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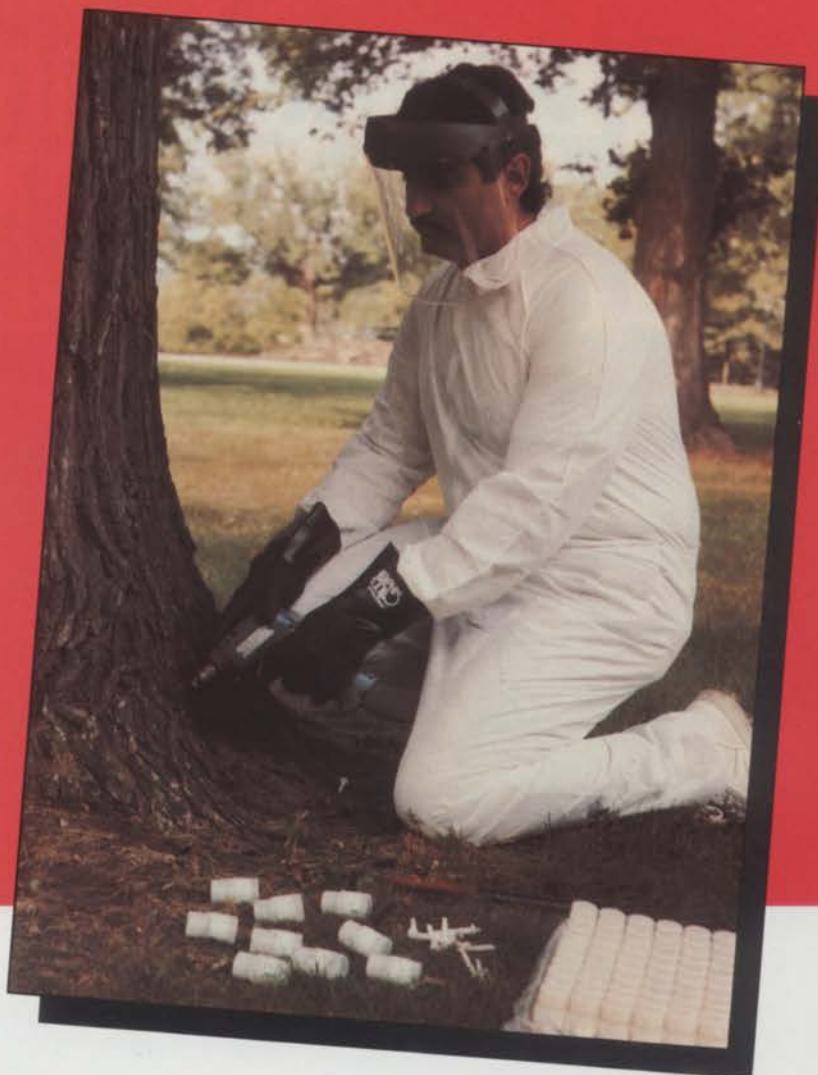
IN THIS ISSUE:
Tree Pruning
Soil Additives
Ornamental
Insect Control

TREE CARE STRATEGIES

*Safety should come first on
the list of priorities when
maintaining trees.*

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USE READER SERVICE #65

Lawn & Landscape MAINTENANCE

VOLUME 13, NUMBER 5

MAY 1992

Cover Photo:
Swingle Tree Co., Denver

FEATURES

24 Tree Care Safety: Training Means Everything

Accident prevention requires a commitment to safety through communications, training and corporate vision.

30 Tree Pruning Essentials

Misconceptions abound about proper tree pruning, but with some basic ground rules, necessary pruning will result in healthier plants.



p. 40

40 Reel Mowing: Still a High-End Specialty

While not the first choice of landscape contractors, reel mowers are regaining favor on some properties where a short cut is required.



p. 24

44 Chipping Away at Landscape Wastes

Landscapers in search of horticultural waste-reduction equipment will find a plethora of product offerings. Defining needs to meet results is the first step.

51 Enhancing Plant Environments With Soil Amendments

The more knowledge a contractor can garner from the soil, the better he'll be able to treat turf and plant symptoms.

52 IDing and Controlling Ornamental Insects

Heavily uncontrolled pest populations result in plant defoliation and stress, leading to increased insect and disease susceptibility.



p. 30

DEPARTMENTS

74
Advertisers' Index

72
Calendar

4
Editor's Focus

18
Landscape News

68
People

15
Association News

73
Classifieds

58
Hands On

8
News in Brief

70
Products

6
Business Watch

60
Compost Corner

20
Irrigation News

Oregon battles Asian gypsy moth infestation.

65
Seed

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Editor's Focus

COOPERATIVE EFFORTS have reached new heights in the green industry.

The numbers of associations, lawn and landscape maintenance companies and congressional representatives joining the crusade for federal and state preemption of local pesticide ordinances is growing daily. In addition, contractors on the local level are making tremendous strides against unreasonable legislation.

Just recently, pesticide regulations in the cities of Fairview Park, Ohio, and Mansfield, Mass., were shot down. In both cases, respective state laws were said to be adequate and clear in their intention that state law supersedes local law.

The strategic win in Fairview Park should set a precedent in other Cleveland suburbs which have attempted to severely curtail pesticide applications within city limits. Of particular interest in the Fairview case are the circumstances surrounding the repealed pesticide laws.

The city passed legislation last fall placing strict notification laws on the applications of pesticides to trees and shrubs. The law stood untested until this spring when The Davey Tree Expert Co. of Kent, Ohio, refused to do business in the suburb because its ordinance was illegal under Ohio law.

Upon further review, the city law director found that Ohio law did restrict cities from enacting legislation more strict than the state law. The city council, in turn, repealed its city ordinance, but its law director vowed to enforce the state law to the letter.

That's fine with most Ohio maintenance contractors; most are already complying with standard notification and posting regulations.

Mansfield's "Pink Flamingo" ordinance, as it has become known, required professionals applying pesticides to post a relatively large pink sign on treated properties. This pink sign was in addition to posting signs already required by the state.

However, a judge ruled that the state law was more than adequate. The city still holds an appeal option, but most agree the controversy in Mansfield is over.

Justice does prevail if you take an active, participatory role in your industry.

Elsewhere in the pesticide arena, thumbs up to *USA Today* for giving Responsible Industry for a Sound Environment an opportunity to present the opposing view to its lawn chemical debate. Until recently, RISE or any of the other national associations representing the green industry wouldn't have been called upon to tell its side of the story. This is made possible because of the industry's continuing ef-



forts in media relations.

But thumbs down to the "nation's newspaper" for presenting its "be wary of lawn chemicals" view.

The paper editorialized that the chemicals used in routine lawn care can be dangerous to more than weeds and pests. While it does encourage consumers to be more aware of the quantity of product they're applying to their lawns and to ask more questions of their lawn service operators, it implies that the industry does little in the way of product testing.

In reality, pesticides are among the most researched, tested and regulated products on the market. Specialty chemical firms analyze untold numbers of molecules annually in the hopes of finding the few that will make a difference in the control of insects, diseases and weeds. If and when they reach the market, the products have run the gamut of tests from acute toxicology to environmental fate studies.

Allen James, executive director of RISE, put forth strong arguments on behalf of specialty chemicals. Namely, he cited the environmental benefits resulting from effective chemical applications and the rigorous testing products undergo before being used on turf and ornamentals.

Nevertheless, the editorial debate presents mixed signals leading to confusion among the general public. Lawn and landscape maintenance contractors need to be diligent in their efforts to provide their customers with honest, accurate information. Care must also be taken in direct mail efforts proclaiming the safety of chemicals.

Whether you're applying pesticides or performing mowing and related maintenance services, the green industry needs to control its own destiny through effective communications. — Cindy Code

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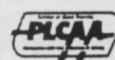
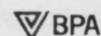
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Business Watch

FOLLOWING A LONG and bitter winter, spring showered better news on the financial community. For starters, personal income and spending rose in February, a healthy 0.7 percent and 0.6 percent, respectively. Consumer spending is critical, comprising two-thirds of the nation's total economic activity.

Consumer confidence also rose, from 47.3 in February to 54 in March. The confidence index is charted monthly by the Conference Board, a New York-based research firm. Despite the climbing confidence, March's reading is still significantly below non-recessionary times. (Below 80 signals a recession).

Adopting an optimistic outlook, The National Association of Realtors forecasted a lasting expansion by summer.

Overall, many analysts have predicted modest growth (about 2.5 percent) in 1992. The Federal Reserve said that industry appeared "modestly more optimistic" in March, but cautioned that weaknesses remain in manufacturing and other sectors.

UNEMPLOYMENT RATE

DEC.	JAN.	FEB.	MAR.
7.1	7.1	7.3	7.3

FIXED MORTGAGE RATE*

DEC.	JAN.	FEB.	MAR.
7.98	8.67	8.72	8.68

*Posted yields on 30-year mortgage commitments for delivery within 30 days.

MORE JOB CUTS IN '92

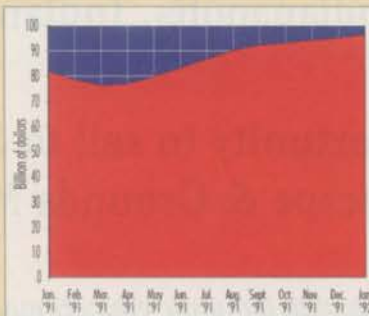
The average number of workers laid off per weekday in the first quarter, 1989-1992.



Source: USA Today and Workplace Trends

SINGLE-FAMILY HOUSING STAYS ON GROWTH TRACK...

Single-family construction registered its tenth consecutive month of increase in January to \$96.6 billion.



Source: Bureau of the Census

...WHILE OFFICE CONSTRUCTION DECLINES

Office construction continued its downward trend in January to a low of \$15.3 billion.



Source: Bureau of the Census



REGIONAL REPORT: SOUTHEAST

CONSTRUCTION — or lack thereof — appears to be a unifying theme among Southeastern economies.

In Georgia, Atlanta is riding high on flattering reports in *Fortune* magazine, ranking the city as tops for business. Overbuilding in the 1980s, however, has hampered its residential construction markets.

A depressed construction market continues to plague Florida, where at least 78,600 construction jobs have been lost since 1988, according to the National Association of Realtors.

Alabama could see modest gains in housing starts over the next decade. Housing starts in Alabama reached a low of 12,000 units in the first quarter of 1991.

After a building boom in the mid-1980s, South Carolina has seen housing starts stabilize somewhat and non-residential construction decline.

Dale Elkins, regional vice president for ISS Landscape Management Services, Tampa, said 1991 brought mixed blessings to the Florida landscape market. On the one hand, landscape construction was hampered by low-ball bidding. "People wanted to survive the recession so they were willing to suffer low profit margins."

But Elkins said less construction translated into more maintenance in many areas. "People weren't expanding, but they were improving the quality of property they did have." This helped Elkin's company, which is about 70 percent maintenance and only 30 percent construction. "Business actually grew during the heat of the recession," he said.

Pragmatic lawn and landscape maintenance contractors emphasize value in today's competitive marketplace. Charles Fahrenkopf, vice president of sales and design, Adsit Landscape & Design Firm, Memphis, Tenn., said service, quality and price are the three things shoppers seek in the '90s.

"You have to look at your organization and provide the best value you can. Show your customer how you can spend their money wisely. People are definitely price-conscious, but they are also quality-driven."

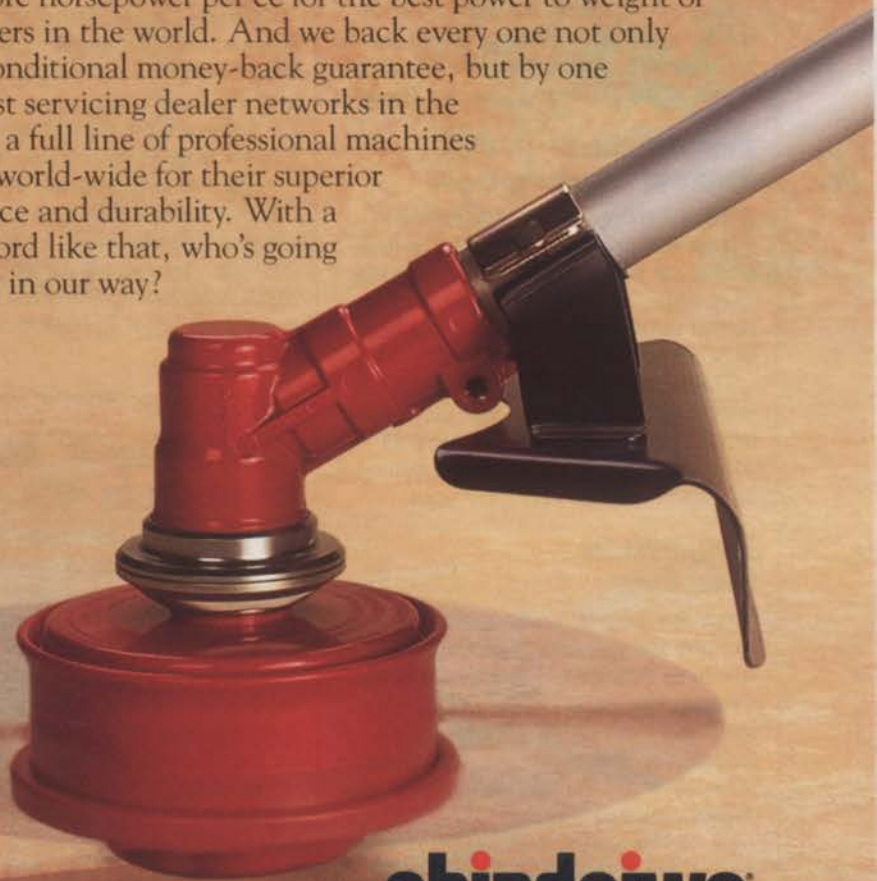
Paul Anderegg, president of All Green Corp., Marietta, Ga., said that the recession "really hasn't affected our businesses. We're an aggressive marketing company."

With lawn care businesses in 19 locations, including Florida and North Carolina, All Green relies heavily on telemarketing for its sales.

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NEWS DIGEST

ISA Chief Named To National Council

William Kruidenier, executive director of the International Society of Arboriculture, was appointed to chair the 15-member National Urban and Community Forestry Advisory Council.

The council will advise the U.S. Secretary of Agriculture on development of a national urban and community forestry action plan, evaluate the plan's implementation and develop criteria for a national challenge cost share program. The council was established under the provisions of the Urban and Community Forestry Assistance section of the 1990 Farm Bill.

Sweepster Acquires Ford Leaf Loader Line

Sweepster Inc. reached an agreement with Ford New Holland Inc. to purchase Ford's Model 710 Leaf Loader product line. The arrangement includes the purchase of all machines and parts inventory as well as tooling, patents and documentation. Financial details of the agreement were not released.

Ruppert Buys Sequoia Landscape

Ruppert Landscape Co. of Ashton, Md., acquired Sequoia Landscape Co., a division of the Sequoia Companies, based in Centerville, Va. The buy-out allows Ruppert to further develop its customer base in Northern Virginia.

The acquisition includes the transfer of vehicles and equipment as well as the maintenance contracts on approximately 25 properties adding more than \$1.5 million in revenue over the next three years.

Target Hosts Field Days

Target Specialty Products, a distributor of turf care and pest control products, has scheduled field days at several California locations to educate current and potential users about its products. Events include product demonstrations, test plots and a barbecue lunch. Participants can earn continuing education credits.

For further information and registration, contact: 800/237-5233 for Lake Poway, May 20; and 800/352-3870 for El Dorado Regional Park, Long Beach, May 27; Corona City Park, May 28; and Ventura College, June 4.

Gypsy Moth Control Efforts Under Way in Northwest

AN ASIAN GYPSY moth eradication and detection plan for North Portland has been approved by the Oregon Department of Agriculture.

The cooperative effort between state and federal agencies calls for spraying up to 9,600 acres in an effort to rid Oregon of the potentially devastating pest.

First detected in August of last year, the Asian gypsy moth may pose more of a threat than the European variety first brought to the East Coast in 1869.

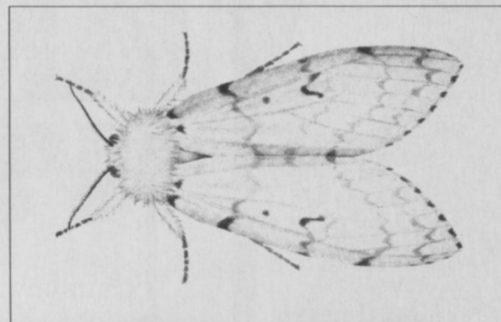
The eradication plan for North Portland calls for the aerial application of the naturally occurring *Bacillus thuringiensis* (Bt), a bacteria that produces a caterpillar-specific toxin. The ODA has successfully used Bt in the past to eradicate infestations of European gypsy moth.

Although exact figures on the extent of the damage are not available, the insect has been blamed for considerable defoliation along the Siberian coast.

In addition to strategies outlined in the West, research is under way at the Northeastern Forest Experiment Station's laboratory in Hamden, Conn., where many of the controls available today for the gypsy moth were developed.

The Asian gypsy moth is of the same species as that introduced into the Northeast; however, the adult female is larger, and is estimated to be capable of flying from 40 to 100 km, whereas the "North American" strain female does not fly. Other characteristics include:

- Favored hosts may differ; the Asian moth appears to feed more readily on a much broader range of plants, and may establish more readily on conifers.
- The two strains should be capable of interbreeding, with unknown hybrid results.
- Greater variability in Asian moth populations may prove problematic in pest identification and control.
- Currently, there is no quick, sure method of distinguishing males of the Asian and North American strains. Identification is key to designing control programs; the Asian gypsy moth has the potential to spread much more quickly, so larger areas may need to be treated.



The adult gypsy moth is a serious pest of shade trees and landscape plants in the United States.

'Don't Bag It' Makes Its Mark in Wis.

Greenfield, Wis., BFI Waste Systems, The Toro Co. and Howard Johnson's Enterprises joined forces to create a "Don't Bag It" lawn care plan.

The program is designed to reduce pressure on landfill space, contain the costs of solid-waste disposal and help stimulate the local economy by boosting sales of recycler lawn mowers and slow-release fertilizer.

The program involves volunteer lawn demonstrators from households in each of the city's 56 residential quarter sections, selected through a public drawing. In exchange for recycling their grass clippings, the demonstrators will receive free use of recycling mowers and a season's supply of slow-release fertilizers.

The city of 33,843 residents is hoping the Don't Bag It program will reach the same acceptance level its curbside recycling program has — 85 percent participation.

Ohio City Repeals Notification Law

A law regulating the chemical treatment of trees and shrubs in Fairview Park, Ohio, was ruled illegal and later repealed by the city's council.

Last fall, the Fairview City Council unanimously passed legislation requiring commercial applicators to notify surrounding property owners, within one week of the spraying, before treating trees and shrubs. Notification included the date and time of the spraying, name and telephone

number of the applicator, the chemical being used and any special instructions for use. In addition, a warning sign no smaller than 4 by 5 inches was to be posted around the sprayed site for 24 hours.

What the council didn't anticipate were resident complaints prompted by the refusal of The Davey Tree Expert Co. of Kent, Ohio, to do business in the Cleveland suburb as long as the law stood.

Subsequently, a review of Ohio law by the city's law director showed that cities within Ohio cannot supersede state laws on the application of pesticides.

The city now plans to enforce the state law which includes notification of residents (upon request) whose property abuts the property on which a lawn pesticide is to be applied at least one day prior to the treatment process, the approximate time of the application and the company name and phone number. According to state law, customer requests for notification must be made in writing.

Davey Institute Graduates 47 Employees

Forty-seven employees of The Davey Tree Expert Co., Kent, Ohio, recently graduated from the 1992 Davey Institute of Tree Sciences, a four-week training program at the company's Kent headquarters.

