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Ohio State University 1996

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Virginia Polytechnic Institute & State University 1996

# PENDIM



# RASS?

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*Penn State University 1996*

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DANIEL INGHAM

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## SIMA meeting can help with snow removal



*Terry McIVER*

**TERRY McIVER**  
Editor-in-Chief

**I**f you want to improve the way your company runs its snow removal business, then you should attend The Snow & Ice Management Association's first *Snow & Ice Symposium*, May 7-9 at the Airport Marriott Hotel, Pittsburgh, Pa.

SIMA is a year-old organization that has come off the blocks fast, with useful information for serious snow removalists!

LANDSCAPE MANAGEMENT is the exclusive Green Industry publication helping to sponsor this event. Other sponsors are Western Snowplows,

Fisher Snowplows, Shindaiwa, Cryotech Deicing Technology and Burke's Trading International.

Snow removal is not easy. It takes time to plan your marketing, capitalization and pricing strategies. A May meeting will enable you to take home what you learn and use it to plan well ahead of the first snowfall.

**John Allin**, president of Allin Companies, Erie, Pa., is a founding member of SIMA, and has a vast back-

ground as a landscaper and snow removal expert.

"It is our intent to bring snow plow contractors together for the first time, to give them time to have some intense interaction among their peers," says Allin.

"I have found that to be the best way to learn. A contractor can sit and listen to me for an hour, but it will be more valuable if he can ask a contractor from three states away how he would handle a specific snow removal situation."

The lineup for the Symposium brings together experts in weather prediction; finance; equipment and advice from people who are successful at snow removal.

**Dale Keep** is a Maintenance Methods Specialist for Washington state. He has written many reports and articles on the subject of snow removal,

and has trained other public works departments. Keep has been active in evaluating environmental issues associated with deicers. He will share facts about deicing and anti-icing methods.

For the "bottom line," **Frank Ross**, one of the Green Industry's leading business consultants, will speak. Ross knows what companies do to become profitable, and what they must continue to do to make money.

"Companies need to isolate snow activities into a profit center, and understand how much it truly costs them," says Ross.

Ross told me he will also explain pricing strategies, and ways to present those prices in a way that will be accepted by your customers.

Since what we're talking about is the weather—and what you *can* do about it—the Symposium has asked **Bryce Anderson**, chief meteorologist at DTN, to speak on meteorology.

"I'm going to cover some basic weather fundamentals to help the audience get a handle on the big weather systems that eventually funnel down to the local area," Anderson told me.

"Then we'll take a regional look in terms of radar and go over some fundamental factors and features of pressure centers as they move across the country," says Anderson.

Master of Ceremonies **Jim Paluch** runs J.P. Horizons, Painesville, Ohio. He specializes in "business coaching."

Paluch told me he hopes to combine "big picture instruction with 'right-brain' creativity," in a "Roundtable Olympics" format. Having people in a roundtable format, says Paluch, "creates a sense of camaraderie among the group. With that camaraderie, they're more willing to share information after the session is over."

Supplier representatives will also be ready to answer questions you have about snow removal equipment.

SIMA members can attend the Symposium for \$295. Non-members pay \$365. There's a price break if more than one person attends from your company.

You can join SIMA for as little as \$130. To learn more about the Symposium and SIMA, call the Association at 814/456-9550. **LM**



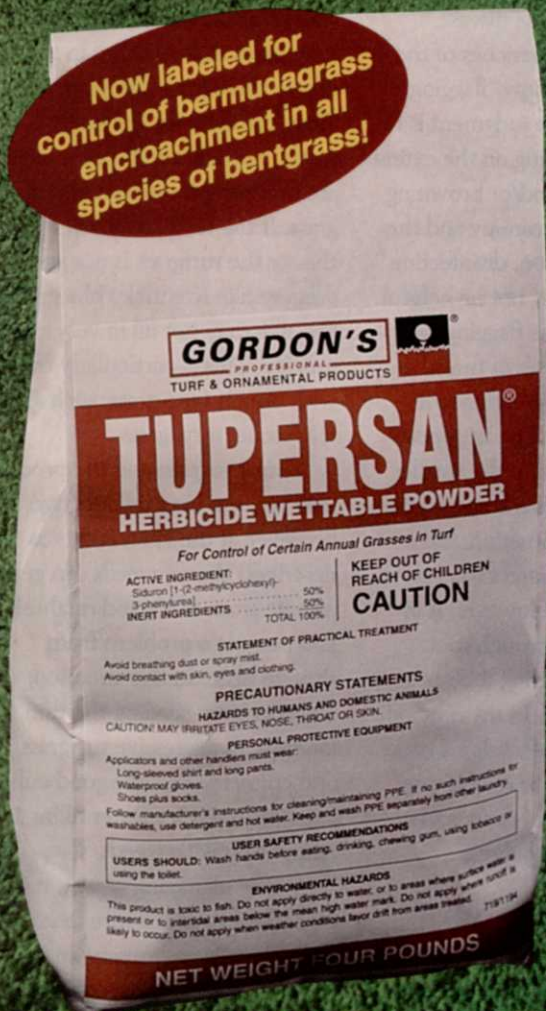
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## Field bindweed puts us in a bind

*We have a serious problem with field bindweed growing in and around some plants in our client properties. How can we get rid of it without hurting the ornamental shrubs?*

—MICHIGAN

Field bindweed (*Convolvulus arvensis*) is a perennial weed that belongs to the sweet potato family. It has an underground root that's not unlike a sweet potato.

There are no selective herbicides to remove this weed. One option is to use non-selective products such as Roundup, Finale or Scythe as post-emergent treatments. These products will harm the desirable plants. Take care not to contact or touch the desirable plants while treating.

Try using a brush or wick for applications. This will be time consuming, but it's better than repeatedly hand weeding from an established ornamental planting.

Another option is to relandscape heavily infested areas. In this situation, the area to be landscaped can be pre-treated with one of the existing bindweed treatments. Then bring in plant materials free from bindweed. Select plants from nurseries that have good sanitation practices.

## Why disinfect tools?

*We were in a situation where an elm tree had several branches showing "flagging" symptoms of Dutch elm disease. Our supervisor insisted*

*we disinfect tools while making cuts within the same tree. Why?*

—NEW YORK

The main objective of disinfecting pruning tools is to sanitize the tools to prevent or minimize spreading the disease. While pruning branches of the same tree that show "flagging" symptoms, some judgment is required. Depending on the extent of the flagging and/or browning of foliage in the canopy and the source of infection, disinfecting tools may or may not be helpful.

Generally, the flagging symptoms are the result of fungal infection spread by bark beetle feeding activity. The European bark beetles feed in the smaller branch junctions and spread the fungus. In this situation, it is a good idea to disinfect to prevent further spread. However, if infection occurs through root grafting, disinfecting tools may be of little value. In my opinion, if in doubt, disinfect. It's a good sanitation practice to help prevent the spread of fungus that causes Dutch elm disease.

