750 - TREE IDENTIFICATION
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Pictorial reference to identifying trees by checking leaves, buds, branches, fruit and bark. Like its sister publication SHRUB IDENTIFICATION, popular and botanical names are listed with index tabs for easy reference. $14.95

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illustrates plant identification characteristics. Organized in two basic sections: plant identification and plant disorders, this text utilizes 430 color photos, 430 line drawings and 45 black and white photos to simplify identification. $32.50

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Kathleen W. Kerr, Editor
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by Lori Thomson Harvey and W.T. Thompson
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OCTOBER 1988/LANDSCAPE MANAGEMENT 61
Davey's research examines safety question

Herbicides used properly will not damage ornamentals, turf, or non-target species. That is, according to the results of a multi-year joint research project conducted by Davey Tree and Sandoz Crop Protection Corp.

The study was designed because lawn care herbicides such as Trimec, dicamba, MCPP and 2,4-D are often blamed by homeowners for damage to ornamentals. Also, a lack of research information and pictorial guides exist showing the typical symptoms of lawn herbicide damage, says Dr. Bal Rao, Davey's manager of technical resources.

"One of the most common complaints from our lawn care clients is herbicide injury to ornamentals," says Rao.

In all, 210 plants were tested beginning in 1980 at the company's research farm in Shalersville, Ohio. Ornamental shrubs and trees—including arborvitae, Colorado blue spruce, rose, privet, juniper, taxus, rhododendron, sugar maple, pin oak and linden—were randomly planted in blocks.

Questions to be answered

Key answers Rao sought included the potential for drift contamination from these compounds, the rate at which they build-up, and lateral and downward movement in the soil.

The herbicide treatments and rates per 1,000 sq. ft. consisted of: 1) no herbicide, 2) Trimec at the recommended rate, 3) Trimec at twice the recommended rate, and 4) twice the recommended rate of the three individual compounds that comprise Trimec: 2,4-D, dicamba and MCPP. "There's always the potential for damage to ornamental broadleaves by these materials (Trimec, dicamba, MCPP and 2,4-D) if the spray material comes in contact with actively growing broadleaf plants as a result of sloppy application—or if the material is applied on a windy day," says Rao.

The first applications were made in late April 1982 at Davey's standard rates and methods. No evidence of herbicide injury was found in any of the treatments until 1984, when injury symptoms were noted on only three species: linden, maple and taxus. The injury symptoms were observed in only those blocks treated at twice the recommended rate with dicamba. No other injuries were noted.

Rao says that the foliar damage noted was not permanent, and the plants eventually recovered. "If these materials are used properly at recommended rates, they aren't harmful or detrimental, and one should expect no adverse effect on non-target species," says Rao.

Containerized plants examined

The companies also completed a "dramatic drift study" where containerized plants—including rhododendron, juniper, ivy, grape and raspberry—were treated directly with dicamba, 2,4-D and Trimec.

Plants were distributed at random in test plots and treated directly with recommended rates of dicamba, 2,4-D and Trimec in August 1984. Subsequent visual observations for herbicide spray injury were made at one-week intervals until October.

Rao discovered that various species respond differently to the herbicides. Rao and a panel of experts later rated the containerized plants on a sensitivity scale from low to high.

The Davey Tree species sensitivity study discovered that juniper experienced only a slight yellowing of young leaves from contact with all three materials, while arborvitae and rhododendron suffered damage ranging from slight yellowing to cupping of new growth, depending on the material applied. However, neither species experienced terminal bud kill or complete defoliation from dicamba, 2,4-D or Trimec.

According to Rao, less than one percent of the complaints analyzed by the Davey lab are linked to herbicide damage, and these problems are most likely caused by inexperienced applicators. "The fact is that insects, diseases, mites, or even frost and heat can cause mimicking symptoms of herbicide damage which complicates diagnosis," says Rao. "It's very hard to diagnose herbicide damage. Planting and post-planting care, diseases, insects and environmental factors are all potential causes of damage. Many times I find that the problem may have started years ago with the homeowner. Over-application of materials is quite common, and many times the damage to ornamentals doesn't appear until the following season."
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Circle No. 102 on Reader Inquiry Card

88-83

OCTOBER 1988/LANDSCAPE MANAGEMENT 63
Natural products are gaining popularity constantly. Though it is unlikely they will ever replace pesticides and fertilizer, there is little doubt natural materials have a place in the market.

Last fall, Jim Loke, superintendent at Quail Hollow Resort in Painesville, Ohio, was in the market for a natural material to add to the topdressing on course greens. His need for a good natural additive resulted from a lack of Pennsylvania peat and the questionable quality of northern Ohio peat.

What he found was an all-natural, non-burning vegetative product containing poultry manure that is distributed by a Painesville-based company called Bio-Ganics. Chemical analysis of the product showed approximately a 3-2-2 percentage-by-weight N-P-K mix.

In November 1987, Loke applied the product to 11 of his greens and the practice green. Holes 3, 4 and 5 received the equivalent of 1.5 lb. N per 1,000; 1, 6, 9 and 11 received 3.0 lb. N. The double green of holes 2 and 7 served as the test green. Two received the 3 lb. rate, 7 got 1.5 lb., with the area between serving as the check plot.

The results were stunning, reports Loke, who adds that the density and color of the greens were excellent.

**Application rates**

Greens that received 3.0 lbs. showed no aerifier holes coming out of dormancy, the 1.5 rate showed some and the check plot showed all the aerifier holes.

“‘What’s been real positive,’” Loke says, “‘is the public relations aspect. The golf pro, the members and the business customers were overwhelmed at the mid-season quality of the greens at the end of April.”