The training course gives selected employees from the company's offices throughout the United States and Canada the opportunity to learn about tree physiology, insect and disease management, soils, equipment, safety, leadership skills, personal development and more.

Three basic goals of the Institute are to update Davey employees' technical skills, introduce them to Davey corporate headquarters and start them in management training.

The first two weeks are spent primarily

in the classroom learning terminology and technical information. The last two weeks focus on practical applications, with cabling and bracing classes in Davey's "indoor forest," tree climbing and aerial rescue training in a nearby cemetery.

SWCC Releases Compost Proceedings

The Solid Waste Composting Council released proceedings from its 1991 national conference. The 200-page publication reprints more than 25 presentations by leading voices in the composting industry.

In the proceedings, experts from the U.S. Department of Agriculture, land-grant universities and private industry review literature and describe recent findings on land-applied sewage sludge and sludge compost, product quality and heavy metal limits and separation technologies.

The publication is available through the SWCC for \$50 to council members and \$100 to non-members. Contact: SWCC, 114 Pitt St., Alexandria, Va. 22314; 703/739-2401 or 800/457-4474.

Treatment Keeping Deer Ticks in Check

Researchers at Castle Hill in Ipswich, Mass., reported a substantial reduction in deer ticks on an 18-acre treated site within the New England park.

The study, published in the Journal of Medical Entomology, reported "Complaints from visitors and employees about tick-bites or ticks observed on skin or clothing, which were common in the study site before intervention, became rare after treatment ... About 35 percent of the people who live within 5 km of the reser-

(continued on page 12)



Davey Institute of Tree Sciences instructors demonstrate tree cabling techniques to employees of The Davey Tree Expert Co., Kent, Ohio, during an indoor forest session at the institute.

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This allows you to control tough surface-feeding pests like sod webworms, cutworms,

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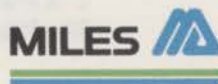
chemical into the air, TEMPO also costs less than other leading insecticides.

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News

(continued from page 9)

vation and 66 percent of the residents bordering the reservation had contracted Lyme disease between 1980 and 1987."

ServiceMaster Puts In Bid for ChemLawn

ServiceMaster Consumer Services Limited Partnership, the operating firm which has owned a majority share in TruGreen since 1990, has announced its intention to acquire ChemLawn Services Corp. from Ecolab. If the sale is approved, what were once three separate and substantial companies in the lawn maintenance industry just 18 months ago will become one.

In March, Ecolab announced plans to divest ChemLawn through a sale, spinoff or other form of corporate disposition. Since then, a variety of investor groups showed interest in the lawn care giant, but negotiations with ServiceMaster jumped to the forefront, according to Deb Strohmaier, ChemLawn public relations manager. Details are expected to be finalized by June 1.

ChemLawn, which was acquired by Ecolab in 1987, reported sales of \$355 million last year. TruGreen's same year customer generated revenues were \$92 million. ServiceMaster's lawn care sales figures were unavailable.

Norm Goldenburg of TruGreen said the impending acquisition by ServiceMaster should appeal to ChemLawn because TruGreen is managed by lawn care professionals.

"We like this business and we like dealing with customers and homeowners," he said. "It'll be a terrific team."

As for a name change, staff reductions or cities with overlapping branches and/or franchises, no information was available.

Irrigation Firms Join to Market Drip Products

The Toro Co.'s Irrigation division and Netafim Irrigation have formed a partnership to develop a line of drip-related products for landscape professionals.

The Netafim/Toro line will be available exclusively through Toro distributors. Products are designed to maximize water conservation through the precise application of water. Included is a full range of sub-surface drip, drip and related products.

In addition to the Netafim line, Toro will offer a range of products designed to maximize watering efficiency, including microspray, high-flow-shut-off, rainswitch, sprinklers, valves and controllers. ■

Association News

THE CRYSTAL BALL committee of the **Associated Landscape Contractors of America** has issued its latest report, *Crystal Ball Report XII: Quality and the Landscape Contractor*.

The publication resulted from a two-day meeting in which committee members discussed the concept of Total Quality Philosophy (TQP), both within their own firms and among their client bases. They then compared that philosophy to any preconceived ideas of quality they may have had.

The report analyzes how TQP can be used in the landscape industry to maximize employee talents, improve client satisfaction, reduce costs and eliminate roadblocks and stress.

Copies of the report are available to ALCA members for \$3 and non-members for \$15. A 5 percent shipping and handling fee must accompany all orders.

The **Green Industry Expo** board of directors has added five hours to this year's show in Indianapolis, Nov. 16-19. This gives attendees and exhibitors more time

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on the trade show floor.

The revised schedule includes a first-time, two-hour "sneak preview" on Monday, Nov. 16; and three additional hours of exhibiting on Tuesday and Wednesday. The additional hours were in response to exhibitor and attendee requests.

The GIE show is co-sponsored by the Associated Landscape Contractors of America, the Professional Grounds Man-

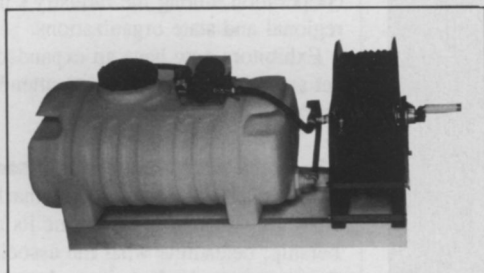
agement Society and the Professional Lawn Care Association of America. The GIE is in its third year.

Peter Grathoff of Thornapple Landscape Maintenance, Geneva, Ill., recently was elected president of the **Mid-America Horticultural Trade Show**.

Richard Schwarz of Schwarz Nursery &

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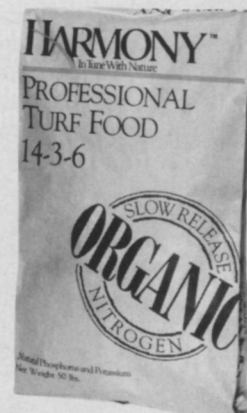
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Garden Center, Addison, Ill., was elected vice president.

Elected to serve as a director was Frank Mariani of Mariani Landscape, Lake Bluff, Ill. Paul Swartz of P. Swartz Nursery & Garden Shop, Burlington, Wis., was re-elected as a director. The remaining officers and board members are serving existing terms.

Board members represent Mid-Am's three sponsoring associations: the Illinois Landscape Contractors Association, the Illinois Nurserymen's Association and the Wisconsin Landscape Federation. Mid-Am

is also endorsed by the Iowa Nurserymen's Association, the Minnesota Nursery & Landscape Association and the Nebraska Association of Nurserymen.

Mid-Am '93 is scheduled for Jan. 14-16 in Chicago.

The **American Sod Producers Association** is marketing educational materials on the environmental benefits of turfgrass. A full-color brochure and six-minute videotape highlight the functional, recreational and aesthetic benefits of turfgrass.

Also available is a slide show with script, prepared for ASPA by Dr. James Beard of Texas A&M University.

Videotapes are \$25 each; brochures, \$75 for 500 and \$250 for 2,000; and slide show, \$50.

The **Professional Grounds Management Society** recently formed a Connecticut branch to meet the needs of landscape contractors and grounds managers in the state.

Elected as officers were: Gary Dickinson, Blue Cross/Blue Shield, president; Francine Vallillo, Branford, vice president; Bruce Adams, Imperial Nurseries, secretary; and Richard Shaffer, Hartford Insurance Group, treasurer.

Meetings will be held around the state, providing professionals with the opportunity to network and share ideas and techniques.

After monitoring exhibitor and attendee feedback and results of a recent survey, the **American Association of Nurserymen** has decided to make changes in its convention and trade show for 1993 and 1994.

The 1993 annual convention will be held in conjunction with the TAN-MISS-LARK Regional Nursery and Garden Supply Show, Aug. 5-8 in Dallas. The 1994 convention is scheduled with the Mid-Atlantic Nurserymen's Trade Show, July 6-10 in Baltimore.

AAN President Dick Campbell said attendees benefit from the arrangement because it enables them to visit more exhibits at a single event. It also moves toward one of AAN's goals: increasing cooperation among the industry's national, regional and state organizations.

Exhibitors now have an expanded market and fewer trade shows to attend in a year.

The **Professional Lawn Care Association of America** will conduct a telemarketing survey in June to better define its membership, determine what the association is doing right and where it needs to improve.

PLCAA President Bob Andrews said the association will contract an outside firm to handle the survey of 150 current members, 75 former members and 75 companies who contacted the association for membership information but did not join.

"The definition of our membership is changing rapidly," Andrews said. "We want to know what types of activities they're doing and alter our staff functions accordingly."

The 20-minute phone survey will query association members on current and potential customer service trends, volume sizes and association interests.

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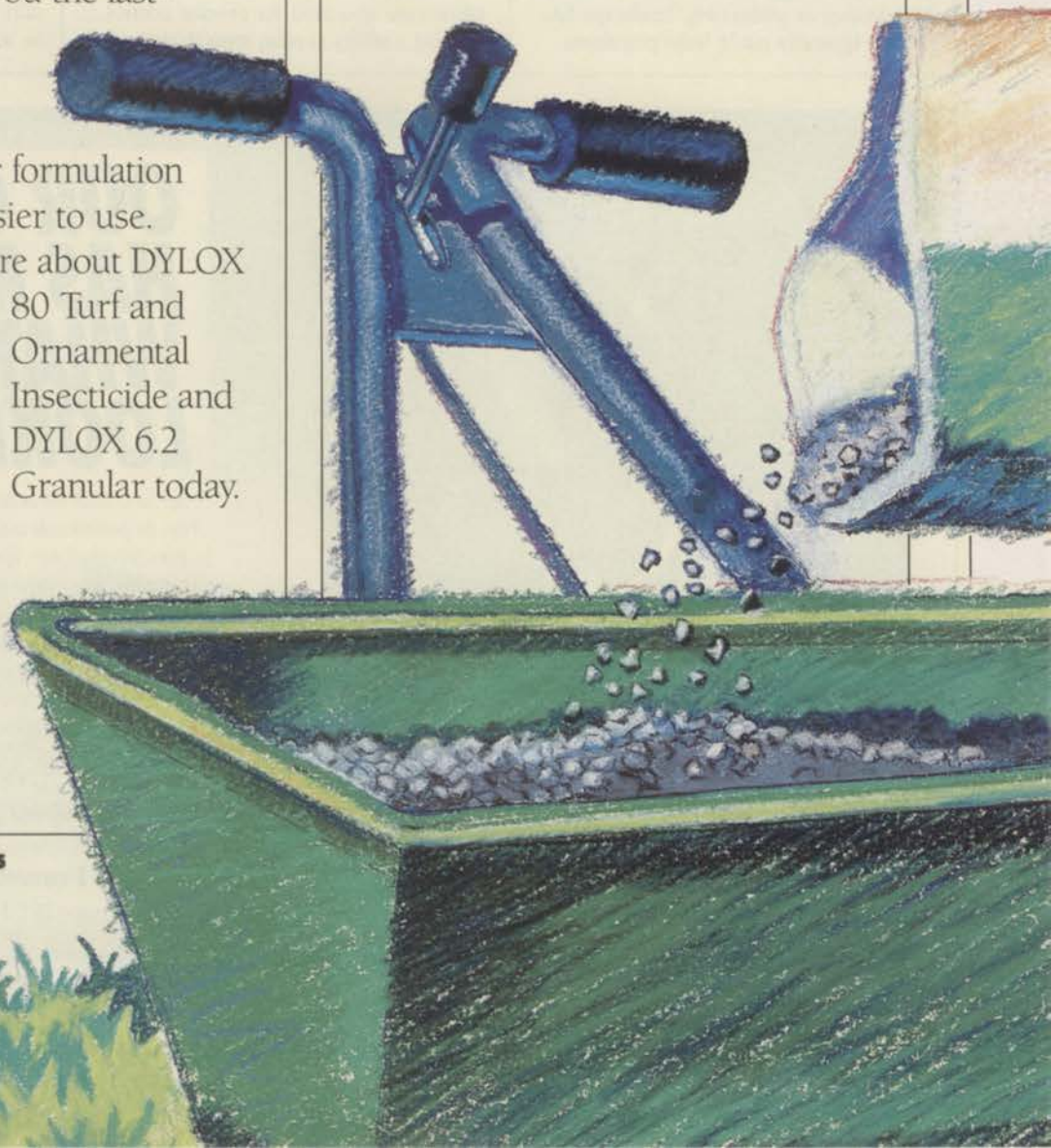
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Landscape News

LANDSCAPE FABRICS: COVERING NEW GROUND IN LAWN MAINTENANCE

LANDSCAPE FABRICS are covering a small but growing niche in landscape maintenance. Used primarily for weed control, the fabrics are designed to allow moisture, oxygen and nutrients to pass through plant roots, while stifling weed growth.

"Landscape fabric is the space-age answer to the black plastic used in the past," said Boyd Thomas, director of marketing for Easy Gardener, Waco, Texas.

According to Thomas, black plastic not only stunts weed growth, but blocks soil and water routes as well. Plant rot and poor root development can result.

Today's landscape fabrics are lighter weight than their plastic counterparts and allow more oxygen and moisture exchange. Also known as geotextiles, landscape fabrics are typically made from petroleum



Landscape fabrics can enhance weed control efforts. Photo: Reemay.

by-products and are either woven or non-woven. Many have ultra-violet inhibitors added for longer life.

In addition to weed control, landscape fabrics are also used for erosion control, offering stability to plant roots during winds

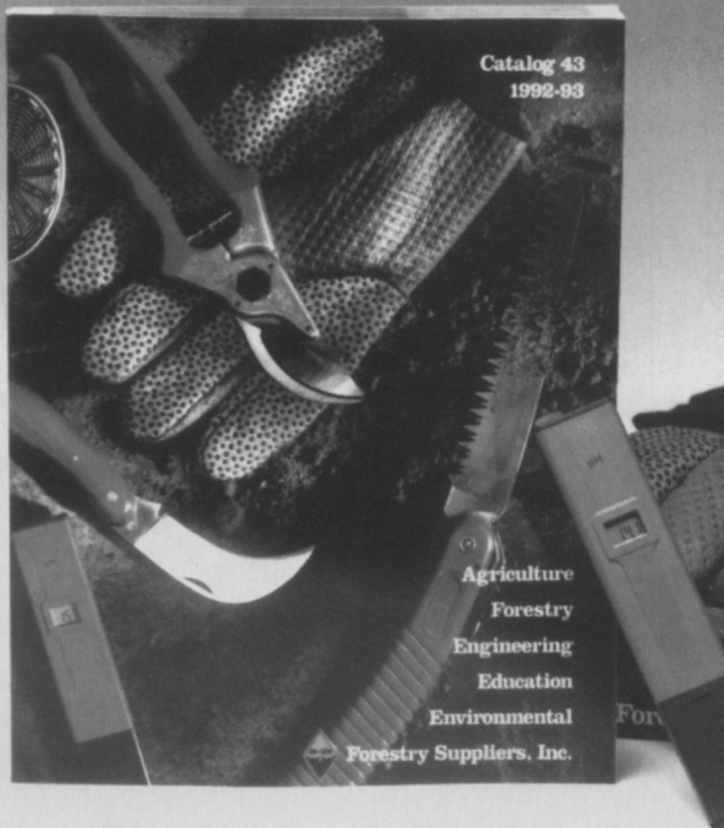
and heavy rainfall. Additionally, landscape fabrics can be used as sediment barriers or as a stabilizer behind retaining walls and under patios and walkways.

Although initial cost often discourages their use, landscape fabrics can actually save money by reducing the use of herbicides and mulch. Landscape contractors may have to be patient, however, for cost savings to materialize.

"Landscape fabrics can be five times the cost of black plastic," said John Russell, business manager/packages products for Reemay, Old Hickory, Tenn.

"But the benefit of landscape fabrics is healthier plants. Landscape fabrics are the more cost-effective choice."

As for reducing herbicide use, Russell said, "Over a five-year period, it would be less expensive to put landscape fabric



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in than to go in twice a year with chemical controls."

Labor savings is another benefit. "Once you put it down, airborne seed may germinate on top of the fabric, but you don't have to go in and weed on a regular basis," Russell said.

He added that with UV-inhibitors, landscape fabrics can last about five years when exposed to sun, and longer in shady areas.

WHO'S USING THEM? Craig Kuehl said his company uses landscape fabrics to achieve better weed control than just using preemergents and mulch. As wholesale manager for Stano Landscaping, Milwaukee, Wis., Kuehl also markets Blunks landscape fabrics to other landscape contracting firms.

Kuehl said the fabrics have worked well for his company's weed control needs.

"They cut down on the amount of mulch we have to use to achieve effective weed control," he said. "When we spec a job with two inches of hardwood mulch, by the time that mulch settles, it's down to one inch and that's enough for weed seeds to get going. But fabrics prevent weed seeds from getting into the soil."

Ed Gallagher, landscape management manager for Yardmaster, said his company

does not use landscape fabrics. "For the size of the projects we do — the size of the beds and the size of the jobs — the cost would be immense," he said. "If you have a good preemergence program, it should resolve any weed problems."

WHAT TO LOOK FOR. Russell said to look for a strong and lightweight fabric.

Water permeability, biodegradability and ease of use are also important characteristics, according to Kuehl. "Water permeability is most important, because you've got the fabric between the water zone and the root source. Some of the black plastic mulches aren't as permeable to water."

Todd Townsend, national sales manager for Blunks, Chicago, advised against fabrics with plastic content because they can get "a buildup of gases under the plastic from the heat. The soil isn't able to breathe as well," he said.

HOW TO USE THEM. According to Townsend, "Landscape fabric is all in the preparation." He said much of the success behind landscape fabrics depends on the proper application of post and preemergent herbicides and soil preparation.

For new planting areas:

- Use a non-selective herbicide such as Roundup® to eradicate any weeds. Till the area and add proper nutrients.

- Roll out the fabric and pin it down. Overlap the strips a couple of inches to provide a solid weed barrier.

- Mark planting areas by cutting an 'X' in the material with a knife.

- Fold back the flaps created by the 'X' and install the plant, then fold the flaps back in place.

- Trim off any excess around edges and mulch with a 2-inch layer of mulch.

For existing plantings:

- Physically remove any grass or weeds.

- Roll out the material, fitting it around existing plants.

- In the case of larger shrubs, roll a strip of fabric on each side of the shrub, then secure the two strips around the base.

- If shrubs or plantings are smaller, roll fabric over the top of them, then cut a hole in the fabric and work the fabric over the plant.

Townsend cautioned that although a good fabric can control up to 95 percent of all weeds, there are certain grasses no landscape fabric can completely control such as bluegrasses and yellow nutsedge. —

Julie A. Evans

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Irrigation News

EFFECTIVE WATER CONSERVATION IN HOME LANDSCAPES

BECAUSE DRIP AND MICRO spray irrigation water products were first used in the ag market where water is scarce or expensive, people in general have come to consider these irrigation products as water conservation tools only.

But as municipalities' water supplies became threatened by continuing drought (and sobered by paying rapidly increasing prices for their water), cities began searching for ways to reduce water consumption while still maintaining their parks, median strips and the like. So, too, did businesses and homeowners as they became the subject of bans restricting normal water usage.

The necessity to conserve water opened the door for irrigation product manufacturers to introduce many drip and micro spray installations.

While the landscape market was identified as a new, emerging market for these irrigation products, supplies were marketed through turf distributors and sold to contractors without providing the training



Emitters and bubbler systems operate best for five to seven minutes, two or three times a day, depending on regional factors.

needed most by end-users.

Consequently, the industry's results in the landscape arena have been mediocre.