## Weed resistance in home lawns

*We are having a problem managing common broadleaf weeds, such as dandelion or plantain, in some lawns but not others. It's a problem in lawns with a thin grass stand. Are these weeds developing a resistance?*

—MICHIGAN

The reason why you may be having weeds in some lawns and not in others may be related to "thin" lawns. Any open areas or

a thin stand of turfgrass can allow weeds to germinate and eventually establish. Weed seeds can remain viable in soil for a long period (10 to 20 years). In addition, weed seeds can be carried by wind from nearby untreated areas. Weeds are opportunist pests that establish in areas where there is no competition. They compete for the same water, nutrients and space that are necessary for desirable turfgrass. If the turfgrass stand is thin or the turfgrass is not aggressive like Kentucky bluegrass, the area may not fill in very quickly. This is particularly true with bunch-type grass, such as tall fescue or ryegrass.

Your program and the products you use may be effective; however, if the lawn is thin as described above, weeds can germinate from seeds and establish and present a problem from time to time. In this situation, consider over-seeding the thin lawns with aggressive turfgrass and cultivars. Provide good cultural practices for faster filling in competing with weeds.

While managing weeds, it is important to make sure that the target weeds are present and actively growing. Quite often, if the weeds are not actively growing, they will not absorb the product and translocate it to the root system. I am not familiar with any reports suggesting resistance to lawn applied herbicides. With granular products, an application made when leaf surfaces are moist or wet gives better results. **LM**



**BALAKRISHNA RAO**

Manager of Research and  
Technical Development  
for the Davey Tree Co.  
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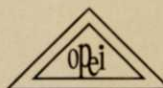
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LM



# NC turfgrass industry is booming

**RALEIGH, NC**—Researchers and educators in North Carolina hustle to stay ahead of the state's expanding turfgrass industry. That they're able to do this is credit to their resourcefulness and far sightedness. And also to the cooperation that they've forged with the professional turfgrass community, particularly the influential Turfgrass Council of North Carolina (TCNC).

The hub for this activity is North Carolina State University. The turfgrass staff at NCSU spearheads a full menu of research and outreach programs, in addition to instructing over 200 students in both its four- and two-year programs.

Because of the growing importance of these programs and of turfgrass, in general, to the state's economy, NCSU is considering expanding its turfgrass research field center, says Dr. Arthur Bruneau, Professor of Crop Science.

A 20-acre site a few miles from the present site is a probable location.

Meanwhile, turfgrass research progresses at NCSU, and at other locations throughout the state too, from the sandhills in the center of the state to the mountains in the west. These include turfgrass variety trials (including NTEP trials), pesticide trials, water quality and nutrient management studies, detailed investigations into turfgrass physiology and others.

One of the newest turfgrass research efforts at the university involves turfgrass bioengineering. Researcher Dr. Rongda (Ron) Qu and his



These turfgrass plants represent the beginnings of North Carolina State University's efforts to genetically engineer improved turf.

small staff have begun work on the state's three dominant turfgrasses: tall fescue, perennial ryegrass and hybrid bermudagrass. The goal is to

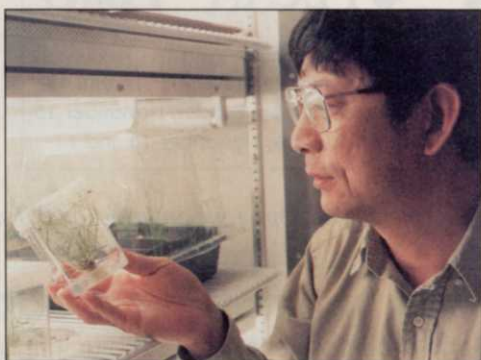
improve, through genetic engineering, each of these species for the mid-Atlantic region's special conditions—for instance, developing a hybrid bermudagrass with resistance to nematodes, brown patch resistance for tall fescue, solving the summer persistence problem for perennial rye.

The process won't be as simple as identifying specific genes and "shooting"

them into turfgrasses to get grasses with improved characteristics, stressed Qu. The process is vastly more involved than that; but it can be accomplished given time and sufficient funding, he said.

"In our first year we spent most of our efforts in the tissue culture stage," Qu explained. "We've also started some transformations and got some calli." (Callus is the undifferentiated mass of cells, at least from appearances, in a culture dish that eventually sends forth leaves and roots and becomes plants, in this case turfgrass plants.)

"Ten years ago we weren't doing any of this gene transformation work," added Dr. Charles Peacock, professor of crop science. "But we have to take advantage of genetic transformation with the demands everyone is making on providing as good a quality



Dr. Ron Qu, above, heads NCSU's turfgrass genetic engineering effort. He's shown to the left with, far left, Dr. Arthur Bruneau and Dr. Charles Peacock of the NCSU turf staff.





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## NC TURFGRASS AT A GLANCE

### North Carolina:

- ▶ has over 2 million acres of turf with 1.2 million acres in home lawns.
- ▶ has over 150,000 acres of turf in parks with playgrounds averaging over 900 hours of use each month.
- ▶ maintains a turfgrass acreage equal to 41 percent of all of the state's harvested cropland, and is nearly 1.7 times the acreage of the state's total pasture land.
- ▶ turfgrass industry employs over 114,300 fulltime and seasonally, with an annual payroll of \$374 million,
- ▶ invests over \$830 million in annual turfgrass maintenance expense plus the ownership of \$3.5 billion worth of turfgrass maintenance equipment.
- ▶ hosts over 15.3 million rounds of golf a year.

turf as possible with as little input from a nutrient, pesticide and a water conservation viewpoint.

"We're not looking for any real quick turnaround," he added, "but 20 years from now we're going to have grasses that are more stress resistant, more pest tolerant and that take lower inputs and give us better quality; genetics can do this."

The turfgrass genetics work—like turfgrass research everywhere—is being funded by "a mixed bag" of sources, said Sam Lang, one of the directors of the TCNC. These include funds from the university, from the state legislature and help from the TCNC itself that annually provides the university's turfgrass program with over \$100,000 for research.

Lang identified water quality in the state's rivers as another issue that the state's turf industry and turf researchers are being asked to help. North Carolina has 14 significant rivers flowing across it toward the Atlantic

Ocean, and the state is gearing up to reduce nutrient loads 30 percent in all of them. The first river it has targeted with a pilot program is the Neuse River.

Lang said the state is looking at both point and non-point sources of nutrient pollution, and each industry, including turfgrass, is being asked to develop its own plan to reduce it.

NCSU turf researchers recognized this problem before it became an issue, and initiated water quality studies on its research farm about five years.

"Industry (turf) is supporting the big push on water quality," added Art Bruneau. "Industry wants to do what's right too."

To learn more about turfgrass in North Carolina, consider attending the Annual NCSU Turf and Ornamental Field Day on May 20. For more information, contact the TCNC at 1-910-695-1333.

—by Ron Hall

# AgriBioTech buys more turfseed firms

**LAS VEGAS**—AgriBioTech, Inc. (ABT) is ahead in its stated goal to control 45 percent of the \$1.1 billion U.S. forage and turfseed market by December 31, 2000. In fact, Chairman and CEO Dr. Johnny Thomas recently told shareholders that ABT will accomplish that by year's end—two years ahead of schedule.

