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COVER PHOTO:

The IPM technician is the heart of any successful IPM service. The technician can diagnose and usually treat a plant problem on a routine inspection visit. Photo courtesy Collier Arbor Care, Portland, Oregon.
Almost every news commentator we listen to and newspaper we read tells us how poorly we are doing. The other day I heard a very well known host of a TV magazine-type show forecast all of the things that were going to deteriorate in this country this year. I couldn't help but wonder what made him such an authority.

I would like to hear one news commentator offer something positive for a change.

In New Hampshire the presidential primary is held in mid-February. This year we have every candidate and his brother running all over the state telling us that they should be president.

It's wonderful that all of these brilliant people can identify problems and place blame. Still, I have yet to hear one news commentator, one presidential candidate, one congressman or one senator come up with a viable solution.

We live in a dynamic society. Nothing ever stays the same. The more we learn, the better able we are to identify the things we did wrong in the past. For example, I come from the era when we carved out cavities in trees and then filled them with cement. We don't do that anymore. We found a better way and I have never heard anyone criticize those who evolved that cavity treatment technology 100 years ago.

You don't have to be a rocket scientist to identify our problems, but you do have to be creative to solve them. I want to hear a presidential candidate tell me what he is going to do about the economy, health insurance, the AIDS virus, environmental pollution... and how he's going to pay for it. That includes George Bush.

This year we will elect a president, the entire House of Representatives and one-third of the Senate. Let's elect people who are using their energy campaigning with solutions, and who can tell us what they are going to do before we vote for them. If you have an opportunity to shake a candidate's hand, ask him or her what they are going to do about any one of your concerns. Be specific; don't let go of the hand until you get an answer.

I am the eternal optimist. We will solve the problems that face us today and there will be more problems tomorrow. We will solve them, too. I mean the collective we—you and I. As tree people, we are accustomed to problem-solving and being creative, resourceful, daring and self-confident. If we weren't, we would never have gone into the tree business in the first place.

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IPM Comes of Age

Three Firms Help Define Practical Integrated Pest Management

By TCI Staff

Integrated Pest Management has attracted a growing number of followers in the last few years. One of the factors responsible for this is the research of two entomologists at the University of Maryland, Dr. John Davidson and Dr. Michael Raupp. Through their work in the mid-1970s and 1980s, Davidson and Raupp determined that because of the diversity of insects in the landscape, general cover sprays were not the way to control pests. By using various management techniques rather than applying broad-spectrum pesticides throughout the year, they were able to control pests while cutting down the use of pesticide by 85%.

Davidson and Raupp began preaching the values of IPM by publishing their research, writing Extension bulletins, selling the ideas to Extension agents and speaking at professional meetings and to homeowners. They even offered a weeklong seminar to teach companies the mechanics of IPM.

Meanwhile, in the commercial sector, companies such as American Tree Care, Long Island, New York; the F.A. Bartlett Tree Expert Company, Stamford, Connecticut; and Carpenter-Costin Company in Swampscott, Massachusetts, were pioneering IPM programs in the field.

By the end of the 1980s, several firms were offering IPM programs to their clients, including Collier Arbor Care in Portland, Oregon; Integrated Plant Care in Rockville, Maryland; and Hendricksen, The Care of Trees, based in Wheeling, Illinois.

Program development

While Davidson and Raupp were carrying on their research, Terrill Collier began developing an IPM program with Bruce Nelson, Arbor Care’s senior plant health care technician. With a carefully selected group of clients, Collier and Nelson, who holds a master’s in entomology, spent two years on a pilot program “to work the bugs out.”

They experimented and implemented environmentally friendly control materials and techniques because Collier wanted “our company to be leaders in the development of an environmentally sound IPM program for urban landscapes.”

“Traditionally, the industry told customers a six-times-yearly blanket spray approach was necessary to protect their plants. Now the arbor care industry is having to re-educate people to keep up with the changing times,” says Collier, who holds a degree in entomology from Oregon State University.

As a result of the pilot project, Collier Arbor Care offers two distinct programs: targeted pest control and plant health care. Each is designed to offer such options as a strictly organic approach and is customized for individual landscapes.

The targeted pest control approach, begun in the 1960s by Ray Collier, founder of the business, was much different from the blanket spray approach that had been previously used. With the targeted approach, services are designed to manage such specific insect and disease problems as elm leaf beetle or powdery mildew.

IPM was the next logical step. The plant health care program, currently provided to about 100 clients, is a more comprehensive inspection and treatment program designed for the entire landscape. It consists of eight inspection/treatment visits per year for ornamental trees and shrubs. Similar programs are offered for lawns and fruit trees.

Paul L. Wolfe II, who owns and operates Integrated Plant Care in Maryland, started a similar service in 1988. Since its inception, Wolfe’s program has evolved from an insect-and-disease-driven service to one that revolves around the concept of plant health.

With about 125 clients divided equally between residential and commercial clients, Wolfe’s IPM program accounts for about 22% of the company’s gross volume.

Wolfe’s objective is for all the plant material to have a positive impact on the landscape and to perform to the levels that the client expects. Thus, the company advises clients on mulching, watering, fertilizing, soil pH, proper planting and pruning and suggests types of plant material that would perform best in each location.

A property may contain many different plants with a host of problems, warranting as many as 12 visits during the growing season. On the other hand, six visits may
be adequate for a property that is smaller or has fewer problems. Like Collier, Wolfe custom designs programs to suit the needs of the diverse plant material on each property and the expectations of his clients.

The company has incorporated the principles of IPM in all of its pest management programs since Wolfe believes that it is not necessary to spray an entire tree for a problem that is localized.

This approach, he says, accomplishes at least three objectives: The client is pleased because the pest has been managed, the amount of pesticide going into the environment has been reduced, and the firm has minimized its expense for materials as well as exposure to liability.

A year after Wolfe started his service, Hendricksen, The Care of Trees began offering a “formal” IPM program that involves monitoring and managing insects and disease. The program includes regularly scheduled inspections and written reports of observations and treatments or other actions. About 70 properties are enrolled, representing about 8% of the company’s pest management volume.

Since all clients do not need the formal program, the sales representative may design what the company calls a Total Tree Care program. This program calls for appropriate pruning, mulching, fertilization and pest management procedures based on the needs of the plant materials and the client.