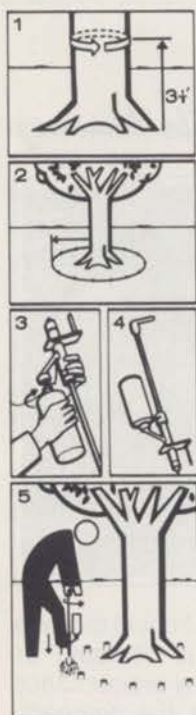
Generally, people assume that applying water slowly to their plants is the best way to irrigate. And that's acceptable if they are using sprinklers or sprays to cover the entire area being watered. But that's not

the best way to irrigate when using emitters or bubblers because these tools deliver water to a specific location or plant.

Emitters and bubblers must deliver water in volume from 5 to 20 gallons per hour in order to spread the water effectively around the plant. As the water stops its lateral movement, the system should be turned off. Lack of lateral movement indicates the water is penetrating the soil around the plant.

So, instead of continuous watering, emitters and bubbler systems operate best for five to seven minutes, two or three times a day, depending on climatic conditions and the types of plants being watered.

More plants and shrubs are killed by overwatering than by underwatering. It is important, therefore, to know how much water your plants will consume daily based on climatic and regional factors. This information is easily obtained from a local soil conservation office or from gardening books. — *Pepco Water Conservation* ■



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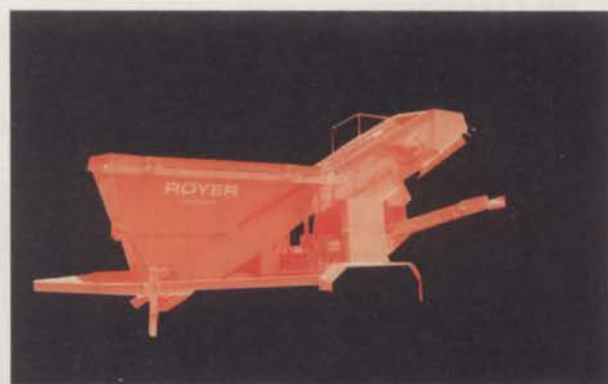
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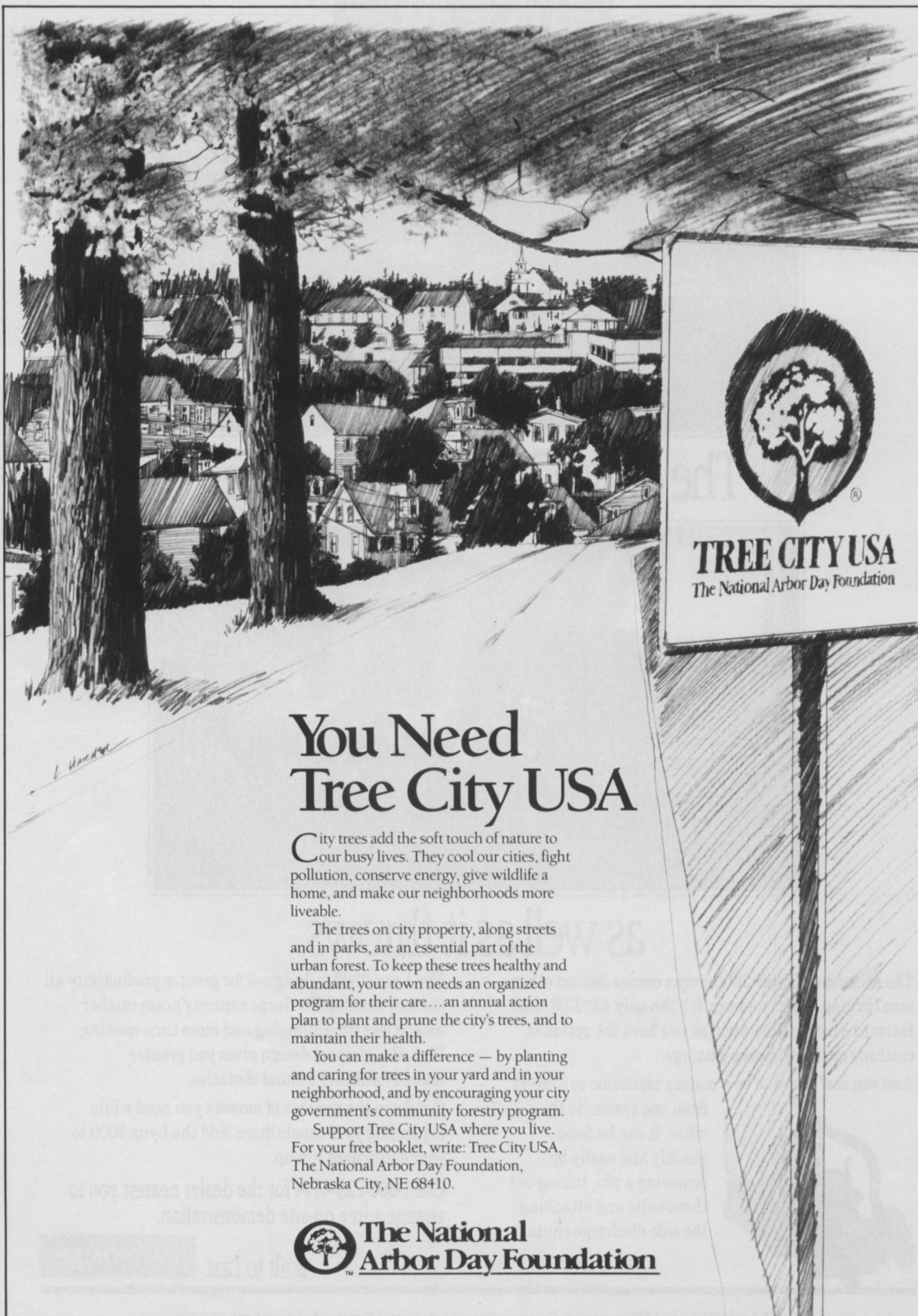
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FOCUS ON:
TREES & ORNAMENTALS

TREE CARE SAFETY: TRAINING MEANS EVERYTHING

*Accident prevention requires
a commitment to safety through communications,
training and corporate vision.*

By Julie A. Evans

SAFETY IS CRITICAL to Barry Smith. As vice president of Arboguard, Avondale Estates, Ga., Smith understands how detrimental accidents can be to employee morale and the financial bottom line. Lucky for Smith, his company's philosophy backs safety 100 percent and rewards employees with financial and other morale-boosting incentives.

For companies engaged in tree care, safety should be first on the list of priorities. Lack of a defined safety program can cripple a company and damage the industry as a whole.

Smith said many accidents happen when companies — usually smaller ones — under pressure to finish a job, place too much demand on unqualified personnel. "Tree care requires a person who is technically oriented. He must have engineering ability to remove trees safely and operate large equipment. In a lot of firms, employees are asked to know a lot and do a lot. That's why training is so important."

Despite the best laid plans, accidents happen. Back sprains and strains, lacerations and contusions are among the more commonly reported injuries.

"Back injury is the loss leader," according to Peter Gerstenberger, director of safety and education for the National Arborist Association, Amherst, N.H. "Back injuries cost the most in terms of money and lost time."

Gerstenberger said there's also been an alarming rise in the number of chipper incidences. The problem exists primarily with the operator and not with the equipment, he said.

In Ohio, injury statistics are tabulated by the Bureau of Workers'



Injuries can be avoided if proper steps are taken. Photo: Mickey Jones

Compensation for ornamental shrub and tree services. These statistics provide a fairly representative sample for the industry as a whole. (No equivalent national statistics are available.)

According to these figures, sprains and strains accounted for 35.8 percent of all injuries in Ohio in 1990. Lacerations and punctures were second, comprising 16.8 percent of the total; followed by fractures, 12.9 percent; and contusions, 8.2 percent.

As for the type of accident or exposure, overexertion topped the list at 24.4 percent of all injuries. Also high on the list were accidents caused by flying or falling objects, 24 percent; and falling from a different level, 12.2 percent.

Overall, 279 injuries were reported, accounting for 5,557 lost days or an average of 19.9 lost days per injury. Only one fatality was reported.

Most landscape and tree care firms agree that safety starts with management. "Management has to be committed to a safe company," said Ed Johnson, vice president of The Davey Tree Expert Co., Kent, Ohio. "If it doesn't start there, you're going to have a tough time getting safety programs initiated."

Peter Becker, Mideast division manager of the F.A. Bartlett Tree Expert Co., Stamford, Conn., stressed communications between upper management and supervisors. "Leadership in safety must result from corporate management and filter down to local management and supervisors," he said. "Most of our safety programs incorporate input from production people, because they're the people who are really faced with the problems."



Safety pays big benefits: Lower insurance rates, fewer workers' compensation claims and reduced lost-time accidents are among the financial incentives to provide a safe work environment.

"Safety has to be foremost for any reputable company," said Allen Butler, president of Wye Tree Experts and Wye Tree Landscape Inc., Wye Mills, Md. "It's like coming into work and getting your first cup of coffee. It's constantly on your mind. Every morning we go over the jobs, determine what's involved, and see that they're performed not only profitably but as safely and efficiently as possible."

COMMUNICATIONS. Fearlessness is the greatest danger, according to Butler. "You have to keep your people constantly aware. We always remind our employees of safety through meetings. If something happens, we discuss how it could have been prevented."

Meetings are a vital part of any safety program. Davey Tree holds weekly safety meetings on various topics. A quarterly meeting is also

held, usually away from the company. Discussions include a review of recent accidents and potential accidents and how they can be avoided.

"The key to safety is learning from others' mistakes," Johnson said. "Prevention is the only way to avoid accidents."

Bartlett holds weekly 10-minute "tailgate" meetings, usually designed around an NAA program. Longer meetings are held every two months, led by the office safety coordinator.

To assure that all levels of employees get involved in safety, each division has a safety and training coordinator. Also, each office of approximately seven employees has a local safety coordinator and a pesticide coordinator. These appointed members of the production crew conduct meetings and are responsible for safety enforcement.

James Murphy, president of James R. Murphy Landscaping and Tree Service, Newark, Ohio, also calls frequent safety meetings. "Regularly we have a safety meeting which may cover any-

thing," he said. "Really, we don't have to look past our own workplace for topics. There are obvious dangers to our work, between climbing, equipment and proximity of danger areas."

Murphy said that constant reminders are important, especially with younger workers. "Younger workers don't listen as much to safety warnings. Young guys need to be dictated to and shown that they have to adhere to what the company deems safe."

"A lot of people my age wish we had been more interested in ear, eye and back protection when we were younger," he said.

SETTING THE STANDARD. The American National Standard for tree care operations (ANSI Z133.1) is recognized by the Occupational Safety and Health Administration as the safety standard for the industry, according to NAA's Gerstenberger.

ANSI Z133.1 covers pruning, trimming, repairing, maintaining and removing trees and cutting brush. Since its inception, the standard has been revised to ac-

Tree safety is crucial at all times. (Photo courtesy of Swingle Tree.)

count for new and refined techniques.

One area that the standard does not cover in great detail is pesticide application. Gerstenberger said that safety requirements for chemical applications are more controlled from outside the industry, via certification and licensing requirements.

Jim Kelley, president of Cambridge Landscape Co., Cambridge, Mass., said his company adheres to directions on the label and general pesticide principles.

Bartlett's Becker said pesticide-related safety meetings concern handling, mixing, equipment usage, proper spraying and chemical trespassing, among others. Mock demonstrations of spill containment are conducted. The spray foreman helps out with training.

REINFORCEMENTS. Tree care safety requires ongoing education, for both new and veteran employees. At Arboguard, employees are reimbursed upon completion of optional courses. The company

also brings in speakers every quarter to discuss equipment safety, new techniques in tree removal and other topics.

To back up the company's stance on education, the company sponsors a quarterly awards program. Operators with zero accidents and good attendance qualify for a quarterly bonus of up to \$150 dollars. They are then eligible for an annual \$500 award, which they automatically win if they receive every quarterly award.

Accidents are serious business to Arborguard. According to Smith, "Any time we have any type of minor accident, even if no one was hurt, they have to come in at the end of the day and fill out an accident investigation, re-

view it with the supervisor; then the person directly involved in the accident has to discuss it with the operations manager, who then brings it up with all employees."

Smith gives credence to the saying, 'you can't teach an old dog new tricks.' "We only hire people with no experience. That is our best motivator. You don't have to worry about teaching old tricks because everything they learn is new."

Awards are also a component of Bartlett's safety program. Awards are given to safe employees on a quarterly and yearly basis. "Everyone's objective is zero accidents but that's not always a reasonable goal," Becker said.

At Davey Tree, the philosophy

is not to discipline workers, but to train them. A regional trainer visits crews on their job sites and observes their performance. Sometimes the trainer videotapes them and points out any unsafe acts at the next quarterly meeting.

From a management standpoint, lower accident rates translate into financial savings. In Massachusetts, for example, Cambridge Landscape saves money on its insurance rates due to its solid safety record. Companies with tarnished safety records pay much higher rates.

TROUBLE-SHOOTING. The number of chipper-related accidents has increased at a disturbing rate, according to Gerstenberger.

"In every case of chipper injury or fatality, the cause is gross employee negligence. We've been preaching that operators have to pay more attention to these machines," he said.

Gerstenberger blames the rise in accidents on lack of proper training. "The typical scenario is the operator has very little experience on the machine at the time of the accident. These accidents occur more often in small companies on the outskirts of the industry. There have been no fatalities among NAA members," he added.

The golden rule of chipper operation, he said, is any part of the operators body should never break the plane of the rear of the

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people look better in personal protective equipment, they'll be more inclined to wear it.

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infeed chute. "Never stick a hand inside; never stick a head inside."

The chipper rollers can pull an "incredible amount of weight," Gerstenberger said. "It takes a large size limb to activate the machine. Small brush won't go through. So operators reach in, sometimes they get their arms, feet and limbs caught."

To circumvent the problem, he said, stop the rollers with the stop reverse lever, place small brush on top of the larger brush, then start the rollers again. The larger brush carries the smaller brush and feeds it to the machine.

The only other option, he said, is to bring a garbage can to the site and carry away the small brush. "But ideally, you want everything to go through the chipper."

Chain saw operation is another high accident area, and kickback is a major culprit. "If the operator is running the saw with one hand, there is a greater chance of injury," Gerstenberger said. "It's unnecessary to ever run a saw with one hand."

He added that saw operators and owners should never discon-

PROPER ATTIRE FOR SAFETY

PROPER CLOTHING plays a large role in accident prevention. Avoid loose, floppy clothing, ragged gloves or worn-out shoes. Tree-trimming clothing gear should include high-top leather shoes with composition soles and heels, a long-sleeved sweat-shirt or close-fitting jacket, a cap and soft leather gauntlet gloves.

For spot trimming, workers can wear rubber boots in place of composition-soled shoes. On overalls or regular work trousers, the cuff area of the pant legs should be wrapped around the ankles and tied. Long-sleeved shirts or proper coats provide arm protection. Tree-trimming workers should always wear personal protective equipment while trimming trees. Approved hard hats and eye protection (ANSI Z87.1-1989) should be worn by workers engaged in tree-trimming. — *National Safety Council*



Dress smart for safety.

nect or get rid of any kickback protection devices on the saw, including the chain brake or low kickback chain. Small saws should have a minimum of three kickback mitigation devices. Larger saws should have a minimum of two.

Another problem area is the chain brake. "Some operators use the chain brake like a parking brake," he said. "They don't realize that they're placing wear on that brake or running it so long that the chain brake just wears out like brakes on a car."

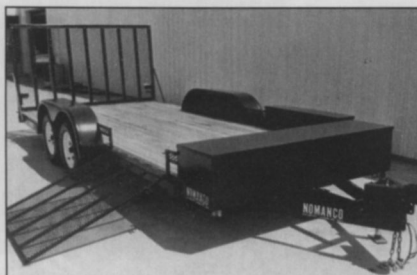
HELP IS AVAILABLE. Videotapes and other training materials are available to the industry. The NAA is developing a back prevention program that includes an awareness video, written support materials, warmup exercises and lifting techniques.

The association is also starting an insurance program for its members. For details, contact NAA, The Meeting Place Mall, Route 101, P.O. Box 1094, Amherst, NH 03031-1094; 603/673-3311.

Non-NAA members can turn to the National Safety Council for tree trimming safety tips. Contact NSC, 444 North Michigan Ave., Chicago, IL 60611-3991; 312/527-4800.

For landscape contracting firms with Spanish-speaking personnel, the Inter-American Safety Council offers accident prevention/loss control awareness literature. Contact IASC, 33 Park Place, Englewood, NJ 07631; 201/871-0004. ■

The author is Associate Editor of Lawn & Landscape Maintenance magazine.



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FOCUS ON:
TREES & ORNAMENTALS

TREE PRUNING ESSENTIALS

Misconceptions abound about proper tree pruning, but with some basic ground rules, necessary pruning will result in healthier plants.

By Trevor Vidic, M.S.



Whether pruning bushes or trees, a contractor should have a specific goal in mind before pruning begins. Photo: Swingle Tree Co.

PROPER PRUNING improves the health, landscape effect and value of trees. Pruning is primarily a matter of common sense once the objectives have been determined and a few basic principles are understood.

Because pruning permanently alters the direction of tree growth, the first rule in pruning is, "Do not cut without a reason." Health, sanitation and safety are good reasons to prune because:

- Dead, diseased or insect-infested branches are removed.
- It allows for greater penetration of light and air to inhibit diseases that develop in low-light and high-humidity conditions.
- The overall size of a tree that has overgrown other plants, walkways and buildings is reduced.
- Dead, split and broken branches are removed because they are a hazard to people and property.
- Exceptionally long and heavy branches are shortened while low branches over roads, sidewalks and other traffic areas are raised.
- Branches interfering with utility wires are removed.
- It corrects or helps reduce storm damage.

Remember, removing live limbs is a dwarfing process. Pruning live branches may stimulate growth in nearby parts, but the invigorating effect of this practice should be evident for only one or two growing seasons.

A common misconception is that repeated pruning of live branches will eventually result in a larger tree. The heavily pruned tree will always be smaller than a tree allowed normal, annual growth. Fertilization, watering, pest control and other cultural practices, in addition to any necessary pruning, are the best methods for developing a large, healthy shade tree.

TREE BIOLOGY. A basic principle of pruning is that removal of any living wood affects future tree growth. Each spring, a tree begins growth from its twigs' terminal buds. An indication of a tree's growth rate is the distance be-

tween bud scale scars — the point where a previous terminal bud began growing.

Ordinarily, spring growth will be most vigorous from the terminal bud. Along the length of the twig there may be none, a few or several lateral buds. Some or none of these lateral buds will open and develop new twigs as another season begins. Any pruning greatly influences the lateral buds' growth potential.

An auxin, a type of hormone produced in the terminal bud of a central leader, or main side branch, suppresses growth farther down on the leader or on a side branch. This principle is called apical dominance. When the terminal bud is removed by pruning or damaged by weather extremes, insects or disease, that branch's apical dominance is altered. As a result, a lateral bud or branch naturally takes over and becomes dominant.

The principle of apical dominance can be used to an advantage in pruning and training, especially of young trees. By cutting back the central leader, or main side branch, growth can be stimulated farther back and the tree canopy can be thickened. New growth can be forced into a too-sparse portion of the tree canopy. By removing or shortening one of two competing laterals, you can restore the dominance of the other, which then becomes the leader branch.

The tree's growth habit is determined by the control that terminal and lateral buds have over one another. In a tree whose terminal buds have strong control over lateral buds, a straight trunk with a central leader will develop. If the lateral buds have strong control over the terminal buds, then a rounded, spreading crown will develop.

