These places look terrible. We used to keep up our properties much better when I was a kid. Someone should do something.” And, he realized, nobody would; that’s why things were slipping so badly.

Poor landscape care. No newly painted houses. Old, decorative wooden porch rails replaced with cheap, ugly metal ones. What to do?

Midnight Wednesday. Steal a “for sale” sign from a house several blocks away. Paint it white with big, black stenciled letters. Hide it in the garage until you’ve had a chance to mow your front yard, edge the walks, prune the shrubbery, mulch the trees and plant 20 bucks worth of flowers.

Midnight Friday.

Sneak the sign out of the garage. Stick it right in the middle of your own spruced up yard.

Earn your neighborhood’s first “Yard of the Month” award. That’s what!

Joe said that on Saturday morning, while he was on his front porch reading the newspaper, “You could hear lawn mowers firing up all over the place.”

“Joe, where’d that award come from?” asked a number of neighbors.

“Danged if I know. I just cleaned up my place a little and that sign was stuck right there when I woke up. I kind of like it. Bet somebody else wins it next month.”

And sure enough, for eight months until everyone caught on, a different, recently improved property on Junietta Street earned the “Yard of the Month” award, thanks to Joe’s midnight walks.

By the time the Westwood Civic Association adopted the concept for the whole community, Junietta Street, according to Joe Money, was “looking mighty fine... like it did when I was a kid, and it’s getting more beautiful every day. Neighbors are getting to know each other better. They work together on stuff again. The city has even gotten into the swing of things. Our firehouse was just painted, we’re getting new street trees this fall, and I think our street has been bumped up on the resurfacing schedule.”

That was 20 years ago. Junietta Street still looks good. Westwood is still making awards for jobs well done. And, it’s looking better every day, too.

Here’s to you, Joe!

Steve Sandfort, RF, CA, is an urban forest consultant.
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