In either case, Hendricksen, The Care of Trees does not use repetitive cover sprays for pest management. Instead, sales personnel inspect the trees and shrubs on a property and recommend management tactics based on what they observe. Severe disease or insect problems are treated through targeted chemical applications.

Because a pest is present, however, does not mean that treatment is needed. The company emphasizes that it is important to evaluate the potential injury a certain pest population can cause and to recognize whether an observed injury is the result of an active infestation or is an old injury.

Ideally, Wolfe says his company does not want to use chemicals and instead tries to achieve a healthy balance in the landscape between the beneficial parasites and predators and the harmful insects. If a pesticide is necessary, the company chooses the least toxic but most effective. The primary material is horticultural oil used in
both the dormant season and the growing season, along with some B.t., some insecticidal soap and systemic treatments. Since recent research has shown nematodes are effective in managing certain types of borers, Wolfe also plans to try that technique.

Training
The key to making an IPM program successful lies in training technicians, according to these three companies.

Rex Bastian, who is technical services coordinator for Hendricksen, The Care of Trees, is responsible for plant health care programs as well as training technicians. He is assisted by Joe Engberg, who provides a bridge between the business and theoretical applications of IPM, and Larry Hall, a past president of the International Society of Arboriculture who has many years of experience dealing with plant materials in the Chicago area. Together they write weekly reports to keep the sales and plant health care staff up to date on insect and disease phenology and other topics of interest.

During the spring and summer, they spend a great deal of time on the plant health care rigs working with the crews. They observe the crew’s techniques and quiz workers on pest and plant materials identification, integrated management procedures and operational procedures. These sessions combined with classroom training provide the company’s plant health care staff more instruction time than any of the firm’s other field employees.

These opportunities for training have improved the status of the plant health care staff within the company. The old trend focused on climbing ability. If an employee was not a proficient climber, that person was often assigned to the spray trucks. Through training and compensation, however, the company’s plant health care staff is now on even terms with the climbing staff. In fact, many of the firm’s best climbers have taken advantage of the PHC training opportunities to broaden their knowledge and skills, thereby becoming more valuable employees.

Still, Hendricksen, The Care of Trees does not employ full-time IPM technicians. Instead, designated individuals handle the scheduled targeted pesticide and fertilizer applications and IPM inspections are woven into their schedules. During the winter, the plant health care staff helps the tree crews with pruning operations.

While The Care of Trees does not require that IPM technicians have a college degree, many of them nonetheless hold a bachelor’s from major colleges and universities. This educational background, especially in the biological and environmental sciences, helps technicians to grasp the holistic personality of integrated plant management, Bastian says. It also leads to a better understanding of the interrelationships among trees, pests, soils, fertilizers and environmental stresses, he adds.

Several of the company’s technicians have no formal training beyond high school, according to Bastian, but still have a desire to learn the seemingly never ending quantity of information regarding trees and their environment.

Since Collier’s plant health care program uses a wide variety of materials and methods, technicians must have the proper training to do an IPM program correctly.
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Collier points out. For example, technicians must have a working knowledge of biorational materials such as oils, soaps, pyrethrums, synthetic pyrethroids, *Bacillus thuringiensis* and copper, which Collier says have replaced up to 80% of traditional insecticides. Technicians must also know when to use biological controls, such as predators, parasites and beneficial nematodes, even though the company uses these techniques on a limited basis. Pheromone traps for monitoring various pests and sticky barriers are also used. Collier expects use of biologicals to increase as products are improved and new ones are introduced.

The trained technician is a key player in the success of the health care program, Collier notes. When a client wants to enroll in the new program, the technician inspects the plants, notes problems, and treats the problems, if necessary. A report is given to the homeowner outlining problems and their severity, treatments and recommendations, and options for plant health improvement. Collier also works with the client to identify priority plants in the landscape.

"This helps us get the client involved in decisions regarding his landscape maintenance and is one of the keys to making an IPM program work," Collier says.

Early on the technician also works to educate a client about real or perceived problems, which can save a lot of unnecessary pesticide applications.

"Often a few brown leaves on a plant can cause alarm, but the trained technician may see this as natural foliage drop," Collier says.

As plant nutrition is a critical cornerstone of the program, fertilization services are routinely proposed to everyone taking the IPM program, according to Collier. The IPM-based lawn care program offers spot treatment for weed control and a pesticide-free program using organic-based fertilizers.

"We also emphasize proper watering habits, regular mowing and annual aeration of lawns—essentially the same principles as in our tree and shrub program," he says.

Wolfe agrees that to do IPM properly requires highly skilled personnel with specialized equipment. Given the company's attempt to steer clear of chemicals, technicians have to know which materials and management techniques will be most effective. Wolfe recommends, therefore, that technicians have a solid background in horticulture, entomology and pathology as well as good communication skills.

**Equipment**

Wolfe feels it is important to be able to treat whatever pests are found on a property, whether they’re on an azalea or a 75-foot hemlock. The company uses two trucks in its IPM program. One has a 1000-gallon stainless steel tank divided into three equal parts, one for water and two for mix. Three separate hose reels minimize the time spent flushing hoses between materials. This truck is used for the company’s large-volume jobs and specialized work such as gypsy moth, dormant oil and fertilizing.

The second truck has a 12-foot bed, a 400-gallon fiberglass tank for water, two 55-gallon and one 100-gallon mixing tanks. There are three hose reels, three pumps and three engines, making it possible to pump from each tank to each pump.

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A targeted spray approach makes sense on properties with few trees, or for specific, widespread problems. Here, a Collier technician applies a dormant copper fungicide treatment to control fungal and bacterial blights on an ornamental cherry.

to each reel. The unit can be dismounted in the fall so the truck can be used as a flatbed.

Both trucks are diesel and have automatic transmissions for ease of operation. The company also uses a backpack mist blower and a small hand tank when the situation warrants.

According to Bastian, The Care of Trees uses a variety of equipment in plant health care activities. Most of the liquid fertilizer applications and high-volume targeted applications are done with hydraulic sprayers in the 1200-gallon capacity range. Such units are used when the technician is performing many repetitive applications throughout the day.