Future crotch formation, strength, growth direction and density can be influenced by removal of branches, twigs or individual buds. Directional pruning is especially useful for filling

(continued on page 32)

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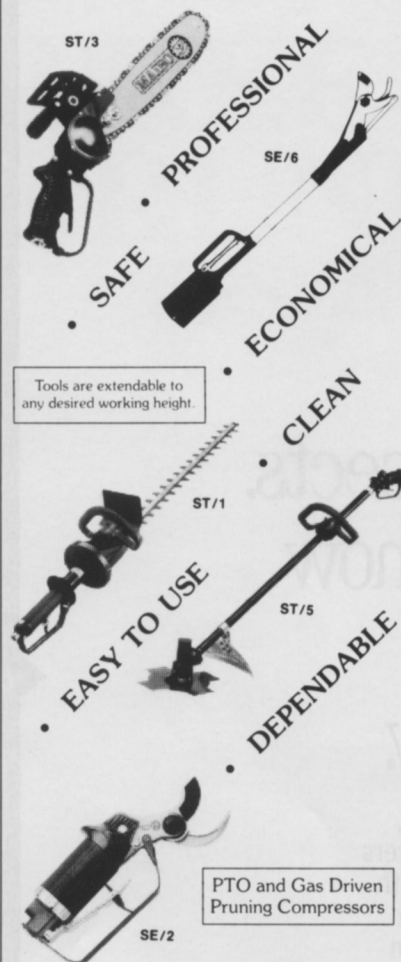
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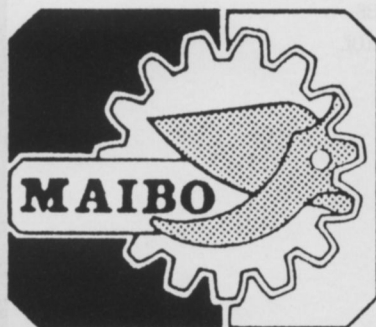
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Tree Pruning

(continued from page 30)

openings in the canopy caused by storm damage. To encourage more upright growth, remove horizontal or spreading branches, twigs or buds. To promote a spreading growth habit, remove the lateral or upright branches, twigs or buds.

The strength of the branch structure is dependent upon the limb angles and spacing. Branches that are to be part of the permanent branch structure should be selected for structural integrity. Scaffold branches (the main branches attached to the trunk) should be well-spaced both vertically and radially.

The angle of branch attachment is also important for the major scaffold branches. A wide angle of attachment that forms a U-shaped crotch has more structural strength than a V-shaped crotch. A branch with a narrow angle of attachment is more likely to split at the crotch, and it should be removed or cabled. Removal should take place at an early age to reduce the size of the wound.

A general practice associated with transplanting, especially bare-root trees, is to remove about one-third of the branches from the canopy at the time of planting. This was thought to restore the root-to-shoot ratio that was disturbed when roots were severed during removal from the nursery. Research has proved that this practice is not necessary. Only broken, crossing or rubbing branches should be pruned when transplanting a tree.

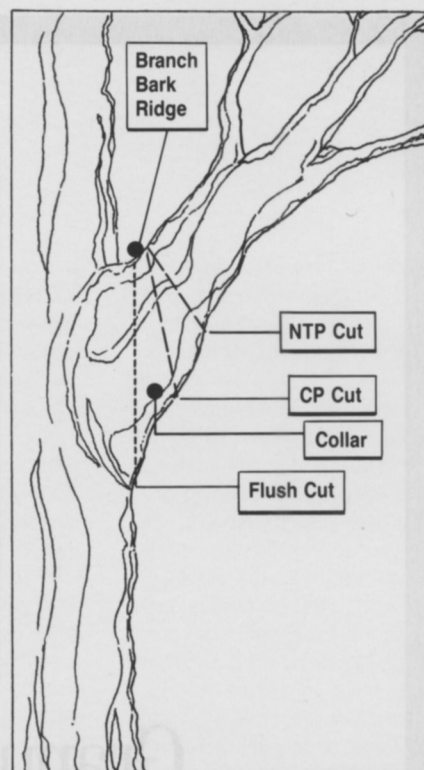
Trees have an effective, built-in ability to protect themselves from wood decay fungi. Improper pruning can impair this ability and lead to decay of the trunk heartwood and sapwood. Remember that even a correctly made pruning cut is a wound. Your objective should be to minimize the extent of that wound so the tree can recover with no permanent injury, or as little damage as possible.

TREE VIGOR. Even though the trunk and the branch have the same ultimate function — to provide structural support for the vascular system — they develop as separate structures.

As the buds open and the leaves develop, the cambium grows and begins to function from the tips of the twigs downward. A new sheath of vascular tissue travels down the branch until it meets the trunk. At this point, the tissues turn abruptly downward and bunch together below the branch. This forms the branch collar. This tissue continues to develop downward along the trunk to the roots.

As branch tissue development slows, the vascular tissues of the trunk increase their growth rate. The trunk tissues grow over the branch collar and form the trunk collar. The "collar" or "shoulder" where branches meet the stem is actually made up of these two collars that develop every year, one on top of the other. For simplicity, the end result is called the *branch collar*.

This layering effect, year after year, gives a branch its strength as well as gives the collar



Arborists and contractors need to choose the best cut for the job at hand.

its ability to prevent trunk decay and to close pruning cuts. The branch and trunk tissues develop and function as separate structures.

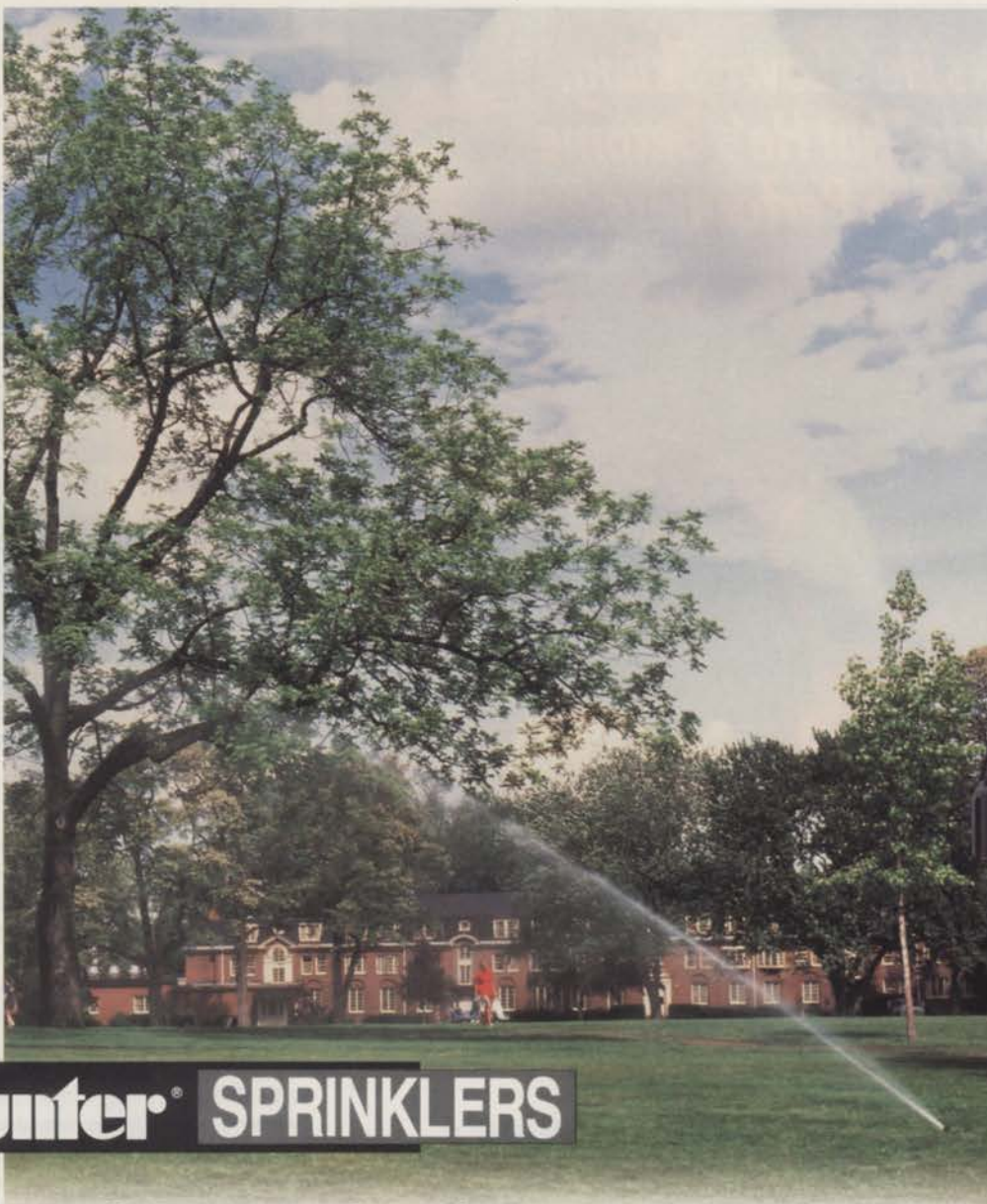
A barrier around the branch tissue inhibits decay from moving into the trunk tissue. If a proper pruning cut is made, only branch tissue is injured. Decay of the branch tissue within the collar will stop when it reaches the barrier separating it from trunk tissue. The wound will close as the trunk woundwood tissue grows and slides over the cut surface of the branch.

Collar injury can lead to a multitude of problems: decayed wood, frost and sun cracks, cankers, energy depletion due to the compartmentalization process and borer infestations. Many of these problems, and more, begin when young trees are improperly pruned. Improper pruning immediately shortens the tree's life span and increases its potential maintenance costs.

Many times what we think is a branch is actually a codominant stem — a forking of trunk tissue. Each codominant stem is connected to 50 percent of the trunk below it, and each is usually about the same size. Because there is no distinction between trunk and branch tissue, there is no branch collar or trunk collar at the base of each stem. There is a bark ridge in the crotch between the stems, just as there would be with a true branch, but that is the only similarity.

MAKING THE CUT. Once the branch collar and the adjacent branch bark ridge are located, it is easy to determine the proper angle of the pruning cut. In natural target pruning (NTP), cuts are made close to but beyond the branch

(continued on page 34)



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Tree Pruning

(continued from page 32)

bark ridge and the branch collar. The NTP cut does not expose trunk tissue, and reduces the possibility of decay.

However, recent work by Dan Neely of the Illinois Natural History Survey showed that conventional pruning (CP) cuts promote quicker woundwood response and are more aesthetically appealing. CP cuts are also made outside of the branch bark ridge, but usually come down through the middle or outer one-third of the collar.

When done with a chain saw, NTP cuts tend to be on the upstroke, where CP cuts are usually down-stroked. Flush cuts are not recommended; they are unnecessarily large and expose the trunk tissue to the possibility of decay.



A woodwound cut will resemble this photo.

NTP or "shigo" cuts minimize initial wound size and leave branch collars at branch/stem junctions intact. NTP cuts are thought to retain the chemical barrier zone in the collar area and confine infectious and subsequent decay to branch tissues. However, Neely has shown that CP cuts close more rapidly and seal off sapwood to invasive organisms sooner than NTP cuts, despite a larger initial wound surface area.

Risk of trunk injury is perceived to be less with NTP cuts, along with less initial wound surface exposure. Slower woundwood development over NTP cuts, however, may leave wounds open to microorganism colonization for a longer period before the woundwood completely seals off the exposed sapwood. This is an interesting divergence of modern arboricultural theory with no "right" or "wrong" answers.

Which of these two pruning methods is used is probably not as important as which and what size branches are cut. Although NTP and CP cuts have advantages and disadvantages, either practice is more desirable than the decay-inducing flush cut. Flush cuts and branch stubs are unhealthy for trees. The relative importance of quick woundwood response and trunk decay resulting from violating collars, as opposed to the less aesthetically pleasing NTP cuts, must be evaluated every time a pruner removes any branch from any tree species. A proper cut will result in a woundwood response resembling a "doughnut" or a complete ring of lignified wood.

Arboricultural researchers are only now beginning to compile short lists of trees with comparative data regarding species-by-species responses to an array of inflicted wounds, including branch removals.

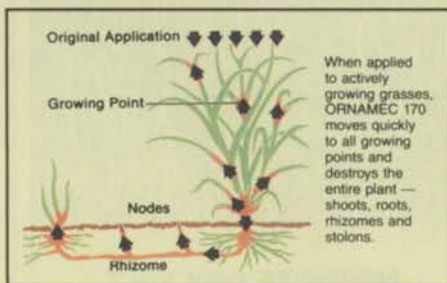
(continued on page 36)





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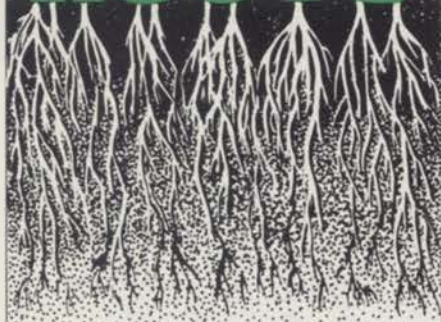
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This tree shows evidence of improper pruning cuts.

Tree Pruning

(continued from page 34)

A branch should be removed without tearing the bark down the trunk from the lower edge of the saw cut. To avoid this, especially when removing large limbs, a cut is made about one-third of the way through the limb on the underside a foot or two out from the trunk. A second cut is then made on the top of the limb a few inches farther out from the first cut.

As the top cut is deepened, the weight of the limb breaks the wood fibers back to the undercut before the top cut goes completely through the limb. By means of these two preliminary cuts, most of the weight of the limb is removed. The procedure is completed by removing the stub with a final cut as previously described.

As the final cut is made, the weight of the stub can be supported by hand, or by rope if the limb is heavy. A heavy branch may also require a slight undercut in the same plane as the final cut to prevent tearing of the bark. If the angle of branch attachment is too tight to allow a downward cutting stroke of the final cut, then the entire cut may have to be accomplished with an upstroke of the chain saw or speed saw. The weight of the stub will have to be supported to avoid binding the saw.

Avoid pruning a tree early in the growing season when buds are breaking and new leaves are expanding. New vascular tissues will be moving down branches and stems. The bark will "slip" easily and the cambium will be vulnerable to tearing damage. Dead branches can be removed any time of year.

Drop-crotch pruning is the practice of reducing the height of a tree or branch by pruning the terminal to a large lateral branch. The lateral to which a branch or trunk is cut should be at least one-third the diameter of the stem being cut. The angle of the cut should be roughly parallel to the direction of the remaining lateral branch so that the wound is in line with the sap flow to and from the remaining lateral.

Do not cut through the branch bark ridge.

Some degree of internal decay should be expected since the cut will not be made in conjunction with a branch collar. The idea is to minimize the time it will take the tree to close the wound.

Drop-crotch pruning is not to be confused with topping, which is a severe and disfiguring practice. Topping is the indiscriminate cutting of branches and trunks without regard to location of lateral branches. The remaining stubs produce excessive watersprout growth, causing a topped tree to grow back to its original height faster and more densely than a properly pruned tree. The stubs decay and the wound may never close.

Research has shown that wound dressing paints do not prevent decay or promote wound closure when compared to unpainted wounds. However, treatment of pruning cuts with a wound dressing is required where open wounds in certain trees may attract insects that carry disease. The beetles that carry Dutch elm disease and oak wilt, for example, are attracted to fresh wounds.

Pruning principles are much the same whether the trees are large or small. They are the same whether the trees are growing on a lawn along the street or on the grounds of an industrial plant. However, the extent of the pruning to be done on any operation depends on the economics involved and the agreement made with the property owner. ■

The author is an ecologist with The Davey Institute of the Kent, Ohio-based The Davey Tree Expert Co.

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USE READER SERVICE #54

REEL MOWING:

STILL A HIGH-END SPECIALTY?

While not the first choice of landscape contractors, reel mowers are regaining favor on some properties where a short cut is required.

By Bob Gitlin

ALTHOUGH GOLF course superintendents still live and die by the reel mower, commercial grass cutters still rely almost exclusively on rotary mowers. Exceptions to the rule are luxurious residential "show" lawns of creeping bentgrass, usually in the North, and bermuda and zoysiagrasses in the South.

Why? Because reel mowing — though it produces that fine crisp short cut demanded of putting greens, tees, fairways (to differing degrees) and elegant carpet-like lawns of wealthier homeowners — is just too time-consuming and labor-intensive to make it an economical proposition for maintenance contractors.

The grasscycling trend has been responsible for some increase in the use of reel mowers, but rotary mowers with their mulching plates and sharp blades provide nearly the same effect.

There is a slight upswing in use of reel mowers, according to

representatives with American Lawn Mower Co./Great States Corp., located in Shelbyville, Ind., but the 135 percent increase the company reported having taken place in its retail sales since 1985 is largely among homeowners, not professionals.

Indeed, in many areas of the country, homeowners who do their own yard work would prefer to get some exercise pushing the new lighter-weight push mowers, which leave a fine mulch as well as eliminate noise and air pollution.

REEL SATISFACTION. An exception to the rotary rule may turn into something interesting in time. David McCleery's one-man Eco-Lawn, Lincoln, Neb., services a clientele largely of university and public school teachers (including four biologists). McCleery's mower of choice is the push reel. He's mowing 30 lawns now, the old-fashioned way.

"I started this business using power mowers. My body took abuse, not just vibrations but hearing. The push reel is quiet. There's not all that stress," he said.

He hones his three reel mowers weekly. He supplements with a rotary mower and power weed whip for trim areas (the rotary is a must for late-season calls involving tall grass cuts). Despite what rotary proponents say, reels are not hard to maintain, he said.

A quarter of McCleery's lawns are zoysia installations (good at keeping out weeds), the rest fescues and other taller grasses, for which he still uses reels. Very few of his customers are wealthy residents with carpet, short grasses.

He uses a bicycle and cart to move his mowers from job to job. His 16-inch mowers (five blade) bang around, tied with bungee cord, with no ill effects. It takes him longer in pre-cleaning to prepare lawns for reel mowing, of course, but he said his low overhead enables him to charge a rate like that of the standard lawn care professional using rotary mowers.

To supplement his almost exclusively residential cutting business, he sells single-reel push mowers through a local wholesale store. He sold 35 last year.

But no commensurate increase in interest has occurred among the general mass of commercial or residential landscapers. Especially not the commercial sector.

COMMERCIAL TRUTHS. "The reel mower was displaced 80 percent to 90 percent in the last decade because of its maintenance requirements," said Bill Kinzer, product manager at Jacobsen Manufacturing, Division of Textron, Racine, Wis., which sells lots of reel mowers to golf course superintendents, but very few to commercial contractors.

Despite some claims that maintenance is a sporadic and simple affair, Kinzer said, upkeep on reels for industrial use is a bit more complicated, and therein lies the reliance of the lawn and landscape maintenance industry on rotary.

"Anybody can take a crescent wrench and take a blade off the reel mower and replace it, or (after you've done it a few times) probably sharpen it properly on a grinder, then put it back on," Kinzer said. "The problem with a reel mower is not just the adjustment, but keeping the front face of the bed knife and reel edge sharp, so it's like a pair of scissors that shears the grass."

Kinzer insists that proper reel usage entails keeping a distance of two thousandths of an inch between bed knife and reel edge, to be able to cut the grass properly.

"The old Worthington gang mowers" — the industry standard workhorse reel — is still a common mower type seen out on golf courses, many athletic fields and very spacious high-end residential properties.

"That's the basic 30-inch mower either mounted on a tractor (most manufacturers have a means to mount it that way) or in pull gangs. That size reel mower is used by a population in the U.S. that is well into the hundred thousands," Kinzer said.