His comments came just weeks before his company announced the pending purchase of four more seed companies. It signed letters of intent to buy: Peterson Seed Co. Inc., Savage, MN; Geo. W. Hill & Co. Inc., Florence, KY; Fine Lawn Research Inc., Kentucky and Oregon; and Geo W. Hill of Indiana Inc., Elwood, IN. The four companies have combined annual sales of about \$37 million.

Peterson specializes in alfalfa, other forages and turfgrass distribution in the East and Midwest. They also have a seed-coating plant and licenses to unique germ plasm. Hill-KY, Hill-IN and Fine Lawn share some common ownership and, as a group, specialize in the distribution of turfgrass seeds, forage seeds and ancillary product distribution. All fine owners, including Jerry Peterson, will sign employment agreements with ABT.

In just three years—since January, 1995—ABT has completed 18 acquisitions and is now the largest forage and cool-season turfgrass seed company in the United States with sales of about \$409 million, including the above four acquisitions and the previously pending acquisition of Zajac Performance Seed, Ohio Seed Co., Van Dyke Seed Co. Inc., Las Vegas Fertilizer Co. Inc., Kinder Seed Inc., and Willamette Seed Co.

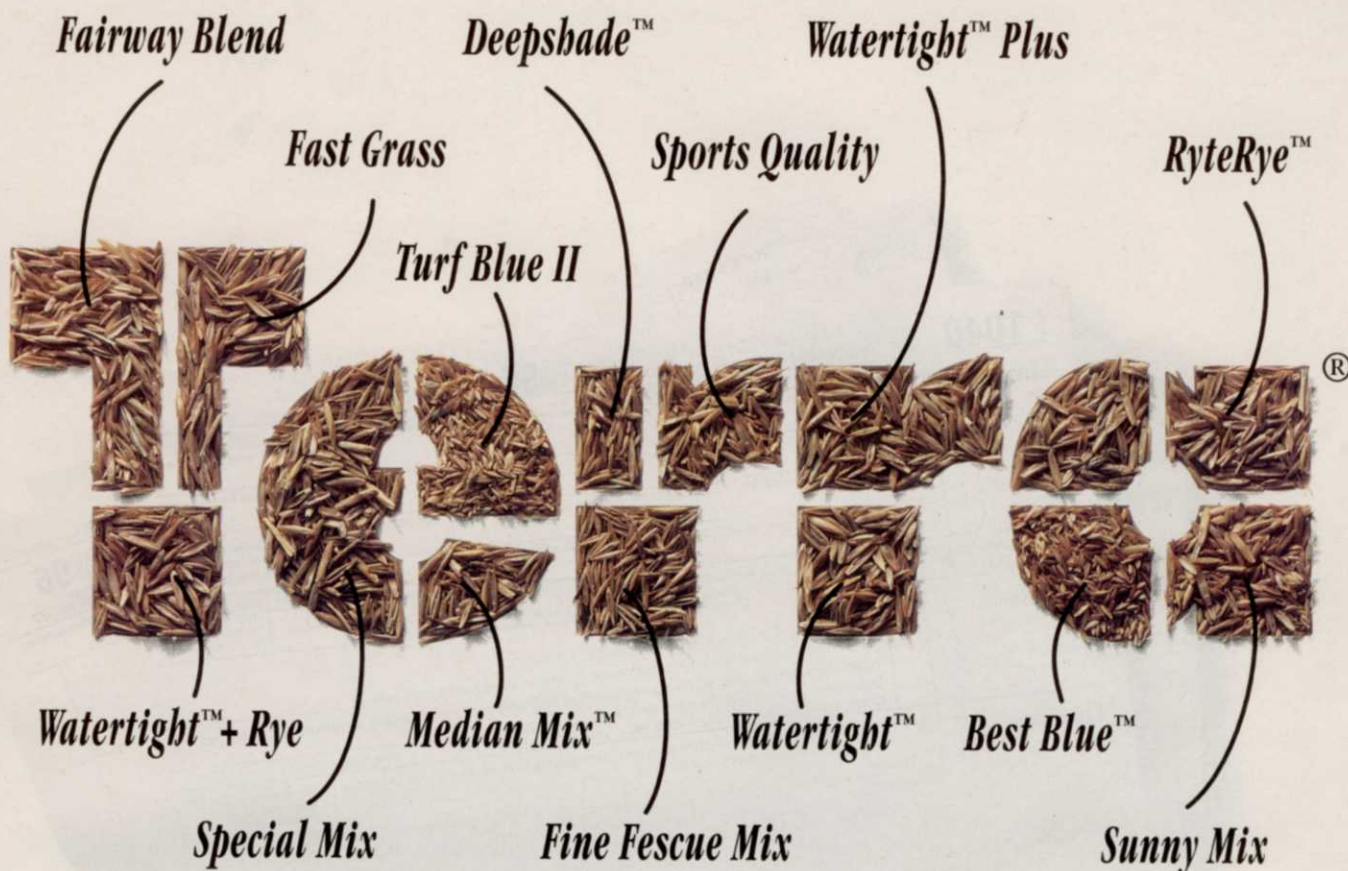
On January 13 ABT completed the purchase of Seed Corporation of America with net sales of about \$40 million and, on January 7, the purchase of Lofts Seed Inc. with annual sales of about \$75 million.

Just two months prior to that, on November 20, Kent Shulze joined the company president and COO, and Dr. Thomas B. Rice as vice president, director of research. Both are experienced and well known in the seed business.

Shulze served as president and CEO (1990-1996) of Northrup King Co., Minneapolis, then an operating unit of Sandoz Seeds. Prior to that he was president and COO of Dekalb-Pfizer Genetics, Dekalb, IL.

Dr. Rice had also previously been with Dekalb Genetics where he served as director of research for 10 years. He was the chief architect of the company's biotechnology strategy. □





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# Equipment:

**L**easing is a contract granting use of property during a specified period in exchange for a specified fee. Leasing offers you the opportunity to select the equipment you want for

*A lease or buy decision can be based on the estimated life of the equipment, the availability of cash flow and the advice of an accountant on the tax ramifications of the decision. You may want to just take the depreciation.*

By STEVE & SUZ TRUSTY

the time period you want without tying up financial resources for the total price of the unit.

In buying equipment you commit to the total price of the equipment which impacts your line of credit with the lender and usually with other sources that request bank information on your credit applications.

"I base my lease or buy decisions on the estimated life of the equipment, the availability of cash flow and the advice of my accountant on the tax ramifications of the decision," says Nick Stipanovich, owner of Nick's Lawn Service, Merritt Island, FL. "There may be times when there's a greater tax advantage

for our company in making a capital purchase and reducing retained profits by that amount than there is in leasing and depreciating the lease value.

"The number one aspect of leasing is I don't have to put up a lot of my money to get into the equipment I want. The initial payment on equipment is generally in the range of the regular payment on that unit.

"Leasing also allows me greater control over my cash flow. When it comes to a \$40,000 or \$50,000 machine, I can sign the lease agreement and make the initial payment at the end of March. The machine is mine to use from the date the agreement is signed. The first regular payment would then come due at the end of April. That control is really important when you're leasing equipment for a job you're just beginning and won't receive payment on until later."