On the formal IPM accounts, the company uses sprayers capable of mixing and applying small quantities of material. These sprayers range in size from 300 gallons to 1000 gallons and were designed and built by Professional Tree and Turf Equipment, in Golden, Colorado. While each is slightly different in structure and operation, all consist of a single nurse tank for fresh water and one to three separate mixing tanks. Some of the sprayers are permanently mounted to the chassis; others are skid-mounted units that can be removed during the winter. After the skid sprayers are removed, chip boxes are mounted until the following spring when the sprayers are reinstalled. If the company buys new sprayers, Bastian says they may be the conversion type since they allow better use of the vehicles throughout the year.

Three of the IPM rigs have multiple tanks with electrically controlled solenoid valves and mixing hoppers. This arrangement allows technicians to quickly mix small quantities of spray solutions from the ground.

The sprayers are mounted on cabover chassis that allow for tight turning radii. One truck has a total capacity (nurse tanks and mixing tanks) of 800 gallons. The other two have capacities of 1000 gallons. In IPM vehicles, capacity is not as important as maneuverability and convenience, according to Bastian.

**Marketing**

Collier has implemented and marketed the IPM program as a plant health care program, and he participated in a National Arborist Association workshop to help other arborists develop similar programs.

“At that (NAA) meeting, we recognized that arborists need to take a more holistic approach to IPM, considering all plant problems affecting the health of the plant - not just pests.” Collier says.

Most of Collier’s IPM clients are referred by current clients or other industry professionals. In addition, he distributes a brochure describing the plant health care service and sends out a newsletter twice a year.

The Care of Trees markets its program to clients who perceive a definite value in the IPM approach. For example, they may be absent from their homes for lengthy periods and simply want someone watching over their properties. Others want problems detected early enough so that severe injury can be avoided.

Just as clients have different personalities and needs, their properties also have different characteristics. A flexible approach allows the company to handle a variety of possible combinations, according to Bastian.

Some clients are given a single price for the inspections and treatments that may be needed to manage pests on their property. This approach works well if the property is small or if many treatment applications won’t be needed, according to Bastian.

If treatments are likely to be frequent, prices for inspections and treatments are
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quoted separately. If no treatments are necessary, the client pays for only the inspection and subsequent report. Any treatments that may be needed are billed separately. This approach is most beneficial when it is difficult to predict what treatments will be required during the season.

The number of inspections, frequency of inspections, included services and extent of the property inspected are all open for negotiation, according to Bastian. Being flexible allows the company to discuss various options with clients and tailor a program that fits their needs and the needs of their plant materials. Thus, clients have more input into how their dollars are invested and don’t pay for treatments they may not need. At the same time, the company does not lose money by having to apply treatments that weren’t foreseen when proposing the program.

**Customer response**

Wolfe says clients want more than just spraying for their money; they want information concerning all aspects of their property. Since the company has contracts with homeowners, office complexes, condominium associations, landscape maintenance contractors, municipalities, churches, nursing homes and an embassy, there is no “typical” IPM customer.

While every client seems to expect something different from the program, Wolfe notes that they are all concerned about managing their landscape investment in a way that keeps their plants looking good while they are being good stewards to the environment.

Collier reports that clients have been enthusiastic about the new plant health care program. “We find that customers with medium to large landscapes, a lot of varied plant material and especially people who are environmentally aware are particularly interested in our IPM program,” he says.

The detailed reports also have been a big hit with homeowners, he adds.

Collier says customers “like the environmentally friendly approach that minimizes the use of pesticides and are attracted by the peace of mind they get knowing that a professional horticulturist is making regular inspections and taking care of their landscape.”

IPM programs are a little more expensive than the old broad-based spray programs, but Collier says that customers “realize that we’re really giving them excellent value for their money.”

---

Many thanks to Rex Bastian, Terrill Collier and Paul L. Wolfe II for their help with this article.

Rex Bastian, of The Care of Trees, holds degrees in fisheries and wildlife biology and horticulture, and a doctorate in entomology from Iowa State University.

Terrill Collier, of Collier Arbor Care, holds a degree in entomology from Oregon State University.

Paul L. Wolfe II holds a degree from Michigan State University and worked for several tree firms before starting his own company, Integrated Plant Care. He also served as president of the Maryland Alliance for Responsible Regulation of Pesticides.

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Trouble with IRS?
The article on Pricing Work (October 1991) says that a company paying its employees on a contractual basis can save on payroll taxes and workers comp insurance.

In all my dealings with the IRS, they say that any control that a company has over employees (time to work, when, and employer’s tools used) means they are employees for payroll purposes regardless of if they are on a contractual basis or not.

Seems that if you go on a contractual basis, you could get into trouble with the IRS.

Bruce D. Lacina
Redwood City, Calif.

Editor’s response: In the article, we discuss the hypothetical Company X that “pays its employees on a contractual basis.” In retrospect, we should have chosen our words more carefully. As far as the IRS is concerned, “employee” and “contractor” are mutually exclusive terms, and as you point out, that can mean trouble for the employer. Perhaps this is one of the reasons that the Company X’s out there disappear so rapidly.

When is a contractor really an employee? A true independent contractor engages his own assistants, gets paid by the job, furnishes his own tools, sets his own hours, offers services to the general public and others, and may show a profit or a loss. Employers may have to pay stiff fines when so-called contractors fail to meet these criteria. Thank you for bringing this to our readers’ attention.

Another look at hazard trees
I would like to comment on forester Stephen R. Bakken’s response to the Hazard Tree Evaluation article (August 1991). He states that he does not consider the dead tree in the picture next to the road, fence and utility line a hazard to students of a nearby school as they pass under it because of the unlikely potential of it falling on them. Mr. Bakken performs a time scenario that places students walking under this tree for 0.7% of the year. His reasoning is questionable, and use of time frames if something happened would most likely be eviscerated in court.

Mr. Bakken should look at the whole picture. He apparently can’t see the tree because the forest is in the way. Hiking trails through the California State Park System shouldn’t be viewed the same as trees over roads, sidewalks, town parks or school playgrounds. The chances of trees or limbs falling on people are remote, anywhere, but they do fall and kill people. Skiers have been killed by falling trees while on the slopes, trees have landed on drivers waiting for a traffic light to change and here on Hilton Head a tree fell on a golfer sitting in a golf cart. Each of these trees probably had the same potential (0.7%) as Mr. Bakken’s example. Each tree also should have been inspected and considered a hazard.