Dennis Brown, marketing services manager in the commercial products division of The Toro Co., Minneapolis, said his firm's three-reel mower is used on golf courses but also on sports fields and industrial complexes with formal or nice lawns.

Though in some markets, particularly on the West Coast, consumer demand has resulted in increased use of single reel mowers, that is a homeowner phenomenon almost exclusively; and no such upswing is taking place with multiple-reel mowing in the lawn and landscape business aside from golf courses, he said.





Reel mowers are seeing increased use in some Southern locations, but contractors said the mowers still see limited use in the commercial mowing business. Photo: Jacobsen

Some say the yard waste issue has made reel mowing more desirable. Even manufacturers of reel mowers argue, however, that the rotaries manufactured today are recycling and mulching just as well as the reels.

"The reel mower cuts off little short blades of grass," Brown said, "but so does our recycler or mulching rotary mower."

Reel mowers are used more in the South than in the North because warmer-season grasses need to be cut shorter. In addition, gang mowers are put on frames and pulled behind the turf tractor on large acreages such as golf courses and sod fields, but generally not smaller areas.

"In a school situation or sports field I probably wouldn't gang reel; it's not too efficient, unless they've got one heck of a big complex and can get in and out," Brown said. "It's very labor-intensive to hook up the reels, come in, make one or two passes,

then move back out again. They'd be better off with a regular golf course type piece of equipment or reel mower — either a triplex cutting 81 to 84 inches or light-weight fiveplex cutting 11 feet that folds up into less than 6 feet — so they can drive it in and out of their openings, maybe take it to another facility even, use it in multiple facilities.

"But most well-maintained schools and sports grounds could be cut with some of the newer rotary mowers as well."

SALES STRATEGIES. The objectives of the golf course superintendent differ markedly from those of the commercial cutter, Brown said.

"The golf course superintendent knows that he needs to grow healthy turf, and a reel mower is more delicate on the grass blade, meaning scissors-cut action vs. impact cutting," he said. "Its width of cut is such that it follows

the undulations of the ground or turf areas more evenly. Their budgets would allow them to afford that, because that quality of cut or playability of the course was their most important objective.

"The commercial cutter, who

Today's rotary mowers are recycling and mulching as well as the reels.

came about some time later, only has one thing in mind, and that's to get in and get out. He's usually cutting at a higher height, because of the type of facilities that he's working on, or grounds. It's not so manicured, level, smooth and uniform. He's got more hills, more terrain, more trimming."

The commercial cutter's different requirements include

needing one mower he can use for the disparate needs of customers. He can't easily haul around several different types of reel mowers, when it makes more economic sense to have a few rugged rotary mowers in the trailer and workhorse them as needed.

END-USER REACTION. Commercial and residential maintenance contractors bear out manufacturer feedback for the most part.

"We're using strictly rotary mowers for ease of maintenance of the equipment," said Kurt Kluznik, president of Yardmaster, Painesville, Ohio. "We find that by sharpening the blades daily on the rotary mowers, we're getting nice cuts. I've seen some old-fashioned landscapers around the Cleveland area using reel mowers on residential sites, but not much. For bent lawns you have to use a reel. A rotary won't cut it short enough. But you can't be using a reel where you have weeds. It's



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USE READER SERVICE #15

got to be a real level lawn. It's a beautiful cut, but very high maintenance equipment."

David Dorward, president/CEO at Cagwin & Dorward, Novato, Calif., said his guys haven't used a reel in years. "First of all, maintenance is horrendous. It's not what I would call a high production machine. And most of the grasses we cut are cool-season grasses such as Kentucky blue, and they're coarser and require mowing at a taller height; we're mowing at 1½ to 2 inches."

Wayne Richards, head of landscape maintenance at Cagwin & Dorward, said he hasn't experienced a noticeable increase in the use of reel mowers, although the reel's role in reducing yard waste is not without merit.

"But some new midsize, walk-behind rotaries out there now are doing a pretty good job grasscycling," he said. "Because of the higher maintenance on reel mowers and the fact that the blades get out of whack hitting rocks or debris, we found we're better off going with rotaries."

Chem-Turf, a Norcross, Ga., full-service contractor maintaining mostly commercial accounts, owns five reel mowers out of a total mower arsenal of about 100. The reel mowers (Tru-Cuts) are used on "show properties," and sparingly because of their high maintenance cost, according to Bill Russell, president. His crews use the reel mower also for "scalping" of warm season turf in early spring.

In Southern rainy seasons, clippings can mount up pretty high. Here's where reel mowing becomes a disadvantage, he said, because it's slow. "Unless it's a high specialty turf and they're demanding it, we stay away from it. It does give a better cut, but I just don't see a shift to the reel mower, especially in a large company like ours."

"If a rotary mower is maintained properly," said Frank Mariani, owner of Mariani Landscape in Lake Bluff, Ill., "you can get nearly the same quality with half the headaches and expense. We do have a couple of bent lawns and have installed a few greens on some estates we maintain; for those we use a reel mower. We have no choice."

Aside from rich people's lawns, another area where reel mowers are used is resort locations. Dale

Elkins, vice president of ISS Landscape Management Services, Tampa, said his crews use them on high-maintenance bermudagrasses at the Dolphin resort at Walt Disney World and at Grand Cypress Resort in Orlando.

"Those are the only Florida jobs where we use the reel. Bermudagrass performs best at a very low height. Only the reel makes those clean crisp cuts," he said.

REEL MAINTENANCE. Maintenance is an art, no question about it. Scott Zakany, vice president of golf services in the golf course division of ISS Landscape Management Services, tells how it's done:

"Greens mowers are backlapped and adjusted on a daily basis when we come in from mowing. Sometimes it means lap them for 15, 20 minutes, sometimes just a couple seconds to get a sharp edge, adjust it, get it set right and be ready to go the next morning."

"Some of the other units, the tee mowers, might get adjusted weekly. And then we have our fairway mowers and rough mowers. We'll go and check those pretty much on a weekly basis, and probably lap or grind them monthly during our growing season."

"We use only one reel mower," said Robert Jones, director of landscape services for The Landmarks Group, a developer of high-rise buildings in Atlanta. The commercial nature of Jones' accounts helps explain this.

"You see a lot more relaxation on the commercial end," he said. "You get into residential, that's a different story. We do a few residences, that's where we use the reel mower, for zoysias and bermudagrass. You charge them more across the board. It's more of a high-profile area you're working with. They expect very stringent results."

As long as rotary mowers keep improving, Jones said, he is even more inclined to see no reason for commercial cutters to abandon that bread-and-butter tool. Rugedness, he said, is a huge advantage of the rotaries, which are relatively impervious to rocks, bumps and twigs, which cause problems with the more finicky and sensitive reel units.

"As far as the commercial end," he said, "there's really no practical application there." ■

The author is a free-lance writer based in Shaker Heights, Ohio.

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USE READER SERVICE #68

CHIPPING AWAY AT LANDSCAPE WASTES

Landscapers in search of horticultural waste-reduction equipment will find a plethora of product offerings. Defining needs to meet results is the first step.

By Julie A. Evans

AS MORE OF the nation's landfills reach capacity, the landscape industry has been presented with a pressing yard-waste disposal dilemma. In response, many landscapers have chosen to reduce and reuse their landscape wastes via equipment such as chippers, chipper/shredders and industrial grinders.

Demand for these products "has been steadily increasing," said Jerry Morey, marketing manager for Bandit Industries, Remus, Mich. "There's been a tremendous increase in demand over the last three years as more states pass laws requiring yard waste and woody vegetation be excluded from the landfill."

Morey said that some states, such as those in New England, have priced yard waste out of the landfill. "They've raised landfill fees to the point where they can't afford to tip there."

As the name suggests, chippers chip tree limbs and heavy brush. Larger branches are ingested through the hopper and chopped up by blades mounted on a rotating wheel. Chipper/shredders have an additional feature; with hammers that swing on a shaft, the units shred brush and soft wood waste into mulch.

Industrial grinders crush tree limbs, grass, leaves and other yard wastes into ornamental mulch. In-

dustrial grinders vary in size and can be competitive in price to some chipper/shredders, according to Steve Egeland, president of Haybuster Manufacturing, Jamestown, N.D.

Egeland said tub grinders promote a uniform mulch because all materials must pass through a screen prior to discharge. Many landscapers further process the grindings into compost.

Prior to purchasing new equipment, landscape contractors need to define their needs. How much are they willing to invest? What types of yard waste — grass clippings, small or large brush, large limbs, etc. — do they want to process? Do they want to produce wood chips, finer-ground mulch or compost?

"Buy a little more than you need," advised Tim Gilbert, spokesman for Tornado Products, Germantown, Wis. A landscape firm with 25 clients and prospects for growth, for example, should select a chipper/shredder that processes higher volume waste than currently required.

Also take into consideration crew efficiency, Gilbert said. "You don't want to find yourself in a situation where you're underpowered; you want a machine that works as efficiently as your crew works."

Morey noted that the needs of

landscape contractors have become more demanding.

"Traditionally, the (landscape) market has used less costly and lightweight units," he said. "Now they're looking more toward the machines the tree care industry has traditionally used — heavier machines with hydraulic-feed systems."

Much attention lately has focused on hydraulic feed disc-style chippers, Morey said. "The advantage is that it allows them to chip bigger materials and reduces the amount of preparation required to chip. Hydraulic feed forces materials, making it easier to feed."

Jim Hess, sales service manager for Ariens Promark, Brillion, Wis., said lately he's seen heightened interest in midline, 6-inch chipper/shredder models, as user's needs grow more sophisticated.

To help you select equipment, Lawn & Landscape Maintenance has rounded up chipper, chipper/shredder and industrial grinder equipment offerings from manufacturers who responded to our inquiry.

Available from **AmeriQuip** is the dual purpose, commercial duty 250 Chip N Mulch. Model 250 features 1 1/2-inch bearings in-

dependent suspension and heavy gauge steel construction. With two flywheel knives, an adjustable bed knife and 48 flail



knives, the unit chips limbs up to 3 inches in diameter and handles a wide variety of mulching jobs. A 16-h.p. Briggs Vanguard supplies the power.

A shredder-only model is also available.

Circle 140 on reader service card

Ariens Promark offers a midsize brush chipper. Model 395 runs at 175 fpm and has a 90-degree feed angle. It features a 40-h.p. Yanmar diesel engine for high torque; in-line feed hopper with folding feed table; large, funnel-shaped opening that accepts limbs up to 9 1/2-inches in diameter; and two 10-inch Uddeholm chipper steel knives.

The discharge chute rotates 360 degrees and locks in place to aim chips back to the ground, into a truck or up to 30 feet away.

Circle 141 on reader service card

(continued on page 46)

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Landscape Wastes

(continued from page 44)

Whisper chippers from **Asplundh** are self-feeding and chip at 300 feet per minute for faster production with less engine wear. The rotor is machined from solid, rust-free stainless steel. Four full-sized hardened blades provide 64 inches of knife edge.

Other standard and optional features are detailed in a full-color brochure, including a selection chart and complete specifications.

Circle 142 on reader service card

Model BIO 100 chipper/shredder from **BCS** features an 8-h.p. Briggs & Stratton engine. The unit chips limbs up to 3 inches in diameter and 1-inch brush.

BIO 100 features 28 hardened-steel reversible hammers and steel construction. The large-capacity hopper is designed for a direct feeding of material into the shredding chamber and to avoid difficulties of sliding material along slanted surfaces. The transportable unit weighs 250 pounds.

Circle 143 on reader service card

The Mighty Bandit II from **Bandit Industries** is a gravity-feed drop spout chipper with a dual wheel, hydraulic feed system.

The chipper chips limbs and brush up to 6 inches in diameter, as well as short blocks of wood and prunings and other landscape trimmings. The feed wheels are closely coupled



to the chipper disc to prevent hang-ups in the feed system.

Diesel and gas-power engine options are available, ranging from 20- to 30-h.p.

Circle 144 on reader service card

The CHIP-N-VAC chipper/shredder from **Bear Cat** is designed to reduce yard waste debris by as much as 8 parts to 1. The unit also chips logs up to 3 inches, can be used as a blower



and is compact for easy storage.

An optional 10-foot hose vacuum attach-

ment is designed to clean out debris in hard-to-reach areas.

Circle 145 on reader service card

Cub Cadet's Model 648 chipper/shredder features an 8-h.p. 4-cycle engine, 12 reversible and replaceable flail hammer knives and two hardened, replaceable chipper blades. The chipper/shredder handles branches up to 3 inches in diameter. Mulch is collected in a standard 2.5-bushel mesh collection bag.

Circle 146 on reader service card

Echo's chipper/shredder line includes an 8-h.p. model with 3-inch chipping capability, 24 high-performance, hardened steel shredder blades and an extended shredder rotor shaft.

Features include a Briggs & Stratton engine, large hopper opening and reversible self-



sharpening blades. A blower attachment is available.

Circle 147 on reader service card

The CG7000 heavy-duty commercial grinder from **Farmhand** grinds wood waste up to 6 inches thick with a high-speed hammermill rotor and hardened hammers. Materials are discharged up a 22-foot elevator into piles or transport vehicles.

An electric load controller regulates in-feeding to the rotor. Hydraulic motors drive the tub, the undermill conveyor and the discharge elevator.

The CG7000 is available with a self-contained industrial diesel engine, or the PTO model can be powered by a conventional wheel tractor, a portable diesel engine or an electric motor.

Circle 148 on reader service card

New from **Goossen Industries** is a commercial chipper/shredder that chips limbs up to 5 inches in diameter and shreds leaves or brush into mulch. Two models are available: The CSI000 PTO unit features 540 PTO drive and mounts to any tractor with a minimum of 15 h.p. The CS5000 has a 13-h.p. Honda gas engine with electronic ignition and oil alert.

Safety features include double-walled, 10-gauge steel in drum housing; 3/4-inch machined steel chipper plate; and hopper cover to restrict material kickback.

Circle 149 on reader service card

The **Haybuster** I.G.8 industrial grinder crushes tree limbs up to six inches in diameter. It features a heavy-duty, 26-inch-long cylinder with half-inch A.B. hardened hammers.

The tub can be loaded with any skid steer loader and the end product is delivered on a conveyor. An electro-hydraulic sensing governor maximizes grinding efficiency and prevents clogging. The self-contained grinder is completely portable and pulled with a half-ton pickup. It is powered by a diesel engine.
Circle 150 on reader service card

Hodges Mfg. Co. has introduced a line of chipper/shredders. The heavy-duty units are available in 3.5-, 5-, 8- and 16-h.p. models.

The 8- and 16-h.p. units are on a towable trailer. The 3.5-h.p. unit is for shredding only; the other chipper/shredders take limbs from 2 to 3½ inches in diameter, depending on the selected model.

Circle 151 on reader service card

The 3-inch chipper from **Kwik-Way** is designed with a high-strength metal cutting wheel. Two cutting knives are built into the wheel.

All units except the 3-point model include power feed. The towable and pull-about units use an 18-h.p. engine.

Circle 152 on reader service card

The Revac from **Little Wonder** employs a six-bladed steel fan to pull material through a series of hammers. Hardened tool steel chipping knives, attached to the 40-pound flywheel, chip branches up to 3½ inches in diameter.

The chipper/shredder is transported with a standard 3-wheel platform with 12-inch pneumatic tires. Intake and discharge options are available.

Circle 153 on reader service card

The **SC182** Brute chipper/shredder from **MackKissic** chips logs up to 4 1/2-inches in diameter. Shredding and grinding is performed by 48 free-swinging hammers that pulverize prunings and branches up to 1 1/2-inches in



diameter. The unit is powered by a 12- or 16-h.p. Kohler Magnum solid-cast iron engine.

Standard features include key start with battery, 1 1/4-inch-hole screen and bar grate screen. The unit is highway towable.

Circle 154 on reader service card

The **Morbark** E-Z Chipper model 10/20 is a heavy-duty, 4-inch drum-style chipper.

Standard features include Morbark's patented bagging system and a drop feed designed to allow the operator to safely chip even the smallest of lawn and landscape maintenance debris.

Circle 155 on reader service card

A small tractor-powered chipper is available from **Northeast Implement Corp.** The Valby CH 150 chipper produces uniform chips from soft and hard woods, green or seasoned.

The chipper is capable of chipping 6-inch-diameter round wood and 9-inch-wide slabs.

(continued on page 50)

HOW TO BUY A CHIPPER/SHREDDER

MANY CHIPPER/SHREDDER products enter the market each year. The following tips are designed to help you identify what you need from a chipper/shredder before investing in one.

1. Decide what sorts, sizes and volumes of waste you need to process. Then add about 20 percent to your imagined sizes and volumes.
2. Quantify your processing needs with some real numbers. "I plan to shred leaves three times a year. I need to chip 3-inch limbs. I plan to run the machine about 50 hours a year." See what features each brand has to meet those needs. Does it chip 3 1/2-inch limbs? Does it vacuum loose debris? Is it well powered by a name-brand engine?
3. Imagine yourself using one. Is it easy to move around? Is it compact, lightweight? Look for the following features:
 - Safety — Is it certified by the Outdoor Power Equipment Institute? Look for low vibration, adequate warning labels and sturdy construction.
 - Power — Buy as much horsepower as you need.
 - Chipping — Look for angled knives and self-feeding action.
 - Shredding — Look for swinging triangular hammers.
 - Vacuuming — Determine if you need a vacuum system.
 - Low profile — Consider easy loading of waste, ease of transport, convenient storage.
4. Get technical. Why is this one better or more expensive than that one? Remember, you get what you pay for. Test drive before you buy. Ask for a demonstration. — *Tornado Products*

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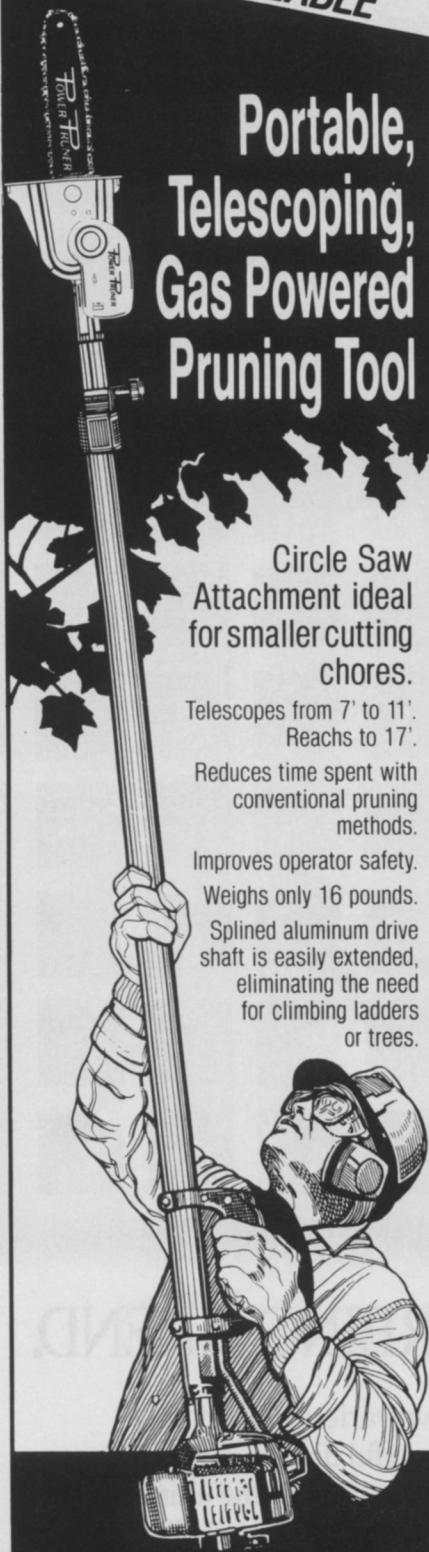
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USE READER SERVICE #105

Landscape Wastes

(continued from page 47)

The self-feeding chipper draws in material with no pushing required by the operator. It can



be powered by 17- to 50-h.p. tractors.