Stipanovich adds, "most of our equipment lease agreements are set up similar to a bank loan, but with a dollar buy out at the end of the lease period. Because technology is moving so fast in this industry, I like the flexibility leasing gives me to move up to a faster, better unit at any point in

the life of the lease without making a major impact on my cash position."

Dave Herman, superintendent of Heritage Highlands Golf and Country Club, Tucson, AZ, says, "we lease so we can get the best equipment for the least amount of money upfront. With traditional purchasing on a golf course you have equipment on three- to five-year cycles. When those machines need replacement, you're facing a huge capital expense. With leasing, we have equipment on three-, four- and five-year leasing programs: the smaller mowers on three-year leases, the Gators on four-year, and the larger tractors and other units on five year.

"At the end of the lease period we have the option to extend the lease for an additional year, buy it out at the pre-determined price point, or tell the company to take it away. We can start another lease on a new machine at that point, with a minimal initial payment."

Gary Tungate, vice president and regional manager for the Southeastern US offices of Environmental Services/Environmental Golf/Valley Crest says, "our company has found it



a good basic business decision to go with outright purchases and take the depreciation. With our national buying power, strong cash position, and consistent growth, we keep coming to that decision. Leas-

***Do your homework. Make sure you're working with a good leasing agent and that there are no hidden charges.***

ing does have a place when other assets are needed and purchasing makes a detrimental effect on buying power."

Tungate adds, "we determine the life cycle of our machines using the manufacturer's projections and our own estimates of our own usage of that piece of equipment. Each machine is analyzed with replacement based on those factors, along with the performance of the machine and its maintenance and repair records."

The same kind of analysis

and performance tracking is followed by those leasing equipment. Because Stipanovich keeps newer machines in his lineup, maintenance generally is confined to regular servicing; the company handles it in-house.

"We get a one year, bumper-to-bumper warranty on new turf equipment and opt for two more years of warranty on all the major parts through our distributor (Ari-

zona Machinery) so all the major repair issues are covered," says Herman. "We handle general, scheduled maintenance."

Stipanovich cautions that "all leases are not created equal. Do your homework and make sure you're working with a good leasing agent and that there are no hidden charges."

Cleve Cleveland, CGCS, is superintendent and owner of Newark Valley Golf Course, Newark Valley, NY. He holds two degrees in accounting, and

speaks on financial issues at turf conferences.

"Ask your sales rep to put you in touch with a leasing specialist, who will be more than happy to explain the types and details of various leases," says Cleveland.

"Have the salesman provide you with a detail of a lease arrangement. Talk to your CPA or the golf course's CPA and have them analyze it and try to estimate the built-in interest rate factor"

"Do pick a leasing company that understands your business, offers flexibility and is willing to work with you," adds Herman.

Some leasing companies offer a "bundling" option with used equipment from the associated manufacturer and allied products, in the same package with your new equipment lease.

Herman says, "We're using John Deere Leasing and not just for John Deere machines.

Things that we'll have for a long time, such as our storage towers, are



**Cleveland: Know the built-in interest rate factor.**

leased through them with a one dollar buyout."

Flexibility is a key component of leasing. Herman notes, "One of the greatest advantages to leasing is the opportunity to make the move to more advanced equipment, a ma-

chine that performs better or more closely matches our needs.

With leasing, we can do this when that equipment becomes available, even before we reach the end of the lease cycle on our current unit. We switched from our leased Gators to leasing the new Turf Gators when they came out with a minimal increase in our lease payments and no penalty for making the change.

"The previously leased machines are a great buy for courses that don't have the resources to lease or purchase new equipment. Our Gators had been serviced regularly and were in great shape, but we wanted the advantages of the new machines."

*See leasing financial tips on page 22*

# Lease or buy?



# Cutting costs a key

For many contractors and superintendents, signing a lease could be like signing away a headache or two. Contractors and superintendents find leasing a way to defray the amount of their capital investments.

It also answers a maintenance question: who will fix it, and for how much?

Other advantages include trade-in options, tax advantages and convenience.

**Lance Schelhammer**, president of Grass Roots, Inc., Lenexa, KS., knows first hand how vital leasing is due to equipment depreciation.

"We feel that since some of the trucks are used in snow removal, their value decreases a lot faster than a truck that wouldn't be used in snow removal. Therefore, it's not a sound investment. We feel we should lease the snow trucks rather than purchase them. Since we need to turn over the trucks every three to four years, it makes sense for us to lease those trucks. You're not absorbing the same amount of loss as you would on a purchase."

Schelhammer doesn't equivocate on the dollars he saves.

"A lease is normally cheaper than buying," says Schelhammer. "There might be as much as \$100 per month difference per vehicle."

Grass Roots leases 15 vehicles, for a savings of \$1500.

A leased vehicle, however, can't be listed on the Assets column of a financial statement.

"It's just a cost," reminds Schelhammer.

**Sam Burke**, owner of Hebron, Ky.-based Landscape One, has leased mid-range mowers and trucks.

"That's the main part of your workforce. Those are the items that are used daily. Those are the higher dollar pieces of equipment and the types of equipment that you want to try to keep updated without stretching yourself cost-wise to purchase."

Burke says that over a five-year period, you may save 20-25 percent, considering downtime, or possibilities of downtime.

**Tom Tuttle**, golf course superintendent of Trenton CC, Trenton, NJ, leases a reel grinder.

"In the long run we pay a little less

money. We incorporate the payments for it into our operating budget. I didn't have to ask for any more capital money to purchase it. From that standpoint, I just continue to use my operating budget to get the piece of equipment.

Tuttle may lease more in the future, including fairway mowers, spray tanks and tractors.

"Those are the kinds of equipment you want to replace on a regular basis, especially the mowing machinery. They have an estimated lifespan, and you set up the lease for the estimated life of the equipment. As opposed to just buying it and keeping it years on end; then, when you want to get rid of it, it doesn't have its trade value.

"It's a way of keeping the average age of your primary pieces of equipment at a young age, with less breakdowns and more productivity," says Tuttle.

"There is a benefit as far as capital output," adds **Dennis Smith**, fleet manager for an Irving, Texas-based landscape company.

"You don't have to come up with initial capital to get the vehicle. We lease the bulk of our equipment primarily for capital purposes."

That retention of capital was a key advantage for **Ed May**, superintendent of the new Blue Bell CC, Blue Bell, Pa.

"This is a new golf course, so we had to purchase the entire maintenance fleet, which is about \$500,000 worth of equipment. The lease/purchase option was good because we didn't have that initial large amount of money going out."

In some cases, leasing is just plain easier.

"It's easy to get a lease. It's convenient. The payments are nice," lists **Melissa Shrader**, president of Greenshades, Inc., North Liberty, Iowa.

"If you're careful, the payments can be equal to buying it, without all the paperwork."

Greenshades leases mowers, trucks and radios, "for the convenience and the tax savings. You can deduct that completely off your taxes rather than having to go through

a depreciation schedule.

"My feeling isn't that you necessarily save money. It's more for your tax dollars."