Mr. Bakken should indeed inspect heavily used hiking trails. Hikers and campers assume a certain amount of danger when they enter a forest but in high traffic areas and camp grounds they should be free from obvious hazards. Mr. Bakken would probably be negligent if he were to ignore a potential hazard because of the odds, probability or the questionable time factors that he uses. I doubt if any court would find for a plaintiff injured by a tree in a forest. I’m not a lawyer or judge, though. However, in my opinion, if the forester knew a tree was a “hazard,” he would have a moral, if not legal, obligation to remedy the situation.

We certainly can’t remove every tree that we consider a hazard but they are a hazard just the same. A qualified tree consultant would be remiss and held liable if he didn’t inform the owner of the hazard. I wouldn’t want to be the person who has to explain to a jury that he didn’t think the dead tree would fall on a student because of some time factor or odds.

If a tree falls and kills or maims a person, you can bet that someone or organization is going to sue. It is up to that person to take, as Mr. Bakken advocates, reasonable and prudent action beforehand. Effective tree maintenance programs would help alleviate some of the responsibility. Excuses, time factors, probabilities, odds, assumptions and reasonableness are fodder for lawyers to use to build their case in court and they will.

It is the arborist/tree consultant’s job and responsibility to inform the client of the hazard that a tree presents. It is up to the client to act.

Gary R. Mullane
Low Country Tree Care, Inc.
Hilton Head Island, S.C.

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Eco-Marketing

By Peter Gerstenberger

Integrated Pest Management (IPM) may be right for your company, but is it right for your customer?

According to David Dickson, president of Swingle Tree Company, Denver, Colorado, many tree companies want to practice IPM for various reasons. Some companies want to avoid the liability of a conventional synthetic pesticide program, while others perceive IPM as part of the image they want to portray. Still others are motivated by a concern for the environment.

Whatever their intentions, many make the mistake of deciding what is best for the customer. They learn the hard way that trying to sell an IPM service without a marketing plan doesn’t work.

A marketing plan must include some form of survey that shows what customers want. For example, a 1990 market survey of more than 500 property owners and managers across the U.S. showed a slight disfavor with blanket pesticide application and only the slightest preference for an IPM approach that would cost more than a conventional service. The study, part of an IPM project being conducted by the National Arborist Association and the International Society of Arboriculture, also revealed that respondents want fast-acting, effective methods.

Sensitive to customers’ needs, Swingle was committed to providing effective treatments and developed a reputation for guaranteeing its pesticide applications. The company embarked on a 2-year campaign to determine the needs of its customers and make them aware of the options, including a total IPM service.

As part of its strategy, Swingle decided to use the safest products wherever possible, and wanted to eliminate the use of certain products entirely because of liability.

Biorational pesticides often cost more than their synthetic counterparts, and the company wanted to see if its clients would be willing to bear higher costs. As a measure of its commitment to the use of biorational products, Swingle advises its customers that it has absorbed 90% of the price increase.

Swingle distinguishes its service in the marketplace by using only the latest, most effective products. The company has a trademark on the term “ECO-SMART,” which is used to describe its biorational product line. Swingle’s marketing strategy aims at getting customers to see that using ECO-SMART fits into an environmentally conscious lifestyle.

Second, the company sets itself apart by being totally candid with its customers and offering them choices. Swingle wasn’t about to proclaim its treatments as “all natural, all safe” and violate their trust.

Swingle has 9000 spray customers. Only 50 subscribe to a full IPM service, and 100 request ECO-SMART products only. The rest automatically receive ECO-SMART products where appropriate. The three main biorational controls used by the company are summer oil, B.t. and pyrethrum—products with little residual activity and organic, low toxicity ingredients.

“We’ll routinely spray elm leaf beetle with a B.t. formulation,” says Dickson, “but we’re still going to treat Mrs. Smith’s locust borer problem with Dursban because the natural products won’t control the problem.”

Third, the company takes pains to see that all its actions are responsible to the customer and to the environment. “If you’re a responsible company, your customers are going to respect that very much,” says Dickson.
While this study guide has been developed for use by candidates for ISA Arborist Certification, it has also been immediately recognized as an invaluable addition to any reference library. With over 160 pages of information and nearly 200 illustrations and photos, it provides ready-reference for arborists on all levels. The guide is housed in a handsome 3-ring looseleaf binder with each chapter separated by tabbed reference dividers.

The Study Guide is intended to serve as a recommended program of study. It is not intended to be the only program of study to obtain certification. The narrative portion of this guide is general in nature and serves as a primer.

Each chapter of the guide contains: objectives for study; list of new terms; narrative with illustrations/photos; workbook section; other suggested sources of information; challenge questions; and sample exam questions.

Chapter topics include:
- Tree Biology
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- Construction Management
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"The study guide is a great step in the right direction. Arborist certification is helping to raise the professional standards of the industry."
—Don Blair
M.E. Blair Tree Experts

"This long-overdue guide fills a gap in the literature available to arborists. It will be a great educational tool."
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The cost of the study guide is $60.00 for ISA members, $90.00 for non-members. Add $10.00 to obtain the ANSI Z-133 Safety Standards (referenced in text). It can be ordered prepaid from ISA, P.O. Box 908, Urbana, IL 61801, or FAX VISA/MasterCard orders with card number and expiration date to (217) 328-7483.
Natural Controls

By Brian Barnard
TCI Staff

Maintaining a healthy landscape requires intensive management, particularly if conditions allow insect pests to increase in numbers. But public awareness of environmental issues has changed control methods used by professional arborists.

Biorational techniques used to manage insect populations are alternatives to applications of hard pesticides in some cases.

Biorational pesticides are naturally occurring biochemicals and pest control agents that are used to maintain pests in the ornamental landscape at an acceptable level. Included in the biorational category are viruses, bacteria, protozoa, and fungi.

Other natural pest control and monitoring agents include parasitic and predaceous insects, sex pheromone traps, horticultural soaps and oils, and botanical insecticides such as pyrethrum.