Circle 156 on reader service card

The **Olathe** model 801 shredder/chipper is portable and uses PTO power from a 25- to 60-h.p. tractor. Debris is loaded directly into the top-loading hopper using a 5-foot bucket loader; or long branches and limbs can be fed into the chipper.

The reversible hydraulic feed roller meters material from the 60-inch-wide hopper to the hammermill. The shredder and chipper share a common chute to create a desirable mix of materials. The chute adjusts its direction to discharge materials.

A changeable sizing screen below the hammermill produces the desired size of discharge materials.

Circle 157 on reader service card

PeCo Outdoor Power Equipment offers the model 12/24 chipper/shredder. The unit is powered by a 12-h.p. Kohler engine and draws extra momentum from a 1 1/4-inch by 24-inch flywheel. It accepts limbs up to 5 inches in diameter.

Other features include twin-belt drive and a 20-h.p.-rated clutch with low speed disengagement. A work platform with 360-degree rotation of both the feed and discharge chute is operated by foot pedal. Options include tail lights, extra knives and spare tire.

Circle 158 on reader service card

The **Sterling** chipper/shredder has a low profile design with extra large capacity hopper and oversized diamond-shaped chipping chute.

Available in 5-, 7.5- and 8-h.p. units, all handle up to 3-inch irregular limbs and are equipped with a heavy-duty centrifugal clutch.

Circle 159 on reader service card

The new **Yard Shark** chipper/shredder from **Tilton Equipment Co.** features heavy-gauge

metal construction and a vibration-absorbing frame design.

The 8-h.p. unit chips branches up to 3 inches in diameter at a high feed rate. Dual chipping blades are mounted on a heavy, large diameter flywheel.

Other features include: an extra-wide chipper chute; a large, low-profile 1.8 bushel capacity shredder hopper; and a heavy-duty shredding chamber with 16 reversible, free-swinging flail blades.

Circle 160 on reader service card

The **Baker** chipper/vacuum shredder is available from **Tornado Products**. The unit chips tree limbs up to 6 inches in diameter and vacuums and shreds leaves and loose waste via a 20-foot vacuum hose. Compact and lightweight, the unit is available on a highway-ready trailer with a 20- or 23-h.p. Kohler Magnum engine, or sled-mounted for tractor PTO drives of up to 30 h.p.

The discharge chute rotates 360 degrees to deposit materials to the appropriate location. Other equipment features include self-feeding action for easy waste processing and an optional vacuum kit.

Circle 161 on reader service card

The **Vermeer** 935 brush chipper chips brush and limbs up to 9 inches in diameter. The unit has an 18-inch-diameter, self-feeding, hy-



draulically controlled feed roller with a variable speed range of 0 to 275 fpm.

Other product features include a discharge chute, capable of swinging up to 270 degrees; and a heavy-duty, portable, waist-high feed table.

The 2,800-pound unit has a standard 35-h.p. Wisconsin W4-1770, 4-cylinder, air-cooled gas engine; or an optional 42-h.p. Deutz T3L-1011 air-cooled diesel engine.

Circle 162 on reader service card

The model 18D93 chipper from **Wood-Pro** is powered by a 9-h.p. Vanguard engine and uses a 2-belt centrifugal clutch. The 360-degree discharge chute, with deflector, deposits the chips where desired.

The road-towable chipper has an 18-inch-diameter disc and twin blades for chipping limbs up to 3 inches.

Circle 163 on reader service card

ENHANCING PLANT ENVIRONMENTS

The more knowledge a contractor can garner from the soil, the better he'll be able to treat turf and plant symptoms.

By Cindy Code

ACIDITY, ALKALINITY, porosity, nutrient deficiencies and more problems are undoubtedly becoming visible in home lawns and commercial turf across the country as temperatures rise.

While there's a number of products on the market to treat these symptoms, a lawn and landscape maintenance contractor must first know what he's dealing with before he can begin to apply control measures.

Additives and amendments can do many things to a soil, but generally should only be applied with the intention of creating a more hospitable environment for turf and plants; not for a quick cure.

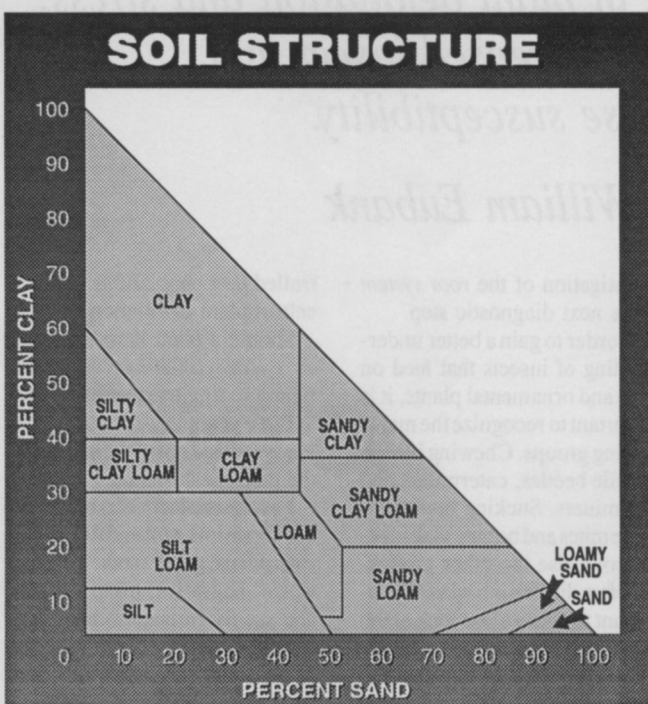
Whether a contractor is out to change the chemical or physical nature of the soil, a soil analysis, soil texture test and/or an organic matter test will reveal plenty about the soil he's dealing with.

A comprehensive soil analysis will disclose the nutrient status of the soil including phosphorus, calcium, magnesium and potassium levels. Random cores taken from the upper two inches of soil should provide a composite sample of the area.

When trying to discover more about the physical makeup of the soil, a soil texture and organic matter test are two common tests to determine the percent of sand, silt and clay size particles in the soil in question.

At the very least, a contractor should know the pH of any soil he's managing, according to Dr. Coleman Ward, an Auburn University agronomist. A routine test will include a pH count and should be followed by a buffer pH to determine the soil's lime index.

Most land grant universities have the capability to analyze soil tests, which run anywhere from \$6 to \$15. Generally within a week, the lab will return the test with a fairly complete soil analysis



Textural triangle for soil textural analysis using the USDA classification scheme. Source: American Society of Agronomy Monograph #9.

(depending on the information requested) and recommendations for improvements.

Similar soil tests can be used both in turf and ornamental bed areas, but a different set of recommendations, depending on plant type, will be prescribed. The more specific a contractor is about the plant's environment and maintenance level, the better the analysis.

LAYING GROUNDWORK. Despite the revelations a soil test can provide, the procedure is all too often overlooked. As a result, the effec-

tiveness of pesticides and fertilizers can be influenced by extremely acidic or alkaline pH levels.

To encourage soil testing, lawn and landscape maintenance contractors should market it as an additional service to customers. Not only will the test results help a contractor talk more intelligently with his clients, a soil test has been known to help close a sale.

"Generally, the lawn care industry is a prescription industry, recommending certain amounts of NPK and some kind of weed control, and that's pretty much it," said

Steve Nichols, vice president of Soil Technologies, Fairfield, Iowa. "This is one of the weaknesses in the industry...a reactive instead of proactive response."

Obstacles can stem from turf's quick reaction to applications of NPK. However, problems are often covered up by applying macronutrients in large quantities. To address these problems, micro-organism-containing biofertilizers and soil conditioners are being marketed in the industry as methods to improve soil fertility and nutrient status, Nichols said.

These products can help reduce disease vulnerability often brought on by over applications of nitrogen. To date, these products have been used mostly on golf courses, but are beginning to be adapted to home lawns.

Dr. Chuck Darrah, general manager and consulting agronomist for CLC LABS in Westerville, Ohio, said a lot of information can be gained with a soil test. For instance the use of lime and sulphur requires knowing what pH level you're starting with before trying to correct the condition.

PHYSICAL AMENDMENTS. If a complete overhaul of a growing medium is needed, it's easiest to amend a soil before installation takes place. Physically changing soil entails altering the rooting medium of the soil with a high carbon material like peat or mulch.

"You want a product that's resistant to microbial decomposition, something that will improve the physical property of the soil so it has better water and air movement," Ward said.

Grading the soil and adding an inch or two of composted topdressing can encourage the roots to grow deeper, said Phil Fogarty, Crowley Lawn Service, Cleveland, Ohio.

(continued on page 74)

ORNAMENTAL INSECTS:

IDENTIFICATION AND CONTROL

Heavily uncontrolled pest populations result in plant defoliation and stress, leading to increased insect and disease susceptibility.

By William Eubank

EVERY COMPANY AND individual contractor involved in the care of trees and ornamental plants is frequently faced with the dilemma of dealing with insects and their resultant damage. Aside from the detracting visible damage, the physical stress placed on trees and shrubs greatly weakens plants, leading to increased susceptibility to disease and adverse environmental factors.

This article will provide information to help identify some causes of evident plant damage, followed by some recommendations for control using an integrated pest management approach.

Plant-damage or decline recognition is the key diagnostic ingredient in maintaining good plant health. Just observing the symptoms of stress or decline doesn't mean you have found its source.

For instance, a plant can display the symptom of wilted leaves, but that doesn't necessarily mean there is foliage insect activity present. However, a professional should begin an investigation of the displayed symptom, and if no pest activity is found move down to associated twigs, branches and trunk. If there is still no insect activity detected, then moving to an

investigation of the root system is the next diagnostic step.

In order to gain a better understanding of insects that feed on trees and ornamental plants, it is important to recognize the major feeding groups. Chewing insects include beetles, caterpillars and leaf miners. Sucking insects include mites and borers. Gall makers comprise the other groups.

Before diagnosis begins, it's important to take a close look at the anatomical features of a plant including the leaf, twig/trunk and root system. We will discuss what to look for when a particular plant is displaying poor color, wilted leaves, dying/dead branches or otherwise poor general health.

LEAF DAMAGE. Many different kinds of insects attack the leaves of a plant. Below, a few of the major insects and their respective damage symptoms are discussed.

1. When the edges of a leaf appear chewed, ragged or notched, this is usually the work of a caterpillar or beetle larva.

2. The center of the leaf may look chewed away, holes may be left in the leaf or it may be skeletonized, as is characteristic of many beetle adults. Heavy uncon-

trolled pest populations may result in plant defoliation.

Should a plant have to spend energy on refoliating two to three times in a single season or for two to three years in a row, the plant may very well not make it through the next harsh winter.

Pest examples: Caterpillars — cankerworms, tent and forest tent caterpillars, gypsy moth, fall webworm, bagworm, tussock moth and sawfly (related to bees and wasps). Beetles — Japanese beetle, elm leaf beetle and willow and cottonwood leaf beetle.

3. Leaf stippling is the yellow speckled discoloration on certain leaves caused by sucking insects or mites. This stippling is simply the removal, by the pest, of the chlorophyll at that location. When turning such damaged leaves over, usually with a 10X power hand lens, a contractor can see the insects or will see evidence of their previous visit.

A heavy pest infestation may completely devoid the leaf of chlorophyll and moisture, thus making it incapable of conducting photosynthesis and causing it to dry out and be shed by the plant. Again, as previously discussed, a weakened plant going into a cold

harsh winter may never come out of dormancy.

Pest examples: Insects — scale insects, whitefly, mealy bug, aphids, lacebug and leafhoppers. Mites — spider and eriophyid (very small cigar-shaped mites with all eight legs occurring on one end).

4. The formation of tunnels between upper and lower leaf surfaces is another type of leaf damage. Leaf miners are responsible for this damage. These insects are very difficult to control since the adults are not feeding on the leaves, just laying eggs.

A heavy population will often cause premature leaf defoliation. Most often, by the time the dam-



Japanese beetle adults feeding on rose bud (left). Lady beetle adults and larva as biological control insects (below). Photos: Bill Eubank.



age is noticed the insects have already completed their life cycle. **Pest examples:** Holly leaf miners and Yaupon leaf miners.

5. Shiny, sticky, clear droplets on a leaf surface is the sign of honey dew deposition. As these honey dew-producing insects feed, tiny droplets of this sticky sweet substance are exuded. A black sooty mold (fungus) begins to grow on this nutrient-rich substance and soon leaves, twigs, branches and even the trunk of the tree or shrub turn black.

Obviously, the object is to control the insect before an abundance of honey dew is produced thus preventing the development of the black sooty mold. **Pest ex-**

amples: aphids, scale insects, mealybugs and whitefly.

TWIG & TRUNK DAMAGE. Many plants may exhibit wilted, dying or dead foliage which may or may not hold onto the twig or branch. Inspect the small twigs as well as larger branches that supply nourishment to the affected leaves.

1. Evidence of girdling around the clipped end of a twig or branch terminal indicates an attack of a twig girdler. The girdled branch most often falls to the ground while others may be left attached, but will be flagging (dying) awaiting the next wind to break them off.

Pest example: Twig girdler

(adult beetles most often are involved).

2. Holes in branches often indicate borer activity. Using a knife to probe the hole and subsequent tunnels may produce the immature stage of either a beetle or caterpillar. Usually trees or shrubs under stress, as mentioned earlier, will be much more susceptible to borer damage. Keep plants as healthy as possible. Spray preventively before borers enter the plant.

Pest examples: Elm bark beetle, ash borer, branch and twig borers and shothole borer.

3. Hollowed out branch terminals is another plant damage symptom. The damage causes flagging of the foliage about the time the insect is winding up its life cycle and about to emerge as an adult. The best time to control these pests is to spray susceptible plants in early spring in order to prevent insect entrance into the terminal.

Pest examples: Pine tip moth and European pine shoot moth.

4. Large woody growths on stems are most often the work of *gall makers*. The plant tries to wall off this foreign invader by building a woody barricade which protects

the plant from further damage and protects the insect from outside harm while it is developing inside. Sometimes the gall may cause the distal portion of the twig or branch beyond the gall to flag and die.

Controlling gall makers is difficult because of the thick woody like protection the gall affords the insect within. Wasps, midges, psyllids, aphids and others are responsible.

Pest examples: Eastern spruce gall aphid and wool sowers gall.

5. In weakened trees and shrubs, beetles and borers will attack the trunk or stems of the plants, causing damage. The feeding of insects in the cambium layer of the plant breaks the vascular vessel link-up between roots and leaves. If this feeding damage is extensive, including trunk girdling, then large portions or even the entire canopies are left without water and nutrient/gas exchange capability. The tree/shrub then quickly dies. The symptoms of beetle/borer presence or beetle/borer damage are obvious:

- Sawdust particles caught on upper edges of bark will pinpoint their location and clue the contractor in on population density.

Pest examples: Pine bark beetle, lilac borer and cottonwood borer.

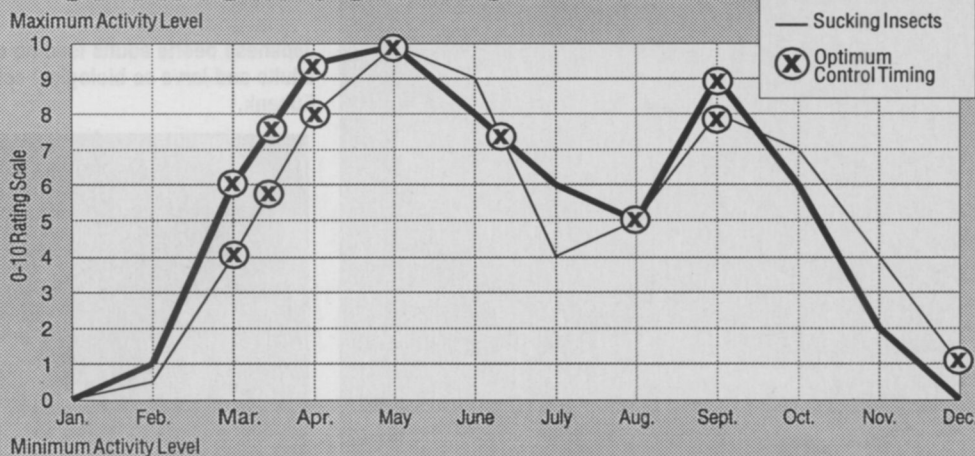
- Sap oozing from holes or borer galleries is still another trunk damage symptom. If the tree is in a weakened state, it will not often have enough turgor pressure (sap pressure) to keep the leaves inflated leading to wilt. Insects feeding within this sap or resin flow are protected from pesticides, making control quite difficult.

Pest examples: Peach tree borer, lesser peach tree borer and shothole borer.

- Bulges and meandering tunnels beneath the thin bark of the white birch tree provide the habitat for one Midwestern insect borer. Being a cambial feeder, some control using a systemic insecticide may be obtained. **Pest example:** Bronze birch borer.

- Loose bark with tunneling and sawdust beneath represents an insect feeding beneath the bark in the cambium layer causing it to die. The bark then begins to loosen as the vascular tissue beneath dries out from the insect damage.

INSECT ACTIVITY AND OPTIMUM CONTROL TIMING



Pest examples: Pine beetle and elm bark beetle.

ROOT SYSTEM DAMAGE. Roots which are severed, chewed in two or nicked will eventually display wilting or flagging in the upper canopy of the plant. When all other above ground anatomical features of the plant have been inspected to rule out any of the pre-

viously mentioned insects and damage, then an inspection of the root system may be justified.

Carefully dig the plant up sifting through the soil as it is gently washed away from the roots. Insects may be discovered while washing the roots or actually found attached to individual roots. Chewing insects cause the majority of insect-related root problems. A

Before diagnosis begins it's important to gain an understanding of the kinds of insects to be treated.

soil drench of any number of insecticides provide control.

Pest examples: Larval stage of several beetle grubs, black vine weevil and strawberry rootworm.