## Maintenance advantages

"My biggest advantage in a leasing agreement would be that at least the agreement I have includes maintenance. The pieces of equipment that I lease can be a big maintenance item," says **Myron Groat**, owner of ABC Lawncare, Fort Dodge, Iowa. "Then, in turn, they never get old under a lease agreement," says Groat, who leases walk-behind mowers.

Shrader enjoys the warranty advantages offered by leases.

"If you have a leased truck and you get into an accident, you trade it in and get a new one, and it doesn't affect your lease at all. You're guaranteed that. For smaller equipment, like radios, it's the same thing. If it's not working, instead of having to deal with repairs and sending it in, and waiting, you have a new one right away."

"If a piece of equipment goes down while it's on the lease, most rental dealers have a repair shop where they can take care of the repairs for you, which is included in

the lease," says **W. Paul Stacey, Jr.**, president of Landscape Services, Inc., Fairview, TN, who likes long-term leases.

"The best way to lease is over a three-year period; that way, you have the warranty on the truck for the whole duration of the lease. We do it for four years, because we maintain our own trucks," says Schelhammer.

And, don't forget the intangibles, like just how good a new truck or mower can make you feel.

"It's nice to have a new piece of equipment every three years," admits **Dave Spotts**, superintendent of Indian Hills Golf & Tennis Club, Paxinos, PA.

—Sharon Connors



Schelhammer: Lease the snow trucks.



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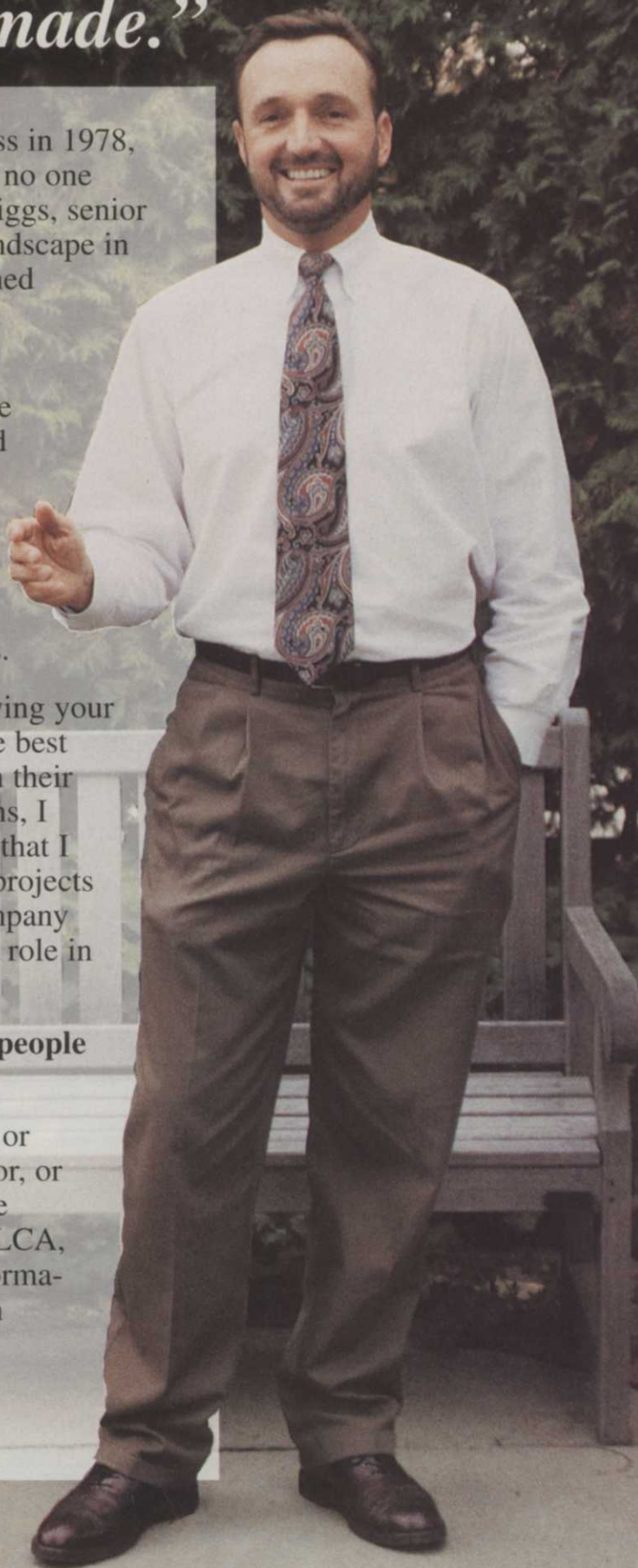
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## POWER BLOWERS

**Look at the range of attachments and other features that each power blower system offers.**

By CURT HARLER

Size the blower to the job. A 32 cc, 360-cubic-foot-per-minute gas blower will deliver a speed of 170 mph, enough to blow wet leaves. However, for sand, dry grass or pine needles a lighter unit will do.

Choosing the right air blower is getting more complex as the variety of models increases. But bureaucratic regulations may have more of a say in your purchasing decision than the operator's comfort or working efficiency.

Some local governments restrict the use of gasoline-powered blowers, which do not meet certain minimum requirements, in residential and other areas. Blowers fall under both EPA and CARB regulations, although most models comply with the 1999 specifications. Noise levels must be kept under 70 decibels at 50 feet, according to ANSI B175.2-1990.

It's been mentioned before, but bears repeating: always operate gas blowers in a safe, courteous fashion.

There are two major categories of blowers: backpack style, and the hand-held unit. For big jobs that will take several hours, choose backpack models. Although most are much heavier than the hand-held units, backpacks usually provide better power, a larger fuel tank for longer operating time, and more freedom of movement to the worker.

Hand-held units are good for quick cleanup and short jobs and usually are simple, one-person systems to run. However, their operating time is likely to be much less than with a backpack unit and the fatigue factor mounts much quicker.

Look at the range of attachments and other features that each blower system offers. A blower which can perform multiple tasks will get more use and will return its investment fast. As always, be safe: a gas powered unit with a bottom impeller should not be set down in loose leaves or grass — the material will be sucked in and block the intake. Be cautious with drawstrings on coats or windbreakers too. They have a way of getting sucked into the engine intake.



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847-540-8400  
Circle No. 252

Low-noise gas-powered blower from Echo, Lake Zurich, IL generates a mere 65 dB at full throttle. The PB-46LN is 50 percent quieter than its earlier model, yet delivers the same air volume and velocity and uses the same 44 cc, two-stroke commercial-grade engine. It has a padded backrest, rugged frame, heavy-duty auto-type filter, and a 2-quart, see-through fuel tank.

**GIANT VAC**  
860-423-7741  
Circle No. 253

The Chip-N-Vac is designed to give versatility of a yard and driveway vacuum system with a chipping capacity of two-inches diameter. The all-in-one compact machine is built to meet rugged standards.

**HUSQVARNA**  
800-438-7297  
Circle No. 254

Two-stroke blower features E-tech, a combination of features to reduce certain harmful exhaust emissions and the smoke and odor associated with them. The 225HBV features a Clean Sweep crankshaft that effectively "sweeps" the fuel/air mixture into chamber.