Each natural tool is useful when incorporated in a structured Integrated Plant Management program. When marketed effectively, biorational techniques make clients feel positive about plant health care.

Use of any biorational tool requires sound knowledge of the plant material in need of care, the material being used and the pest causing the problem. Timing the applications accurately is perhaps most important, due in part to the short length of time the product is effective as well as how it works.

Pyrethrum

Botanical insecticides are derived from plant materials. Pyrethrum is a botanical insecticide naturally produced by the flowers of the Chrysanthemum cinerariaefolium plant. Pyrethroid is a synthetic compound manufactured to imitate the effects of pyrethrum.

Fairfield American Corporation has taken the benefits of pyrethrum one step further by adding piperonyl butoxide to its insecticide Pyrene. Piperonyl butoxide is derived from sassafras and is added to increase the effectiveness of pyrethrum. Both ingredients are photodegradable and non-persistent. Pyrethrum is ideal for combating a wide variety of destructive insects.

Pheromone traps

Monitoring insect populations is a key aspect of an IPM program as it supplies recent and accurate information. Monitoring allows the IPM technician to pinpoint the most effective timing of control tactics.

One monitoring tool is the pheromone trap. Pheromones are sex attractants secreted by the glands of insects. Specific insect pheromones duplicated and used in a trap containing a sticky substance are available for several pests.
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The trap shown is a general purpose wing trap constructed of weather-resistant paperboard used for most insects. The Multipher insect trap is also designed to capture various species of insects. This is achieved by changing the synthetic sex pheromone, the color of the trap and the form and dimension of the entrance holes.

A wide-brimmed cover keeps rain out and allows the pheromone to be dispersed effectively. A small cage attached inside the cover serves as a holder for the pheromone. A bucket inserted in a funnel holds the captured insects. A small strip of insecticide in the container kills the moths as they enter the trap.

Both of these pheromone traps are available from Great Lakes IPM, Vesta burg, Michigan. “My sales have been increasing 10 to 15 percent every year,” reports company owner Jim Hansel.

**Horticulture oils**

While horticultural oils have long been used in orchards, improvements in refining processes over the years have resulted in high-quality dormant and summer oils for shade and ornamental trees. Henry Pratt, consultant for Rockland Corporation, said: “Oil spray (sales) have really climbed because extension and state entomologists are pushing horticultural oils.”

When properly applied, any phytotoxicity problem with horticultural oils is minimal. Although the exact effect oils have on insects is not certain, published theories indicate that oils disrupt insects’ oxygen exchange, affect cell membrane function, and interfere with the feeding habits of sucking insects.

Rockland Corporation distributes a horticultural spray oil labeled for dormant, delayed dormant and summer applications. Many aphids, scale insects, mites, and adelgids can be managed with carefully timed oil applications.

**Pesticidal soaps**

Another alternative to petrochemical pesticides is pesticidal soap. Soaps are potassium salts of select fatty acids, effective against many ornamental pests including aphids, spider mites, mealybugs, and whiteflies. One such product is M-Pede insecticide, manufactured by Mycogen Corporation.

Again, timing is important when using soaps. Application guidelines for M-Pede state that newly hatched pests should be targeted because the product is not effective against eggs or adults. Besides timing the applications accurately, thorough coverage is necessary for adequate control. Soaps are a cell membrane poison and must contact the target pest.

**Microbial insecticides**

Perhaps the most well known weapon in the biological arsenal is *Bacillus*...
**Biorational Products**

**Rockland Horticultural Spray Oil**

**Foray 4813**, sold by Rockland Corp.

**M-Pede, Mycogen Corp.**

**DiPel, Abbott Laboratories**

**M-One, Mycogen Corp.**

**Pyrenone, Fairfield American Corp.**

- *B. thuringiensis (B.t.)*. B.t. has proven to be a popular microbial insecticide for lepidopterous larvae, particularly those larvae with a high stomach pH. It is nontoxic and highly selective, and is available in many formulations, including granular, emulsifiable suspension and aqueous flowables.

  B.t. is a stomach poison, so larvae must be actively feeding when the product is applied. Close scouting and early attention to pest infestations are required for best results. Abbott Laboratories, makers of DiPel, make the following suggestions:

  —Treat when larvae are young before extensive damage has occurred;
  —Cover the larval feeding site thoroughly;
  —Under heavy pest population pressure, use the higher label rates and/or consider a second application;
  —If attempting to control a pest with a single spray, make the treatment when egg hatch is essentially complete, but before extensive plant damage occurs.

  Foray 48B contains B.t. It is manufactured by Novo Biokontrol, a division of Novo Laboratories, and distributed by Rockland Corporation. The product’s effectiveness has been proven in field tests by the U.S. Forest Service.

  One of the latest B.t. products on the market is Steward WG, manufactured by Sandoz Crop Protection Corporation. Steward WG is a biological insecticide specific for the control of lepidopterous larvae.

  Manufactured B.t. varieties work well on certain insects in the order Coleoptera. Mycogen’s M-ONE bioinsecticide contains B.t. variety San Diego, and is labeled for control of the larvae and adults of elm leaf beetle, cottonwood leaf beetle, and imported willow leaf beetle.

  **Beneficial insects**

  Since most of these biorational techniques are applied similarly to hard pesticides, clients or passersby often have no idea what is coming out of the spray nozzle. A large percentage of the general public has negative feelings about any pesticide application. An alternative is the use of beneficial insects to manage damaging insect pests.

  With public pressure on government agencies to maintain a clean environment, some states have initiated biological control programs. Perhaps the most active program is in California.

  The California State Biological Control Program periodically compiles a list of suppliers of beneficial insects. The program, which started in the mid-1970s, has branched out over the last decade with increased funding and public support.

  More than 60 suppliers were included on past lists, and many more suppliers will be included in an upcoming printing. To obtain the list of nationwide beneficial insect suppliers, contact the California State Biological Control Program, 1220 N. Street Room A149, Sacramento, California 95814, 916-654-1141, or contact your State Department of Agriculture.
For Davey Tree Care in Bellevue, Washington, effective control of Phytophthora comes from treating foliage with a systemic fungicide.