(continued on page 56)

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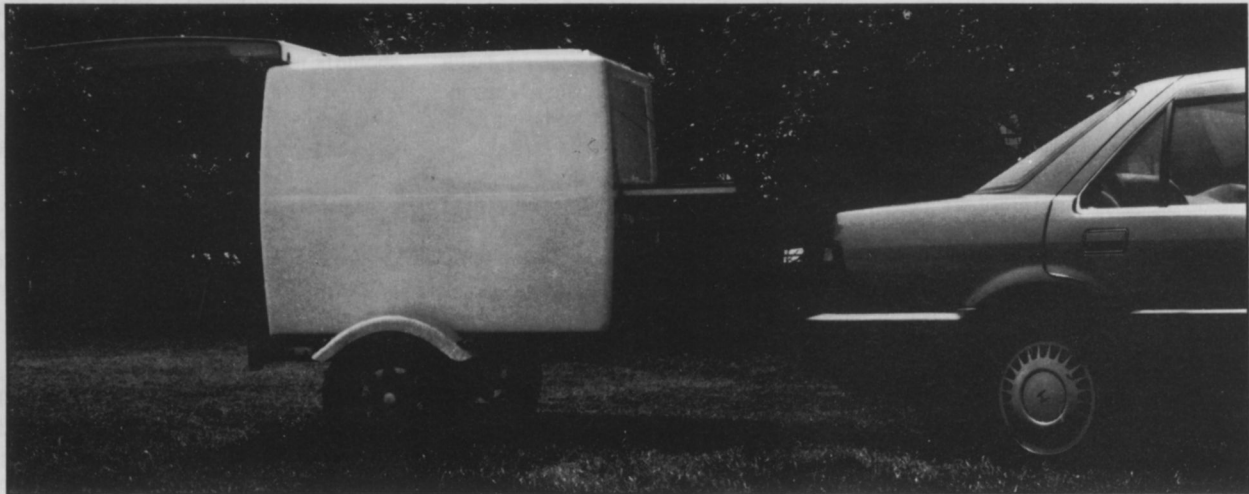
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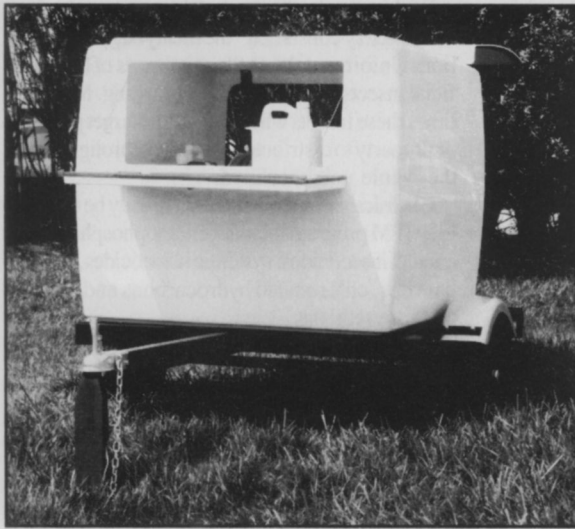
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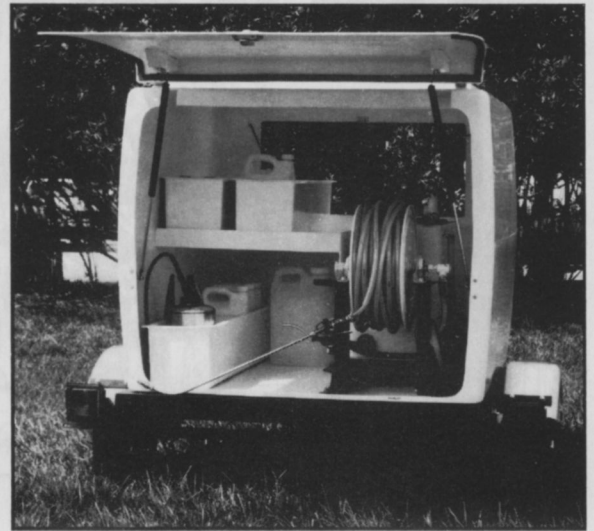
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Ornamental Insects

(continued from page 54)

CONTROL RECOMMENDATIONS. IPM techniques should be implemented as often as possible. IPM is simply defined as the use of as many insect control mechanisms as desirable which will cause as little damage to the environment and beneficial insects/animals, while reducing pest populations to tolerable levels.

The green industry as a whole should strive to get away from the blanket use of insecticides, instead considering the balanced use of cultural techniques, chemical controls, organic mater-

ials and biological controls (using beneficial insects and disease organisms).

The IPM definition mentions reducing pest populations to "tolerable levels." For many ornamental plants, that level often indicates a near "zero" tolerance to most caterpillar and adult beetle activity since their feeding would be so noticeable and damaging. Small populations of sucking insects could be tolerated with minimal plant damage. Even small borer infestations could be tolerated on larger trees as long as cambium loss was minimal.

The insect activity and timing chart (page 54) generally depicts the insect population dynamics (or activity levels) of the groups of

major plant damaging insects as they occur throughout the year. For many insects it is important to apply pest control strategies every two weeks during the early spring population buildup.

As summer temperatures increase, most insect populations begin to subside. At this time, the regularity of pest control intervention should be reduced to correspond with population levels. In late summer/early fall there is another insect population increase. Again, pest control measures will have to be implemented in order to minimize plant damage.

Depending on regional factors, the activity levels for these major insect groups may occur a month earlier or later than times indicated on the chart. The use of biological control agents are, many times, an acceptable way to control insect pests.

I recently inspected an interior shopping mall that had a severe incidence of mealybug. The odor and subsequent cleanup of an insecticidal spray application encouraged mall management to consider an alternative. Green lacewing eggs were deposited on all mealybug infested plants.

Within a month, the hatching larvae had "completely consumed" the mealybug population. Unfortunately, outdoor releases of beneficial insects aren't always as rewarding. Many times these insects will move off the target plant or property to distribute themselves throughout the whole neighborhood.

Chemical controls which can readily be used in an IPM program include: organophosphates, contact insecticides, systemic insecticides, carbamates, chlorinated hydrocarbons and synthetic pyrethrins.

The organic products such as insecticidal soaps, pyrethrum, horticultural oils and sticky traps are some of the many products that can be used alternately with any of the above products for acceptable insect control.

These materials are mostly short-lived; consequently, anyone using these products will have to monitor insect pest populations carefully and be ready to implement more stringent and definite control measures when warranted.

It is difficult to write generally enough to cover insect control timing and also comply with the control recommendations of the various local and university experts for all cities and regions in the country. For this reason, I suggest that the reader contact local county extension entomologists, horticulture specialists or local/state forest entomologists for specific pesticide recommendations and control timing in individual areas.

This presentation of insect diagnostic tools and IPM interventions will hopefully enable the reader to have a better working knowledge of some of the steps and methods with which to approach the diagnosis and control of insect pests on ornamental plants. ■

The author is president of Eubank Consulting, a tree and landscape consulting firm in Houston, Texas, as well as a board certified entomologist.

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Hands On

Editor's Note: Hands On is a new feature in Lawn & Landscape Maintenance magazine to provide our readers with ideas and resources for running their businesses. Items for this department will come from a variety of sources, but most importantly, we need you to share ideas and lessons learned with your peers. Submit your stories to: Hands On, LLM, 4012 Bridge Ave., Cleveland, OH 44113. Or if you want to phone us with your tips, call 800/456-0707.

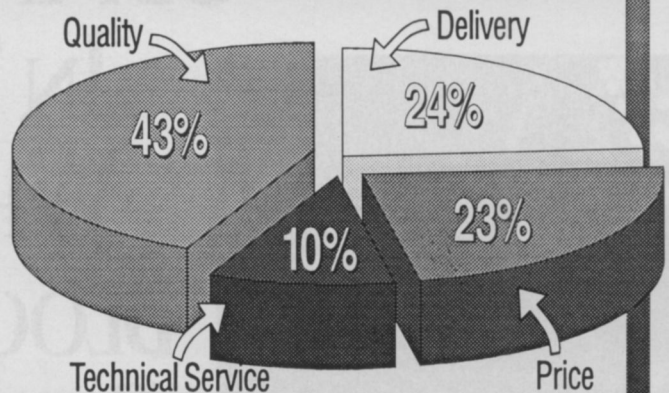
Customer Communications

THE COMMENT section of your invoice is an opportunity to communicate with your customers, helping to promote good service and avoid problems before they begin.

For example, instead of simply telling a customer that a slow-release granular fertilizer was just applied to his lawn, include a tip about when and how often his yard should be watered, and so on. — *Weed Man*

FOCUS ON QUALITY

Most purchasing professionals use some type of rating system. Here's how much each of the following factors contributes, on average, to an overall supply rating:



Source: Small Business Reports

Who Will Take Over When You're Gone?

ONLY HALF of the 210 chief executives in a recent survey said they have planned for their own replacements, according to the accounting firm Coopers & Lybrand. Of those who had plans, about 20 percent hadn't put anything on paper. — *The Wall Street Journal*



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Containing Costs

INSURANCE COSTS can be the nemesis of landscape contractors who don't thoroughly investigate their options before buying.

But a determined contractor can do more than balk at the high price of insurance. Within their own firms, contractors can often reduce insurance costs by establishing an active safety program.

"We found that an active safety and loss control program has been an invaluable strategy for reducing our accidents in all areas. Subsequently, this has reduced our insurance premiums," said David Frank, president of David J. Frank Landscape Contracting, Germantown, Wis.

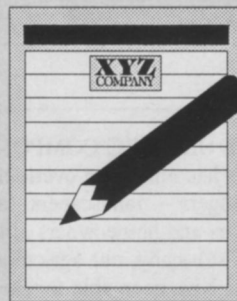
A good safety and loss control program provides an organizational outline detailing the company's safety expectations and the methods used to achieve these objectives. Key points in a safety program should include:

- A clear statement of expectations for all company employees in the areas of vehicle safety and general workplace safety.
- An assignment of responsibility for those managing safety programs.
- Identification of the safety training, preemployment evaluations, certification programs and ongoing reinforcements (such as safety contests, recognition and

Strengthening Sales Strategies

JUST AS YOU would not go on a sales call with your shoes unpolished, be sure your business image isn't unpolished either. To improve your business, here are several marketing tools:

- Printed materials should be well-designed and consistent. Don't be afraid to borrow ideas from other companies. Keep printed products *simple*. Use the same paper stock for all printed products, establishing a recognizable look for your company.
- Logotypes identify companies and can be as simple as using a stylized typeface for your company name on all printed materials.
- Box advertising in the local Yellow Pages should be well-designed and distinct from your competitors.
- Advertising creates an image and stimulates sales. The "tone" and context of the ad should reflect the personality and culture of your company. — *National Association for the Self-Employed*



additional training).

- A hazard communications program.
- Maintenance requirements for all vehicles and equipment.
- An outline of what is expected in the event of a work injury, vehicle or property damage accident.

Additionally, a new program within the insurance industry to promote safety is the concept of occupational injury manage-

ment. This system establishes procedures to be used by employers and medical professionals to help injured employees return to work healthy and more quickly.

The program is designed to ensure quality medical care, contain soaring workers' compensation costs and return injured employees to productive, gainful employment. — *David J. Frank Landscape Contracting*

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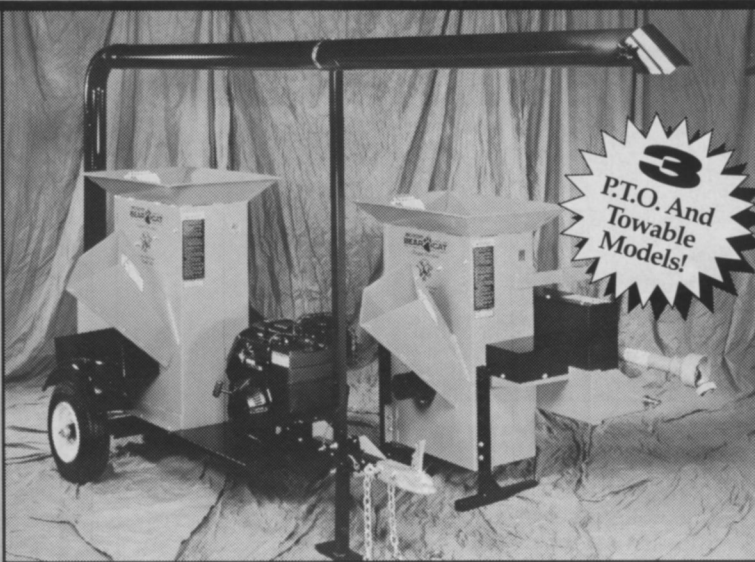


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Compost Corner

REDISCOVERING SOIL ORGANIC MATTER

THE ORGANIC COMPONENT of turf soils has long been overlooked by turf managers — landscapers, lawn care companies and homeowners alike.

Historically, our agricultural counterparts have been able to take advantage of the benefits of soil organic matter by incorporating manures or green cover crops. Turf managers, on the other hand, in the high-tech '70s, '80s and '90s have become accustomed to using fertilizers and pesticides to make their jobs easier. In the process, many have lost sight of the importance of the natural organic component.

But a renewed interest in soil organic matter is rapidly emerging in the green industry. This is largely a result of the wide variety and large quantity of recycled soil amendment topdressings now available to the turf manager. These amendments take the form of composted yard wastes, animal manures, municipal solid wastes (MSW) and sewage sludges. Additionally, numerous manufacturers are selling other

types of products designed to revive or "energize" soil organic matter and biological activity.

The focus of this and subsequent articles will be to review the importance and benefits of soil organic matter, how to increase or enhance soil organic matter content and how to sell the benefits of organic matter applications (as soil amendments or topdressings) to your customers.



Wilkinson

DEFINING SOIL ORGANICS. Soil organic matter can best be described as living and dead plants (roots, rhizomes, leaves, stems) and animals (earthworms, insects, fungi,

bacteria, actinomycetes) present in the soil. Dead materials will be present in various stages of decay since they are subject to decomposition by various microorganisms present in the soil.

Consequently, soil organic matter is a transitory soil component and needs to be constantly renewed by the addition of plant and animal residues.

Soil organic matter is only one component of the soil — the others being minerals (sand, silt, clay), water and air. Typically, organic matter will account for no more than 3 percent to 5 percent of a soil by weight, however, it is a critical component in the development of plants.

Under natural conditions, soil organic matter is constantly being replaced in forests or prairies by the natural death and decay of organic matter (leaves, roots, old trees, etc.). But in modern turf management, artificial conditions do not provide for the automatic return or renewal of soil

(continued on page 62)



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#1
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ECHO
THE RIGHT TOOL

* Line trimmers and power blowers. Survey results available on request.

USE READER SERVICE #71

Compost Corner

(continued from page 60)

organic matter.

Without such renewal, soil organic matter eventually will be depleted. Management skills will become critical as reduced organic matter makes turf more susceptible to a variety of turf stresses such as heat and drought, as well as more prone to damage from insects and diseases.

WHERE'S THE ORGANIC MATTER? Turf managers face a serious dilemma in organic matter management. Often the sites inherited or built are void of organic matter, and turf maintenance itself does not lend itself to improved organic matter development. Consider the following events:

- Many builders will strip away topsoil and attempt to establish a lawn on the remaining subsoil, generally very low in organic matter and of poor quality in terms of compaction, aeration or drainage.
- Few landscapers or contractors go to the expense of modifying poor soils by adding organic matter before seeding.
- In contrast to agriculture where crops are replanted each year, it's difficult for turf managers to incorporate organic mat-

ter after turf establishment. Core aeration followed by topdressing may help, but it's a far cry from the incorporation of organic matter prior to establishment.

- Turf clippings are routinely removed, robbing the soil of a significant amount of beneficial organic matter.

- Pesticide use will often reduce micro-organism activity that is responsible for organic matter decay. As a result, a lot of organic matter is tied up in the form of undecomposed thatch which is of little value to the soil.

- Turf managers don't pay enough attention to soil pH. Neutral to slightly acidic pHs are required for ideal microorganism activity. With improper pH levels, micro-organism activity and decay of present organic matter is reduced dramatically.

ORGANIC MATTER CONTRIBUTIONS. Sufficient soil organic matter will make any turf manager's job easier. More specifically, sufficient levels of soil organic matter will reduce the need for management inputs in a variety of ways.

Soils with adequate organic matter provide a better growing medium. Compared to the alternative, such soils will hold more water, yet drain better and provide

for improved soil aeration.

They will be less subject to compaction and provide for improved turfgrass rooting through improved soil structure. Soils with sufficient organic matter will retain more nutrients, reducing the need for fertilizer and minimizing concerns about leaching.

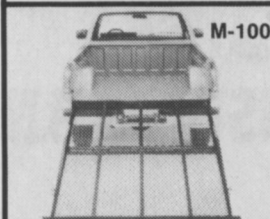
All of these soil benefits have a direct impact on turf management by making the job easier. Recent university research has also indicated that the right type of organic matter (i.e., some composts) added at the right time can provide microorganisms antagonistic to the various fungi causing turf disease, resulting in reduced fungicide use.

Soil organic matter, therefore, can be thought of as a buffer against turf problems. If sufficient organic matter is not added prior to establishment, turf managers must consider ways of improving organic matter levels after the fact. — *Jim Wilkinson*

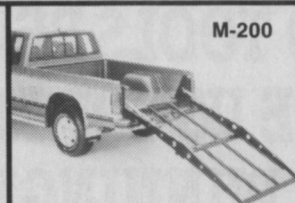
The author is vice president, research and development and professional sales for Earthgro Inc., Lebanon, Conn. Earthgro, with six East Coast facilities, is a producer of composted natural organic products. In 1991, the firm composted more than 300,000 tons of organic material.

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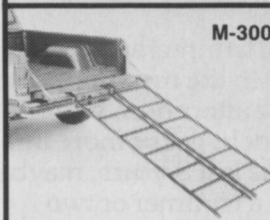
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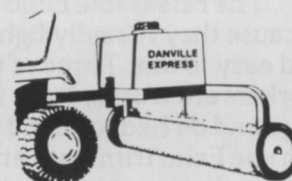


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USE READER SERVICE #36

Seed News

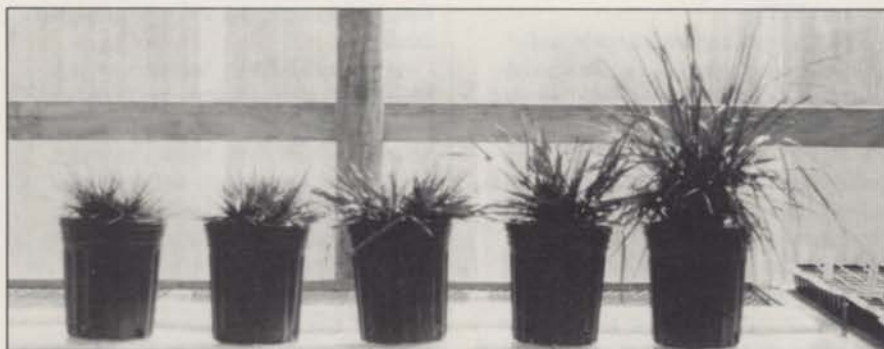
SEED VARIETY GLUT OF THE '90s: BOOM OR BUST?

ANYONE INVOLVED IN the turf seed industry is well aware of the increase in varieties available to the market. For example, more than 100 turf-type tall fescue varieties are eligible to be produced within Oregon's seed certification program this year.

Each National Turfgrass Evaluation Program planting seems to double in the number of new entries. Improvements are achieved so rapidly that many cultivars are obsolete before they even become available.

But these improvements are not constructive if the net result is customer confusion. The challenge is to turn this situation into an advantage for the buyer.

There are many factors which contribute to this growth phenomenon. The single largest is the absence of a comprehensive system which requires a cultivar to be *distinct, uniform and stable* before allowing licensing for sale to the public. Such a system must eventually emerge; but in the meantime, the turf industry is still bene-



Individual clones representing improvements in tall fescue breeding over the last ten years.

fitting from the vigorous competition led by research and development.

One lesson everyone has learned is that new doesn't always mean improved. Even though most turf cultivars are the result of rigorous and extensive testing, there are some which can be classified as "ghost varieties."

Ghost varieties are those which have not

undergone effective or standard breeding methodologies, yet they are marketed as new and improved. These cultivars restrict the monetary return to legitimate research and development programs by capturing some of the profits associated with new releases. They also disorient the customer looking for the best new products.

Fortunately, many inferior ghost varieties

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USE READER SERVICE #33

are exposed by multiyear and locational testing such as that conducted by the NTEP. If uniqueness and stability criteria were also evaluated by an unbiased entity, many ghost varieties would most likely not qualify for federal plant variety protection (PVP).

Truly unique improvements in turf science are the result of rigorous and extensive evaluations. A successful development program requires a yearly cycle of on- and off-site evaluations of potential parent lines. After the parents have been selected and crossed, the resulting generations must be fashioned toward genetic uniformity and stability. Once this is achieved, the decision must be made whether or not the cultivar is of enough merit to justify the expense of undergoing trials within the NTEP or other public and private trials as well as the cost of gaining PVP status.

Most newer varieties have been under development programs for at least six years, some for as long as 25 years. If a plant breeder has properly bred an improved variety, that variety should have a market life cycle of sufficient duration for a company to realize profit from that investment.