**JOHN DEERE**  
Circle No. 255

Deere's BP40 Backpack Blower with 40.2cc Kawasaki engine, 250-

mph air velocity and 590 cfm volume. Fully covered muffler and noise-suppressing air filter for a quiet 71.5 dB(A) sound level. Also the BH30 Hand-held blower with 180 mph velocity and 450 cfm volume. Weighs just 10.7 lbs. Extra large 23-ounce fuel capacity.



Husqvarna two-stroke blower

**LITTLE WONDER**  
215-537-5110  
Circle No. 256

Little Wonder, Southampton, PA has just redesigned its line of push-style commercial blowers. All were field tested by 30 landscapers from New England to North Carolina. Models range from the 9500HO with 5 hp Briggs engine; 9800HO, 8 hp Briggs; 9910HO, 9 hp Honda; and the 9111HO with 11 hp Briggs IP. All with side-discharge.

**MAKITA**  
719-522-8088  
Circle No. 257

The RBL500 Backpack Blower from Makita, La Mirada, CA weighs just 19.2 pounds, but its 48.6 cc engine produces 187 mph windspeed with 447 cfm air volume. A rugged backpack frame protects the blower; plus it evenly distributes weight to the operator to reduce fatigue. 61-oz. see-through fuel tank.

**MANTIS**  
800-366-6268  
Circle No. 258

The Mantis BSV does the work of three tools: blower, shredder and vacuum. Its 21.2 cc gas-powered

engine blows air at up to 125 mph. Cruise control eliminates need to hold trigger down while working. Switch to the debris-collection bag and feeder tube and it is converted to a hand-held vacuum-shredder.

**MACKISSIC, INC.**  
610-495-7581  
Circle No. 259

Nine models of Mighty Mac leaf blowers from MacKissic, Inc., Parker Ford, PA. The LB552PN (shown) is powered by a 5 hp Briggs & Stratton engine, 15-inch diameter impeller, blows 1800 cfm at 175 mph.

**MARUYAMA**  
425-885-0811  
Circle No. 260

The newest backpack blower from Maruyama, Redmond, WA represents a new generation of quieter, lighter, more powerful blower. The BL4500 features a newly designed 40.2cc Kawasaki engine with a wide-open design for cooler running. Weighs 18.6 lbs.

**MCCULLOCH**  
800-423-6302  
Circle No. 261

The 1998 ProMac line of professional products includes the BP4300 Backpack Blower. It features the durability of Mitsubishi and the craftsmanship of McCulloch. Controls mounted on the blow



Maruyama BL4500

pipe. The 43cc Mitsubishi Industrial engine revs up to 644CFM air volume with 70dBa at 7000 rpm.

**RED MAX**  
770-381-5147  
Circle No. 262

Pro Series power blowers available in the RedMax line from Komatsu Zenoah America, Norcross, GA. Choose back-pack style EB431, 441 and EB6200 which feature a maximum air speed of 186 mph and move and air volume of 565 cubic feet per minute; hand-held HB2300 has a 353 cfm air volume at 150 mph.

**RYOBI**  
602-961-1002  
Circle No. 263

Powerful 31 cc, two-cycle gas engine powers the Ryobi 280R gas blower. The unit from the Chandler, AZ company has an operating weight of 11.5 lbs. A super-low tone muffler assures quiet operation. Dual-operating handles allow for left-handed or right-handed use.

**SELBRO, INC.**  
419-483-9918  
Circle No. 264

The ProBlow line of debris blowers from Selbro, Bellevue, OH come in 8, 9 and 11 hp walk-behind models. All units feature cast aluminum precision balanced impellers, fully adjustable and reversible handles.

**SOLO, INC.**  
757-245-4228  
Circle No. 265

Lightweight air blaster is operated by a 5 hp, two-cycle engine. This backpack unit from Solo, Newport News, VA, has padded shoulder straps and an anti-vibration system. The unit is recoil started with a 1.6 quart fuel tank, providing about an hour's work between stops. It blows 468 cubic feet per minute.

**STEINER**  
330-828-0200  
Circle No. 266

THE PB 100 attaches to the company's Quick-Hitch front mount attach system on power units. A 14-inch blower fan generates winds of up to 150 mph at rated engine speeds. Durable construction and greaseable bearings.

**WOLFE METAL FAB**  
724-339-7799  
Circle No. 267

The Saxon Blower-Vac from Wolfe, Lower Burrell, PA, lets one operator do two functions. With the chute open, the unit blows clean around trees and then windrows. By pulling up a lever, the same person can vacuum up all the material. Unit has a 5-foot diameter impeller enclosure, fully-encased in a heavy-duty deck. **LM**



# Timing is everything

*The smallest (youngest) immature stages of turfgrass insect pests usually are most vulnerable to insecticides.*

By PATRICIA J. VITTUM, Ph.D.  
University of Massachusetts

**T**he key to successful management of turf insects is understanding their habits and the life cycles. This determines when a particular management strategy is most appropriate. Each insect species has stages that are most vulnerable to control. That's when your control efforts have the greatest chance of success. In addition, each insect species has particular habits that have a bearing on insecticide decisions; some insects

feed on stems and leaves. Meanwhile some of the most troublesome turf insect problems are soil insects, which spend much of their time in the root zone but may make brief forays into the thatch. These include various species of white grubs in cool-season grasses.

The habitat affects management approaches. Insects which feed and live primarily in stems and leaves are more exposed than others, while those that hide in the thatch are just a bit more protected and less vulnerable to insecticide applications.

Therefore, the chemical characteristics of insecticides become important. A material like chlorpyrifos (Dursban) would be a wise choice for some of the thatch-inhabiting insects because the material is bound quickly in thatch and remains right where the insects are most active. However, such a material often is not able to penetrate the thatch and reach the soil-thatch interface and therefore often does not reduce white grub populations significantly.

### Distribution

Some insects occur in particular areas, preferring certain soil types or certain turf species. For example, hairy chinch bugs (the most common species in cool-season turf) prefer lawns with thick thatch and usually cause the most damage in sunny areas and soils that drain well. Insect problems often show up first in turfgrass on south-facing slopes, in part because these areas are under more moisture and temperature stress during the summer and are more likely to suffer from additional insect activity.

There are several species of white grubs that attack cool-season turfgrass. Many of these species were introduced to North America accidentally, and have adapted to conditions rapidly.

The Japanese beetle, introduced in New Jersey around 1915, has spread until it can be found in virtually every state east of the Mississippi River. The European chafer, which was first found near Rochester, NY, in 1940, has spread to the southern shores of the Great Lakes, through the heart of Michigan, and throughout much of eastern Massachusetts. The oriental beetle, apparently introduced in Connecticut around 1910, is well established throughout coastal New England and has spread into other regions as well. It has also become a major pest in production nurseries, and has ne-



The effectiveness of any control product can only be determined after extensive field trials under varying real-life conditions.

occur in the soil, which means special efforts must be taken to ensure penetration of an insecticide beyond the thatch, while others reside in the thatch, so insecticides that are bound readily in thatch are perfect choices.