By Bradd M. Pavur

(While the companies profiled in this article practice IPM, they also demonstrate that sometimes practicing more conventional methods of pest control are the most effective in battling some diseases.)

After 18 years in the tree care business, Rick Castro knows that Phytophthora is one of the deadliest diseases around. He also knows that it's the most common disease in his area.

For Castro, a manager for Davey Tree Care Company in Bellevue, Washington, the cool, wet conditions of the Pacific Northwest mean that Phytophthora poses a constant threat to valuable trees and shrubs. Davey Tree, therefore, has combined cultural control techniques with preventive sprays of systemic fungicides to halt the notoriously damaging and hard-to-diagnose disease. The combination has yielded good results and has given the company an advantage over most of its competition.

Background

Phytophthora is a widely distributed disease that attacks more than 1000 plant species. The disease is so persistent in soil because its reproductive spores can lie dormant for more than 15 years, ready to emerge whenever conditions become favorable. When these conditions develop, with wet weather and cold temperatures dropping below 55 degrees, the dormant spores produce white, thread-like strands of mycelium. In the presence of high humidity, mycelia form reproductive structures known as sporangia.

If enough free moisture is available, these sporangia then form tiny spores that are explosively released. The spores quickly attach to and spread throughout the root systems of nearby plants. Unless climatic conditions are unfavorable for the disease or the plant has some resistance to Phytophthora, it is likely that the plant will soon die.

Detecting Phytophthora

It is difficult to diagnose Phytophthora because its symptoms vary widely and often resemble the symptoms of other diseases. Some common symptoms include damping-off among seedlings, cankers, gummosis, necrosis of petioles, stunting, root and fruit rots, defoliation and wilt. Nevertheless, to take the proper preventive action, it is critical to know if Phytophthora is present in the soil and in what concentration.

Because IPM strategies emphasize pest-specific targeting of chemicals, diagnostic labs are increasingly used to identify such tricky diseases.

Olaf Ribeiro, a plant pathologist for A & L Southern Agricultural Laboratories in Pompano Beach, Florida, was formerly the president of one such lab, Microbiotics International, in Bainbridge Island, Washington. His experience has taught him the importance of detecting the pathogen and using preventive treatments before the disease gets out of hand.

"Phytophthora is the number one disease problem on ornamentals in the Northwest," says Ribeiro. "When I give presentations I ask people to raise their hands if they've experienced problems with the disease. It's rare that I do not see 100% of the hands raised.

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Even with the best cultural control practices, plants in areas with heavy disease pressure often need a preventive treatment with a systemic fungicide to have a fighting chance, says plant pathologist Olaf Ribeiro.

**Cultural control**

Ribeiro stresses that good cultural control is always the first step in preventing Phytophthora outbreaks. “The most important step in battling this disease is to make sure there is no standing water in the landscaped area,” he says.

“Plantings should be on a raised bed to help ensure good drainage. If you’re planting in areas with heavy clay soils, raise 30% to 50% of the root ball out of the soil, or use tile drains. Plants in clay or sandy soils also benefit from mulching, which increases microbial activity against Phytophthora.”

“I advise people working in areas with heavy disease pressure to plant cultivars that have some resistance to Phytophthora,” Ribeiro adds. “Diseased plants should be placed in plastic bags and lifted out of the area, since dragging the stock away will only spread the pathogen throughout the soil. Foot traffic in and around the diseased areas should be kept to a minimum.

“Lastly, be careful of what you’re putting on your plants. Avoid excessive applications of fertilizers, especially the ones that are high in nitrogen, since plants forced into rapid growth seem to be more susceptible to disease development. You should also have your irrigation water checked to make sure it is disease free,” Ribeiro advises.

Still, Ribeiro says that even with the best cultural control practices, plants in areas with heavy disease pressure often need a preventive treatment with a systemic fungicide to have a fighting chance.

“Anyone who is not using a preventive control measure in the Northwest is just asking for big trouble.” says Ribeiro. “The two fungicides I recommend are Chipco Aliette and Subdue.”

**Systemics**

Back at Davey Tree Care, Castro’s crews apply Chipco Aliette brand fungicide as a preventive spray. “Business here is pretty competitive, so we offer a complete package called the Davey Plant Health Care Program,” Castro explains. “This means we provide full service, including custom-tailored IPM treatments, pruning and subsequent customer education.

“IPM is an important part of our program, which is one reason we have been increasingly using Chipco Aliette,” says Castro. “Instead of drenching about 600 gallons per 1000 square feet, we only have to spray the foliage until it is wet. That means we can use far less product and cut our application time in half.”

**Customer confidence**

Another company that has been successfully battling Phytophthora outbreaks is Washington Tree Service, in Seattle, Washington. This growing company, which already handles over 80,000 individual applications each year and maintains about 40,000 customers, is the largest of its kind in the area.

“Offering Phytophthora treatments has saved us a lot of customers,” says company manager Bud Johnson. “At first I had to be convinced the treatments would work. Now I see them as a significant part of our business and expect them to be a bigger part each year.

“It is very rewarding to go out and treat a tree affected by Phytophthora, then come back later to see it recovering. Even if it’s too far gone to treat, if you can get a lab sample to concretely identify the problem and explain to the customer exactly what went wrong, it’s worth your time because you’re building customer confidence,” Johnson says.

Washington Tree Service is currently building its own diagnostic lab to facilitate testing of soil samples.

Bradd M. Pavur serves as a consultant to Rhone-Poulenc Ag Company.

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Ruling Prompts Bills

Amendments Would Affect Decision On Pesticide Application

Amendments have been proposed in the House of Representatives and Senate that would eliminate the need for pesticide applicators to obtain permits in every municipality where they operate.

H.R. 3850 and S. 2085 would amend the Insecticide, Fungicide, and Rodenticide Act (FIFRA) and address problems resulting from the Supreme Court’s August decision in the Wisconsin Public Intervenor v. Mortier case. In its ruling, the court essentially said that individual municipalities have the authority to regulate the use of pesticides.

The bills stand a good chance of being enacted into law, considering the general public’s commitment to responsible, educated use of pesticides under existing laws and regulations.

“This is a sensible bill that once and for all assures that pesticides will be regulated according to the highest available standards of science and public safety,” said Harvey Gold, executive vice president of the National Pest Control Association and a representative of the Coalition for Sensitive Pesticide Policy (CSPP).