For instance, the life cycle of a well-bred tall fescue variety could last 20 to 30 years; 10 years for development and foundation seed increase, five to 10 years for peak marketing and production and a minimum of five years of declining production, niche marketing and continued name familiarity.

As the turf industry becomes more sophisticated, niche markets are being discovered and defined. Products must then be tested within those niches. In many cases a trial system does not exist to serve such requirements. Consequently, it is urgent that end-users and plant breeders forge new methods of networking and cooperation. If such interaction occurs, ghost varieties will settle out of the market while those cultivars which exhibit superior or even satisfactory performance will maintain some market buoyancy.

Landscape contractors can "vote" for truly improved varieties by staying abreast of developments in seed research. Local extension agents and universities are excellent resources.

A good example of communications resulting in improved varieties is the tall fescue. Due largely to customer demand, tall fescues currently under development

establish faster than standard types, are resistant or immune to diseases such as brown patch, grow slower when not establishing and possess leaf color and texture similar to perennial ryegrass — while maintaining the vigor and hardiness which earmark the tall fescue species.

The warm-season species such as bermudagrass and zoysiagrass are also being refined at an amazing rate — again in response to customer demand. Likewise, native and naturalized species are being evaluated for low maintenance turf applications at a rapid pace. In the meantime, current varieties will satisfy the various markets as long as their performance is clearly identified and communicated to the end-user.

If customers purchase the products which are proven to fit their specific needs, this industry will evolve to better meet those requirements, turning the varietal supply glut of the '90s into an advantage for our industry. An informed seed buyer who is willing to pay for real value is the single most important ingredient to ensure the future profitability of the turf industry. — *Steven Witten, research director for Cascade International Seed Co., Aumsville, Ore.*

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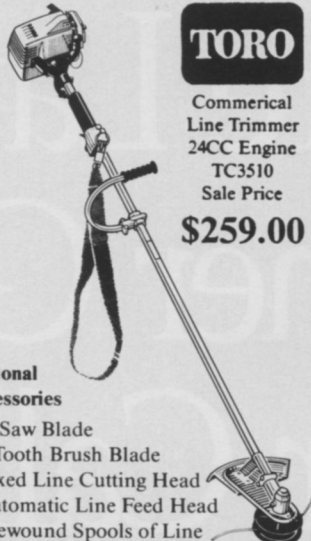
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People

GRACE-SIERRA Horticultural Products Co. named several additions to its management team: **Robert Holton**, vice president, manufacturing; **John Neal**, vice president, research and development; **Lisle Smith**, vice president and chief financial officer; and **Michael Thurlow**, vice president, sales and marketing.

David Dahlstrom joined Shindaiwa as marketing manager. He oversees all marketing, communications and advertising for the company. Dahlstrom replaces **Greg Imus**, who is now Shindaiwa's regional manager of the southern United States and the Pacific area.

Husqvarna named the following appointments to its sales staff: **Steve Taylor**, territory manager, South Carolina; **Mike Templeton**, territory manager, western North Carolina; and **Jim Gatlin**, zone sales manager, southeast.

Richard Gouger retired from ICI Professional Products after more than 18 years of service. Most recently, he was national technical manager, directing the field development and technical sales support func-

tions for the entire product line.

Gouger also held several technical and product management positions within the company.

Chris Chaffee joined Kubota Tractor Corp. as product engineer, commercial turf products. He is responsible for product development of commercial turf implements.

Karla Dickey de Avila joined the contractor division of Rain Bird Sales as marketing coordinator. Her responsibilities include the development of contractor literature and advertisements, analyzing sales data and managing mailing lists.

Also within the contractor division, **Anita Matlock** was named xerigation marketing coordinator.

The commercial division of Rain Bird Sales appointed **David Suruki** and **Patricia Thompson** as marketing coordinators.

Exmark Manufacturing Co. promoted four senior staff members: **H. Ray Rickard** was named executive vice president; **Charles Packard**, vice president of engineering; **Garry Busboom**, director of engin-



Chaffee



Dickey de Avila

earing; and **John Crumrine**, senior product manager.

Former Jacklin Seed Co. Plant Manager **Ted Dionne** was awarded honorary lifetime memberships by the Washington-North Idaho Seed Association and the Idaho-Eastern Oregon Seed Association. The honorary membership is the fifth to be granted since 1952.

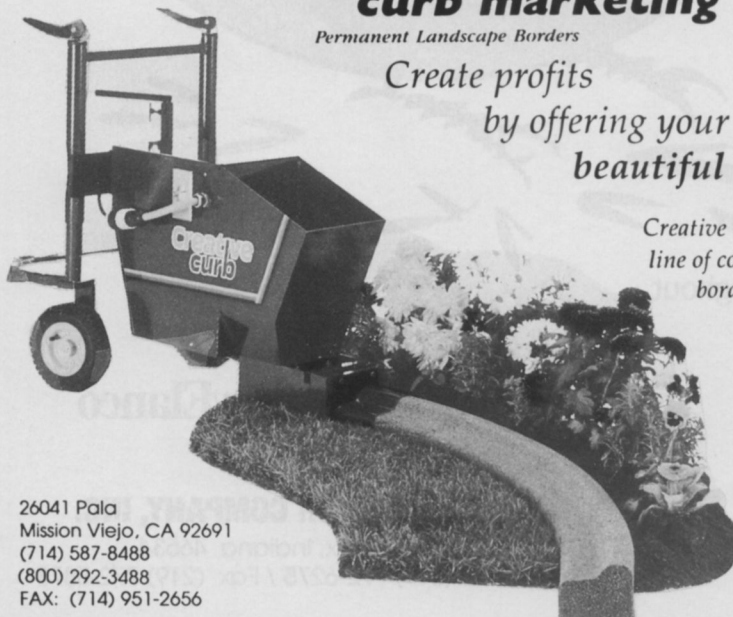
Earthgro Compost Services appointed **Vincent Lunetta** as regional manager in Pennsylvania, Delaware, New Jersey and Maryland. He is responsible for yard waste procurement, site development and on-site compost consulting. ■

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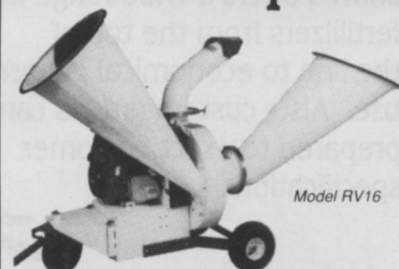
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Products

The new **Cushman** Turf-Truckster vehicles feature larger tires for reduced compaction and better flotation on sensitive turf areas. The tires add 3 inches of ground clearance for extra mobility on uneven terrain.

Standard on both 3- and 4-wheel models is a live hydraulic system for operating a range of equipment and attachments, including 5th wheel implements for aerating, spraying, hauling and topdressing.

The 3-wheel version has a new spring-over-shock absorber front wheel fork, with rubber isolated pivot points. The



steering ratio has been increased 20:1 on the 4-wheel models for easier steering.

Circle 127 on reader service card

Product Spotlight

The 2 X 2 Split Level™ mulching blade from **Snapper** has six cutting surfaces — four horizontal and two vertical. When coupled with the patented, deep-drawn mulching chamber, the blades cut and re-cut grass, reducing it to a fine, powder-like mulch.

For non-mulching applications, the blade can be used with a grass catcher or an attached chute for side discharge.

It's available on the 21-inch commercial mower and will soon be available for midrange walk-behind mowers.

Circle 126 on reader service card

JRP International offers the Nutri-Pak, a fertilizer packet formulated to continuously fertilize over a five-year period with one application.

Each packet contains 2 ounces of 16-8-8 water-soluble fertilizer. The sides of each packet are perforated with microscopic pores, allowing water vapor to penetrate the packet, dissolve the fertilizer and gradually release it to the roots of trees, ornamentals, shrubs and roses.

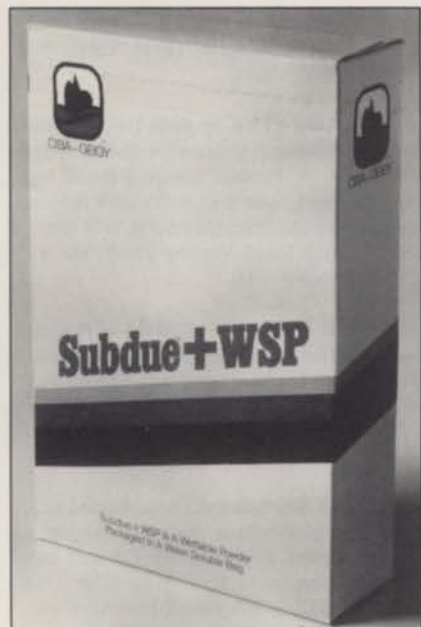
Circle 128 on reader service card

ROOTSinc. is offering a free Reike model MR60-CPD dispensing pump to all first-time purchasers of 55-gallon drums of ROOTS,™ ironROOTS® and NoburN.™ The pump offers 360-degree dispensing and delivers 10-ounces per stroke. The offer is available in 1992.

Circle 129 on reader service card

The Environmental Protection Agency has approved a new formulation for Subdue® systemic fungicide. From **Ciba-Geigy**,

Subdue+ WSP® combines Subdue's turf disease control with water-soluble packaging. The product controls Pythium blight



and Pythium damping-off in all turf species, yellow tuft in bluegrass and downy mildew in St. Augustinegrass.

Subdue+ WSP is packaged in a 20-ounce water-soluble bag, which treats approximately 10,000 square feet, or one-fourth of an acre, at the two-ounce rate.

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The Pest Pak trailer from **Tuflex** can be transported behind small compact cars. It features all fiberglass construction and 30/50 gallon, 12-volt/2 gpm sprayer with 200-foot hose and reel.

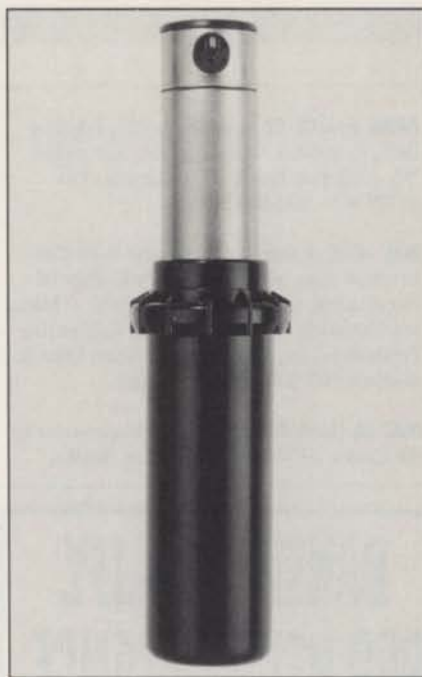
Included are secondary containment trays and a storage shelf. Available in a variety of colors, the trailer has a high-gloss molded finish, large rear door, all D.O.T. lighting and reinforced roof rail.

Circle 131 on reader service card

Hunter Industries offers an optional stainless steel riser for its gear-driven G-Type sprinkler. The stainless steel casing helps to protect the pop-up riser from abrasive elements and improves the performance of the wiper seal to ensure positive pop-downs.

Two G-Type models are available with the stainless steel riser: the PGP-ADS with adjustable arcs from 40 to 360 degrees; and the PGP-36S, a fixed, full-circle sprinkler.

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able nozzles to vary the discharge rates from 0.5 to 14.4 gpm and the radius from 28 to 52 feet. A drain check valve is standard on the stainless steel models.

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Calendar

APRIL 20-OCT. 12: AmeriFlora '92, Franklin Park, Columbus, Ohio. Contact: AmeriFlora '92, 1995 East Broad St., Columbus, OH 43209-1679; 800/BUCKEYE.

MAY 18-20: Controlling Sediment from Construction Sites, presented by The College of Engineering, University of Wisconsin — Madison/Extension. Contact: Dept. of Engineering Professional Development, 432 North Lake St., Madison, WI 53706; 608/262-2061.

MAY 21: Insect Pests of Conifers, sponsored by the Center for Urban Horticulture, Seattle,

Wash. Contact: Center for Urban Horticulture, University of Washington, GF-15, Seattle, WA 98195; 206/685-8033.

MAY 27-JUNE 12: Site Grading Workshop, Cornell University. Contact: Landscape Architecture Program, Cornell University, 440 Kennedy, Ithaca, NY 14853; 607/255-1801.

JUNE 17-18: Midwest Grounds Management Conference, co-sponsored by the Midwest Association of Physical Plant Administrators and the Professional Grounds Management Society, Miami University, Oxford, Ohio. Contact: Ken Havens, Miami University, Cole Service Bldg., Oxford, OH 45056; 513/529-6786 or Allan Shulder, PGMS, 10402 Ridgland Road, Suite 4, Hunt Valley, MD 21030; 301/667-1833.

JULY 1: Cornell Turfgrass Field Day, Pine Island, N.Y., co-sponsored by the Hudson Valley Horticulture Agents, Orange County Sod Growers Association and the New York State Turfgrass Association. Contact: NYSTA, 800/873-TURF or 518/783-1229.

JULY 7: Focus on Wetland Plants, sponsored by the Center for Urban Horticulture, Seattle,

Wash. Contact: Center for Urban Horticulture, University of Washington, GF-15, Seattle, WA 98195; 206/685-8033.

JULY 15: Annual Nursery Field Day, Hampton Roads Agricultural Experiment Station, Virginia Beach, Va. Contact: Hampton Roads Agricultural Experiment Station, Virginia Polytechnic Institute and State University, 1444 Diamond Springs Road, Virginia Beach, VA 23455; 804/363-3900.

JULY 23-27: American Association of Nurserymen Annual Convention and Nursery Industry Trade Show, Grand Hyatt Hotel, Columbus, Ohio. Contact: Lisa Harmon, AAN, 1250 I St. NW, Suite 500, Washington, DC 20005; 202/789-2900.

JULY 26-28: International Lawn, Garden and Power Equipment Expo, Kentucky Fair and Exposition Center, Louisville, Ky. Contact: Expo '92, 6100 Dutchmans Lane, Sixth Floor, Louisville, KY 40205; 800/558-8767 or 502/473-1992.

JULY 28: Dr. Alex Shigo, Penn Allied Nursery Trade Show, Sheraton Valley Forge Hotel Ballroom. Contact: Pennsylvania Nurserymen's Association, 1924 North Second St., Harrisburg, PA 17102; 717/238-1673.

AUG. 7-9: TAN-MISSLARK Regional Nursery & Garden Supply Show, George R. Brown Convention Center, Houston, Texas. Contact: Texas Association of Nurserymen, 7730 IH-35, Austin, TX 78745-6621; 512/280-5182.

AUG. 27-29: Ornamentals Northwest Seminars, Oregon Convention Center, Portland. Contact: Oregon Association of Nurserymen, 2780 S.E. Harrison, Suite 102, Milwaukie, OR 97222; 503/653-8733.

AUG. 28-30: 1992 Farwest Show, Oregon Convention Center, Portland. Contact: Oregon Association of Nurserymen, 2780 S.E. Harrison, Suite 102, Milwaukie, OR 97222; 503/653-8733.

SEPT. 20-23: Florida Turfgrass Association, 40th Annual Conference and Trade Show, Prime F. Osborn Convention Center, Jacksonville, Fla. Contact: Florida Turfgrass Association, 302 S. Graham Ave., Orlando, FL 32803-6399; 407/898-6721.

SEPT. 24-28: Oregon Association of Nurserymen, Annual Convention, Shilo Inn, Lincoln City. Contact: Oregon Association of Nurserymen, 2780 S.E. Harrison, Suite 102, Milwaukie, OR 97222; 503/653-8733.

NOV. 1-2: Southwest Outdoor Power Equipment Show, sponsored by The Service Dealers Association, Arlington Convention Center, Arlington, Texas. Contact: The Service Dealers Association, 1946 S. IH-35, Suite 100-A, Austin, TX 78704-3693; 512/443-7999.

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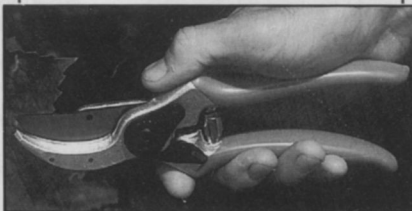
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Plant Environments

(continued from page 51)

"The rich, organic substance encourages root growth and creates a better environment for the turf," he said. "It also amends the soil by breaking down the thatch. Finely shredded yard waste can do the same."

But since physically amending soil isn't always possible, contractors have to rely on amendments to treat symptoms created by in-

adequate soils.

Oftentimes it's wise to manage the soils the best you can based on physical and monetary constraints. For example, applying gypsum is a common practice to relieve compaction in clay, but it's not easy to sell because of the large quantities needed to create a change, Fogarty said. Instead, aeration can be the quickest way to receive a soil reaction, particularly if the homeowner is not willing to pay for alternative methods. But what often

passes for a solution to any given soil problem is generally just masking the real obstacle.

To see significant beneficial effects of fertilizers and other amendments, the organic matter content of the soil should be increased by at least 2 percent, according to Darrah. More often than not, peat moss or another organic is raked into the top of a home lawn, but it's rarely enough. In reality, 500 pounds of organic matter per 1,000 square feet is needed to raise the organic content of soil at a 4-inch depth by 2 percent, he said.

"It depends on what kind of service a landscaper wants to provide...To incorporate a bale of peat in a 200-square-foot bed may make a customer feel good, but horticulturally, it has little effect," Darrah said.

POLYMERS & ENHANCERS. While soil tests are good, they're not all encompassing. For instance, the water holding capacity of the soil isn't revealed in such a test.

Instead, contractors have to become familiar with the soil types they're working with, watch what's happening to water, pesticide and fertilizer applications and be aware of variances in different locations on a single property.

"The practice of using polymers in planting ornamentals, both annuals and perennials, is fairly well proven," said Drew Effron, Aquatrols, Cherry Hill, N.J. "The whole idea is to increase water holding capacity so you can reduce transplant loss with regard to annuals whether or not they're under severe stress following planting. It provides a beneficial effect when plants need it."

Polymers, which can be incorporated into the soil during renovation or injected into established turf, manipulate the soil environment to increase the moisture available to plants. Polymers absorb only free water and are incapable of taking water from a plant.

Polymers can be beneficial in landscaping on sites inaccessible to water or where drainage is a concern, said Terry Whipple, Tomorrow's Technologies, Burlington, Wis. If incorporated properly in the soil, the polymer will last about three years, often longer. ■

The author is Editor of Lawn & Landscape Maintenance magazine.

Ad Index

AmeriQuip	26	Lawn-Wright	34
American Cyanamid*	22,23	Lebanon	31
Andersons	42	Little Wonder	68
Aquatrols	12	Longhorn	66
Arcadian	65	Metko	62
Badger	59	Miles	10,11,17
Bandit	46	Monsanto	28,29,75
Bell Tree	20	Morbark	43
Brewt	32	Oldham	15
Brushking	72	PBI Gordon	35
CBS Software	19	Pennington Seed	37
Ciba-Geigy	70,71	Pennsylvania Nurserymen	57
CompuScapes	66	Peco	60
Craty	59	Prentiss	16
Creative Curb	68	Pro Tree & Turf Equipment	58
Customer Solutions	54	ROOTSinc.	58
Danville Express	62	Ransomes	21
Deere & Co.	38,39	Regal	9,36,47
Dillaware	27	Rhone-Poulenc	48,49
Echo	61	Royer	20
Expo '92	69	SPS Consulting	74
Forestry Suppliers	18	Schuler	27
Goossen	60	Seaberry	74
Green Industry Expo	5	Shindaiwa	7
Harmony	15	Stihl	45
Hunter	33	Tennessee Nurserymen	56
Image Watches	54	Technic Tool	50
Isuzu	76	Tornado	72
J.J. Mauget	2	Turfex	55
JRP International	62	Walker	19
Knox	67		

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