### Habitat

Most turf insects are active only in certain parts of the turfgrass community. Some, like bermudagrass mite and other mite species, tend to remain on the leaves and stems during much of their development. Others, like chinch bugs, two-lined spittlebug, webworms, and cutworms, are active in the thatch and



cessitated the use of soil drenches before plants can be shipped to non-infested areas. The Asiatic garden beetle has been around for at least 70 years, primarily in the northeastern U.S., but until recently was not considered to be a major pest in turf. However, there have been increased reports of activity of this species in turfgrass, perhaps as a result of changing patterns of insecticide use.

#### Habits

Each white grub species has a slightly different life cycle and behaves differently in the soil. Thus, it's important to determine which species is present before attempting to control the grub problem.

For example, European chafer grubs remain in the root zone later in autumn and return earlier in the spring than other grub species. Oriental beetles tend to be quicker and move downward in the soil profile when the upper soil dries out. Under unusually dry conditions, grubs of most species will migrate downward to avoid the hot, dry conditions. In these circumstances, watering the area about 24-36 hours before the intended insecticide application will trick the grubs into thinking that conditions are improving, and they will move back upward into the root zone. The insecticide application will have a much better chance of success.

There are many species of cutworms and webworms that attack turfgrass, and most are active at night. Searches for caterpillars during the daytime usually are futile, unless a "disclosing solution" (an irritating drench or soap flush) is used to force them to crawl to the surface. When insecticides are used to control cutworms or webworms, the applications should be made as late in the day as possible so the material is still "fresh" when the caterpillars emerge to feed in the evening.

#### Timing of application

In many cases an insecticide is the most reliable option for managing a turf insect problem, but the success of that material depends on the timing of application. Consider these rules of thumb when dealing with pest insects:

► most insect eggs and pupae are not susceptible to insecticides, and

*White grubs and other soil insects tend to be the most difficult to control because an insecticide must penetrate through the thatch to contact them.*

► the smallest (youngest) immature stages usually are most vulnerable to insecticides.

A turf manager needs to determine when the pests will be in the egg or pupa stage, and avoid the temptation to treat at that time. The best target date is to treat just as the last of the immatures, whether larvae (of insects like white grubs and weevils) or nymphs (of chinch bugs and other insects with gradual development), emerge from eggs.

The period during which an insecticide can be used with success, varies with insect species. For most white

*cont. on page 32*

## TURF INSECT CONTROL PRODUCTS

COMMON NAME	TRADE NAME	SPEED	PERSISTENCE
acephate	Orthene	rel. fast	short
bendiocarb	Turcam	intermediate	intermediate
bifenthrin	Talstar	rel. fast	intermediate
carbaryl	Sevin	intermediate	intermediate
chlorpyrifos	Dursban	intermediate	intermediate
cyfluthrin	Tempo	rel. fast	intermediate
diazinon	(Diazinon)	intermediate	intermediate
deltamethrin	Deltaguard	rel. fast	intermediate
ethoprop	Mocap	rel. fast	intermediate
fipronil	Chipco Choice	slow	very long
fonofos	Crusade, Mainstay	intermediate	intermediate
halofenozide	Mach 2	intermediate	rel. to very long
imidacloprid	Merit	very slow	very long
isofenphos	Oftanol	slow	relatively long
lambda-cyhalothrin	Battle, Scimitar	rel. fast	intermediate
trichlorfon	Proxol, Dylox	fast	short

#### Speed of efficacy (how quickly pest reduction may be observed):

fast=1-3 days; rel. fast=3-5 days; intermediate=4-7 days; slow=7-14 days; very slow=2-3 weeks.

#### Residual activity (most likely period during which pest control can be expected):

short=1-2 weeks; intermediate=3-6 weeks; relatively long=5-10 weeks; very long=more than 3 months.

*For all products, note that state regulations vary and information may not be completely accurate. Always check the label to confirm that the pest you wish to control is indeed on the label. Mention of a product does not imply endorsement by the author.*



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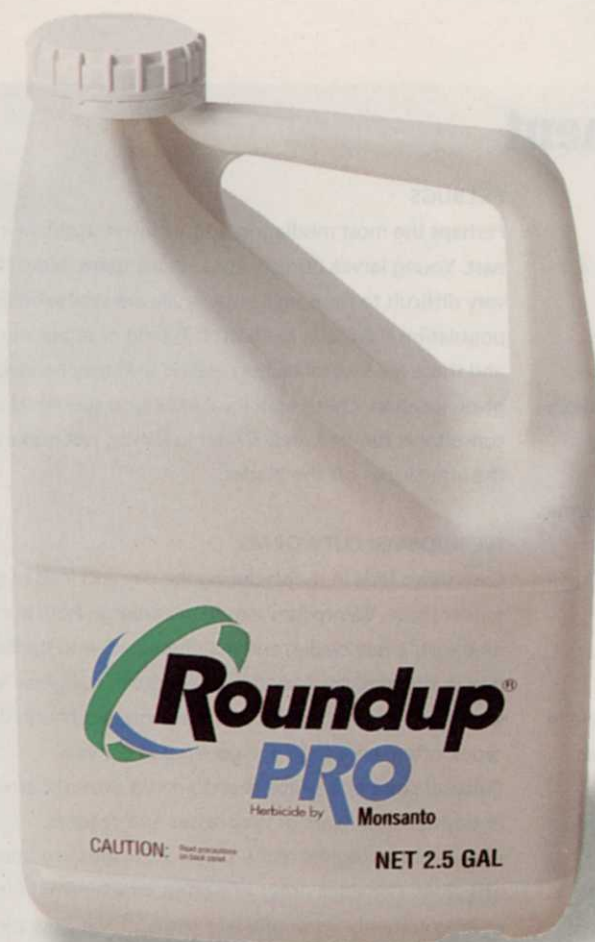
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**W**hen you're thinking of ways to expand your business and boost profits, Roundup® Pro herbicide may be your most useful tool. Roundup Pro can solve almost any lawn care problem you can think of. And it can create some opportunities that may surprise you.

## Think Of All The Possibilities.



### 1 GIVE NEW LIFE TO LAWNS

Take out areas of old worn, damaged grass or an unsightly varietal mix and start with a clean slate. The control you get from Roundup Pro gives new turf a healthy start. The perfect first step in a total or partial lawn renovation and to long-term relationships with customers.

### 2 ZAP 'EM AND WHACK 'EM

First, zap weeds with Roundup Pro; wait three days for it to move into the roots; then whack 'em with a string trimmer while they're still green. You'll get fast, effective results in hard-to-reach places. Plus, Roundup Pro gives you complete control—roots and all—with no regrowth.

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### 4 MASTER MULCH BEDS AND TREE RINGS

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To get more information on these and other profit opportunities, call the Monsanto Customer Relations Center at 1-800-332-3111 and ask for these sell sheets by name:

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- Questions & Answers About Roundup Pro.
- Roundup Pro In The 21st Century.
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White grubs are much easier to control when they're smaller than these.

grub species, young grubs emerge sometime between mid July and early September, and most of them emerge during a three-week period or so. If the situation dictates that a treatment must be made just as the grubs begin to emerge (for example, scheduled lawn care rounds), a turf manager probably should use one of the slower-acting but longer-lasting insecticides on the market. If a grub problem becomes apparent late in the "window of opportunity" (perhaps early Sep-

tember, as grubs are already developing and causing damage), a turf manager should use one of the faster-acting materials, even though most of those materials also break down relatively quickly.