The CSPP, which represents more than 160 national business, trade, agricultural and professional services organizations, praised the legislation. The National Arborist Association joined the Coalition when it was formed last August.

The bill was introduced in the House by Reps. Charles Hatcher (D-Georgia), Ron Marlenee (R-Montana) and Mike Kopetski (D-Oregon), and has 31 cosponsors.

“Mr. Hatcher’s bill removes the potential regulatory, legal and business chaos that would surely result from 83,000 different municipalities across the country suddenly regulating pesticides in different ways,” said Gold.

The bill would not prohibit a state from enacting such regulations, but FIFRA currently endorses the concept of a federal-state partnership in virtually all aspects of pesticide regulation.

“Congress is finally doing what the Supreme Court suggests: clarifying its long-standing intent to preempt local pesticide regulations,” Gold said.

“Almost 100 cities and towns and counties are considering adopting or have already adopted their own regulations since the court handed down its ruling, Senate bill cosponsor Sen. David Pryor (D-Arkansas) said in remarks in the Congressional Record. “To date, no two are alike. Worse yet, many local jurisdictions have left technical, scientific and regulatory decisions in the hands of town engineers and parks department employees since they do not have EPA scientists at their disposal.”

The bill now goes to the Senate Committee on Agriculture, Nutrition and Forestry.

John Hendricksen, president of Hendricksen, the Care of Trees in Wheeling, Illinois, encourages support of H.R. 3850. In a letter to Rep. Bernard E. Pedersen, Hendricksen said, “Obviously, pesticides need to be regulated—but they should be regulated by those levels of government with the scientific expertise to do so—state and federal governments.”
What is ANSI?

By Don Blair

Years ago, I remember studying a National Arborist Association meeting program. Anywhere ANSI showed up on the program I blocked in as free time to sleep in, catch an early lunch or hug out early for something more interesting. So I understand the reluctance to saddle a conference with a loser like an ANSI update.

This is the time to set the record straight on ANSI, what it means, how it works and why it’s so vitally important to us.

ANSI stands for American National Standards Institute. Arborist industry spokespeople and representatives of every major sector and special interest group in tree maintenance meet regularly in Washington. There are 25 members of the Z-133 Committee, which is concerned with the safety requirements of tree maintenance.

Many climbed, some do still and the others have special knowledge or skills that make them invaluable to the process of revising Z-133.

Headquartered in New York City, the American National Standards Institute does not develop standards. Best described as a refereeing agency, ANSI provides a set of criteria that creates a voluntary consensus standard. Translated, that means that the tree maintenance profession organized as a group, went to ANSI and asked for help in developing a workable and meaningful safety standard representative of the needs of all sectors of professional tree maintenance.

ANSI then provided the guidelines for drafting the standards, seating the representatives and voting approval of the standards. To keep us on track, ANSI keeps a calendar requirement for performance. This keeps us working to reasonable deadlines that keep moving the standard forward to completion.

The system works. To date, ANSI has refereed more than 8000 standards governing every conceivable industry, profession or trade.

ANSI is a vital partner of ours that needs to be understood fully and respected to the utmost.

ANSI and OSHA

Once an ANSI safety standard has been approved voluntarily by the industry that created it, the Occupational Safety and Health Administration quite often refers to applicable provisions as their standard for enforcement. This probably accounts for the confusion and resistance to Z-133 within the industry.

Why is Z-133 so important? For one thing, the standard is literally written in blood. Too many passages in Z-133 have been written as a result of bitter experience gained from serious injuries and fatalities.

The Z-133 story begins in 1968 as the result of a mother’s grief over the loss of her son to a tree work-related fatality. Ethel Hugg, of Johnstown, New York, channeled her grief into action and wrote to federal, state and trade association officials urging them to initiate measures to make tree maintenance less hazardous.

The first standard was approved in December 1972. Over the years there have been several revisions, the last being in 1988. ANSI requires a review every five years. We are in that process now, with distribution of the newly revised standard scheduled for the fall of 1993.

Some committee members have served since the panel’s beginning days, while many of us are serving our first term. There are many relatively young members, not too many years from the field.

That fresh perspective balanced with the experience of the veteran members makes a dynamic committee.

Because most of the revision work is still in committee since our last meeting in October, it would not be appropriate for me to go into specific detail about proposed changes and deletions until they are properly approved. In principle, we are working to recognize many of the changes in equipment, technology and technique that have taken place since the 1988 standard.

We are working to create a standard that provides proven and sound guidelines for reducing the hazards of tree maintenance. We are working to remove conflicting and confusing passages and to further clarify ambiguous passages.

As a member of the Ropes and Climbing subcommittee, I can report that we are studying changes in climbing styles, such as belayed footlocking with a prusik hitch or an ascending device, use of carabiners, changes in climbing lines, increasing the allowable service weight of a chain saw that may be used without a separate line, to name a few of our concerns. As we study these changes in style and equipment, we will make recommendations for appropriate safety requirements.

All of the other subcommittees are taking the same open-minded and diligent approach to this revision rather than rubber-stamping the old standard and passing it on without comment.

Within the standard are two important words: shall and should. Thou shalt do the “shall” as they appear in the standard. The “shoulds” give me the problem. Too often they are interpreted as “we should do it, that means we don’t have to!” But, if a requirement states that limbs should be inspected before placing weight on them, it means just that. Should means “should,” not “should have done,” as in: “I guess we should have inspected that limb before Joe
Some tools last a lifetime, and some simply do not. Ropes, blades and hoses, for example, require regular replacement. Sometimes they give you no warning and you need to call a reliable source to ship your order right away. Every time. Without fail.