Loke adds that the nitrogen amount put on with the natural was in addition to his regular N totals for the year. “It is a supplementary fertilizer amendment,” he states.

Part of the benefit of adding this and other natural products as a source of peat is their cation exchange capacity (CEC), which measures a soil’s ability to hold nutrients. Straight sand has a low CEC. In addition to raising the CEC, the natural product acts as a soil buffering agent, making the soil nutrition levels a bit more consistent over time. This means there are fewer peaks and valleys associated with mostly sand greens. “High quality topdressing material holds nutrients,” Loke says, emphasizing the “high quality” aspect.

“At the time of application, the turf was not lush, there was no excess top growth,” Loke explains. “We just had a dense, thick, healthy green turf.” Greens remained mostly disease-free throughout most of the summer of 1988. However, it is quite possible this was a result of the dry, low humidity conditions the Midwest experienced well into July.

Loke points out that this and other natural topdressing and fertilizer products are not a panacea. They are another tool. “It looks like a viable source of natural material to add to the sand,” he notes. “We had it chemically analyzed and it looks like it will satisfy most of our needs.”

The product Loke used, because of its very coarse texture, is not one to be used in season. It is ideal for a late fall feeding, though. If budget is not a factor, he recommends a 3.0 lb. application rate in the fall. If cash flow is tight, try the 1.5 lb. rate. Then wait until April.
To Nashville, heartland of the country and site of the exciting THIRD ANNUAL LANDSCAPE EXPOSITION!

Your colleagues will be coming from all directions to join other landscape professionals for a jam-packed three days of shopping, placing orders, testing equipment, meeting new suppliers, attending high-powered seminars, and sharing some down-home, foot-stompin' fun.

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The Third Annual Landscape Exposition

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Controller handles multiple irrigation schedules

The Mark 200 series micro-processor controllers from Weather-Matic provide a choice of 12, 18, 24 or 30 stations in a heavy duty housing. According to the company, the controllers are easy to program and require minimal training.

An option of six- or seven-day calendar programming allows even-day, odd-day or third-day watering. The dual watering feature provides two independent programs with four daily start times each. Also, a start-up/back-up program automatically gives two daily watering starts on all stations in the absence of a specific program. The back-up can be switched off.

A separate test program allows the operator to run all P1 or P2 stations for two minutes each without disrupting previously programmed duration times. The test program will skip un-programmed stations.

One-Pass Dethatch and Clean-Up.

Goossen's new Power Bake 'n' Vac cuts your large-scale groundskeeping jobs down to size with one-pass clean-up. If you handle golf course, park or roadside maintenance, your job just got easier.

Use the versatile Power Bake 'n' Vac to pick up and mulch leaves in the fall, rake and remove thatch in the spring, and mow (with available accessory blades) throughout the summer. And you should see what it does with those pesky pine needles and cones!

The PTO-driven flail "Rake" unit combines with a powerful vacuum mounted on a 101-bushel trailer to clean a path over 5 feet wide — and then haul it all away. An optional hand-held flexible vacuum hose picks up leaves and other debris from areas where flails cannot operate.

And when your clean-up is done, the large trailer tilts up for fast, complete unloading.

For more information on how the Power Bake 'n' Vac can help you cut clean-up time, call toll free 1-800-228-6542 (in NE, call 402-228-4226).

Another Goossen Solution

Floating aerator circulates water and adds beauty

The Aquavator floating aerator from Rain Jet Fountains, a division of Hardie Irrigation, helps condition water and prevent algae build-up, especially during hot summer months.

The fountains work on ponds or lakes in golf courses, retention basins or as general waterscape on commercial sites. The aerators have several choices of nozzle displays available, and all units can be fitted with lights.

The one-piece float body is injection molded polyethylene. Phillips 366 cross-linked polyethylene makes the float resistant to ultraviolet rays.

Circle No. 116 on Reader Inquiry Card

The company introduced the controllers at the Landscape Industry Show in Long Beach, Calif. in April.

Circle No. 195 on Reader Inquiry Card

continues on page 70
Why Betasan is trusted most by the best.

For over two decades an overwhelming majority of the country's top courses have chosen BETASAN® herbicide for their bentgrass greens, tees and fairways. That's because golf course superintendents know that BETASAN is the only crabgrass preemergent herbicide that's safe for all turf—including established bentgrass, bluegrass, fescue, perennial and annual rye, bermudagrass, Zoysia, bahia, centipede and St. Augustine. Extensive tests have shown BETASAN to be excellent for poa annua control, too.

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SOIL MOIST PLUS works unlike any other product to time release both water and fertilizer into the soil. It absorbs excess water with an action similar to that of a sponge. When the surrounding soil becomes dry, the product discharges the water and fertilizer into the soil as needed.

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Lawn roller incorporates tractor/operator weight

The Rol-A-Lawn turf roller differs from pull-type rollers in that it rests under the back wheels of the tractor. This combines the tractor's weight, the operator's weight plus the weight of the fluid-filled roller.

The roller can be attached by one person without using tools. Simply back the tractor onto the unit and connect the unit to the tractor. The tongue weight is less than 100 lbs. but the combined weight is more than 1,000 lbs.

The Rol-A-Lawn is ideal for golf courses, athletic fields and lawns.

Garden tractor available with two types of engine

Speedex Tractor Corp. has introduced the Falcon Garden Tractor, which offers either a 16 hp Briggs & Stratton or 18 hp Kohler twin cylinder engine mounted on a welded or solid bar frame.

The Falcon is available in hydrostatic or gear drive with many attachments, including quick attach 42-, 50-, and 60-inch mowing decks.

Vacuum loaders clean up leaves fast and efficiently

The Salsco 716 and 720 Loadervac truck loaders are both powered by