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Contact: 800-733-2622

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National Urban Forestry School
Nebraska City, Neb.
Contact: The National Arbor Day Foundation, 402-474-5665

Feb. 27-28
ISA/Rocky Mountain Chapter
Holiday Inn East
Denver, Colo.
Contact: John Duke, 303-425-0814

Feb. 29-March 3
ISA/Southern Chapter
Marina Hotel
Jacksonville, Fla.
Contact: Perry Odom, 904-632-6133

March 5-6
ISA/Michigan Chapter
Kellogg Center
East Lansing, Mich.
Contact: Bob Cool, 517-483-4277

March 6-7
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RF Inter-Science Co. announces a new portable camera-adaptable microscope instrument, the Macroscope 25 "H" kit. This kit combines the Macroscope 25 with the new battery-powered Hi-Intensity Illuminator and a padded carrying case, for a self-contained field-usable microscope. The system can be used for field work in agriculture, horticulture, entomology, field biology and pest control. For further information contact RF Inter-Science Co., P.O. Box 505, Huntington, NY 11743. Phone: 516-421-1342.

The Seppi Forst, a heavy-duty flail mulching mower, can cut and shred trees, brush and branches up to eight inches in diameter, and mulch them in a single operation. Chipped material is deposited on the ground, not sprayed to the sides. Seppi Forst mowers come in a variety of models and sizes for specific applications. For further information contact Seppi, N56 W35700 Lisbon Road, Oconomowoc, WI 53066. Phone: 414-567-0473.
February 1, 1992

Dear Tree Care Industry Professional:

In response to a need identified by our membership, the Board of Directors of the National Arborist Association has agreed to sponsor a group health insurance program offered by the NEW ENGLAND, a superior insurance company.

This program and the NEW ENGLAND were selected after much research and scrutiny by all concerned parties. We are pleased to have it available for the entire tree care industry.

This program will be marketed by the Albiez Insurance Agency, Inc. Albiez is currently providing various insurance products to many association member firms.

We encourage everyone to take a close look at the benefits this fine program has to offer as well as the excellent pricing.

Yours truly,

NATIONAL ARBORIST ASSOCIATION

Robert Felix
Executive Vice President

For Information About The New NAA Sponsored GROUP HEALTH INSURANCE PROGRAM Contact Barry Rosenberg @ Albiez Insurance Agency Today 1-800-ARBORS-1

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Innovative firm seeking plant health care director. Candidate should have an undergraduate degree or equivalent and in-depth knowledge of arboriculture and lawn care. Salary commensurate with experience. Send resume to: Mike’s Tree Surgeons, Inc., 263 Park Street, Troy, MI 48083.

Grounds maintenance/landscape/lawn care—Expanding grounds management firm in Cincinnati and Columbus seeks qualified and experienced personnel to fill openings in grounds maintenance, landscape construction, lawn care, irrigation and flower care. Quality conscious individuals, knowledgeable in ornamentals, turfgrass, landscape installation, lawn mowing, irrigation service, pest management, and flower care should respond. Outstanding compensation, year round work, benefits and advancement opportunities available. Letter or resume to Prolawn.

Proscape, 11488 Deerfield Road, Cincinnati, OH 45242. Attn: Clayton Sheeler, 513-489-2433, days.

Manager—Capable of starting and running satellite office, exp. in sales and pest diagnosis. Winkler's, 1241 Morgan, LaGrange Park, IL 60525. Phone: 708-531-1181.

Arborist/manager for San Diego and San Jose areas. We are looking for highly motivated individuals with strong, well-rounded knowledge of arboriculture. Must have strong background in operations, technical ability, high safety standards, interest in a quality product and a drive for customer satisfaction. Send resume to: Arbor Care, 825 Mabury Road, San Jose, CA 95133. Attn: Peter Sortwell.

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IPM In The Real World

IPM is a new concept for tree care clients, especially for the illustrious residents of the north shore of Long Island. As an IPM technician, I had to be a student, a teacher and a guinea pig.

It is extremely difficult to convince most clients that the IPM concept is more effective than the traditional "cover spray" method that was used for so many years. The most difficult part of the job is dealing with clients and getting them to trust my knowledge and capability. However, once I gain that trust I get put on the spot with questions I can't possibly answer without breaking into a sweat. At first I would attempt to answer the questions right there in the field. Then I got smart.

"Why is my little pine tree next to the driveway dying?"

"You must mean that juniper over there."

"Right. That's what I meant."

"I inspected it for spider mites and found none. I looked for the fruiting bodies of Kabatina and Phomopsis tip blight and found none. I think it might be a drainage problem."

"A drainage problem!? That thing's been there for ten years!"

In the past I would have dug a hole for myself by responding on the borderline of the truth and what they wanted to hear. With sweat from frustration running down my face, I would tell them that I took both a soil and foliar sample to send to the laboratory for analysis.

"Why are the leaves of my maple tree falling off so early?"

"Oh, you mean that tulip tree?"

"Right, that's what I meant."

My mind is thinking compensatory leaf drop, but from habit I hear my mouth saying, "I don't know."

Following the true IPM concept, I have been using soap and/or oil to control spider mites, hemlock wooly adelgid, sawflies, lacebugs, aphids and other ornamental pests. Clients and their neighbors believe that when a truck with a large tank pulls up, it's time to run for the hills. I try to explain that I have just soap in the tank, but they don't seem to hear that.

"Do you take a shower with a rainsuit on?"

I never get a reply other than silence from that one, and, of course, that is what I am looking for.

There are some customers who want me to explain things and others who would rather hear me say, "I don't know." Some follow me around their property and ask me questions. Some pretend that I don't exist. Some don't care if I inspect their plants or not, just as long as they have someone to talk to. But what I don't like is the guy who follows me around wearing those Speedo bikini swim trunks asking me to take soil samples from every shrub.

I guess what will make me a skilled IPM technician is to know how to respond to each client and tend to their individual needs. Even if I allow them to follow me around in those skin-tight bikini briefs.

The author requested that we not publish his name, or the name of his company.

Do you have a story for From the Field? TCI will pay $100 for published articles. Submissions become the property of TCI and are subject to editing for grammar, style and length. Entries must bear the name of the company and a contact person or they will not be considered for publication. Articles and photos must be received by the first day of the month for the following month's issue.
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"I had no idea I would get so much performance out of a little stump cutting machine," says Klinger. "These Vermeer machines (he owns several now) have really helped me make good money without the constant frustration of breakdowns and repairs. That's why I'm so interested in adding your brush chippers to my business."

Thank you, Mr. Klinger. We couldn't have said it any better.

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What's more, you can tank-mix Pyrenone insecticide with most any insecticide to enhance the control of large infestations or difficult to control pests.

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