For many of the thatch insects like chinch bugs, webworms, cutworms, treatments can be made in response to insect activity. However, in an area with a history of cutworm or webworm activity, a turf manager should watch for moth activity. Moths of both cutworms and webworms are nocturnal and are attracted to black light traps. In addition, many sod webworm species can be seen flying haphazardly just above the turf, particularly at dusk. When the number of moths increases noticeably, you should consider treating the area about two to three weeks later. This allows time for the moths to mate, for the females to produce and lay eggs, and for the eggs to hatch into tiny (and vulnerable) caterpillars.

Note: mention of any particular product does not imply endorsement by the author. **LM**

*The author is an associate professor in the department of entomology at the University of Massachusetts.*

## Insects and their treatment

### WHITE GRUBS

Feed on roots of turfgrass. Early symptoms—turf resembles drought stress. Heavily damaged turf can be rolled back like a carpet because there are no roots remaining.

**Cultural control:** Provide adequate moisture to root zone. Avoid mowing too low. Minimize other agronomic stresses.

**Chemical strategies:** Use products which can penetrate thatch reasonably well. If treating when grubs are just emerging (often mid July to mid August), use a slower-acting but longer-lasting material. If spot treating after damage becomes evident, use a fast-acting material. Water in any application with at least 0.25 inch water as soon after application as possible to improve contact with grubs.

### CHINCH BUGS

Suck plant juices from stems. Usually most severe or noticeable in sandy soils or sunny areas, especially in areas with thick thatch. Usually most active in summer months.

**Cultural control:** Reduce thatch. Avoid drought stress. Use endophytic cultivars of ryegrasses or fescues.

**Chemical strategies:** Many turf insecticides are labeled and effective. Consider using products that will remain in the thatch (e.g., Dursban). Apply in late spring or early summer if sampling documents need. Summer applications can also be very effective if necessary. Water in lightly, just enough to move the insecticide off the blades.

### BILLBUGS

Perhaps the most misdiagnosed turf insect problem in the Northeast. Young larvae burrow inside plant stems, older larvae are very difficult to time, and once larvae are well established, the population is difficult to control. Timing of application is critical, and there are several billbug species that may be involved in any given location. Check with local extension specialists or private consultants for your area. Water in lightly, just enough to move the insecticides off the blades.

### WEBWORMS, CUTWORMS

Caterpillars hide in thatch during the day and feed at night on tender tissue. Caterpillars sometimes emerge from burrow holes, nibble off a few blades, and pull them back into the burrow to ingest during the day. May thin or kill patches of grass. Several species of both webworms and cutworms, each with different life cycles, often more than one generation per year.

**Cultural control:** reduce thatch, avoid drought stress, use endophytic cultivars of ryegrasses and fescues.

**Chemical strategies:** many turf insecticides are labeled and effective. Consider using materials which remain in the thatch or are relatively immobile like some of the new pyrethroids. Treat two or three weeks after peak moth flights. Treat as late in the day as possible. Water in lightly and avoid mowing for a day or two after application if possible.



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# A changing picture

*Long-term changes are the trends we observe in landscaping with new turfgrass varieties and new landscape plantings.*

By RICK L. BRANDENBURG, Ph. D  
North Carolina State University

**T**hose of us involved in landscape and turf management experience both short and long-term adjustments.

When I speak of short-term adjustment I am referring to annual weather conditions. This would include above or below normal temperatures or precipitation during the season. These fluctuations from "normal" weather may have a significant impact on the abundance of specific insect pests.

### Short-term effects - the summer of '97

Throughout the Southeast, late summer produced a drought in many areas. This encouraged outbreaks of southern chinch bugs on St. Augustinegrass, in particular, but also on some other warm-season grasses. Southern chinch bugs do best under hot, dry conditions and their abundance is usually enhanced in turf that is over fertilized and has a significant amount of thatch. While good cultural practices and irrigation can help minimize the impact of chinch bugs, St. Augustinegrass is always under threat when the weather has been hot and dry, for an extended period of time.

The hot, dry conditions also appear to enhance the impact of ground pearls on centipedegrass. Ground pearls continue to be a sporadic, yet fluctuating pest of centipede from the Carolinas across to California. Our major frustration with this pest has been our lack of success to develop effective management strategies.

While North Carolina is at the northern range for bermudagrass mites, we saw in increased incidence of this pest, which again was a reflection of the drought. Proper fertilization can help bermudagrass outgrow the damage, but this was effective only where adequate irrigation was available.

The hot, dry conditions also appeared to have negative consequences on other pests. Many grub species were hard to detect and species which spend time near the surface, (e.g. green June beetle bugs) appeared nonexistent. The dry soils apparently resulted in some delays in egg-laying, egg hatch, and grub tunneling and feeding near the surface. When sufficient rains finally occurred, grub feeding and injury became quite apparent. This sudden "increase" in green June beetle grubs caught many turfgrass managers by surprise.

Weather the previous winter (1996-97) also appeared to have a significant impact on several pests. Throughout much of the Southeast, winter temperatures averaged almost four degrees above normal for December through February. This ensured good winter survival of southern pests such as imported fire ants along the northern extent of their range. The fall of 1997 saw a significant increase in fire ant mounds along the edge of their northern movement.

### Long-term effects

Insects are opportunistic creatures with an amazing ability to take advantage of what we set in front of them. Provide them with an adequate source of food in an appropriate environment and they will find it. This is often times the result of our landscape design and plantings. This occurs in several ways. When the adults of various scarab or white grubs lay eggs in the soil, they need to acquire moisture from their surrounding environment to



Weather creates unusual turfgrass stresses and pest problems. The interaction between them can be most damaging to the turf.





The hot, dry August made green June beetle grub damage slow to appear. Rains later in the summer showed much damage.

maintain the ability to hatch. Japanese beetles fly during the day and actively seek those areas of lush, healthy turf (a sign of adequate soil moisture). Some of the other beetles that fly at night don't make that distinction and simply lay their eggs in a more random fashion. If their egg laying coincides with sufficient rainfall and soil moisture an infestation may occur. The availability and use of irrigation in the landscape obviously creates a more suitable habitat and increases the likelihood for the presence of white grubs.

In addition, landscaping, particularly the planting of ornamentals, may influence the abundance of turf pests. Perhaps the most frequently observed is that of ornamentals that are continually fed upon by Japanese beetles. Once the beetles are attracted to an area that also contains high quality turf, it only seems logical they may use that turf as a site to lay their eggs. Thus we create the complete habitat for all stages of the pest. We see the same with the use of hollies as landscape plantings often attracting twolined spittlebug adults and subsequently creating infestation of

The short-tail cricket has increased in importance in the Southeast in the past few years. We are unsure if this is due to changes in the turf landscape or a reflection of short-term weather effects.

## Alternative control more common

The future of integrated pest management for turfgrass is dependent upon the development of environmentally and economically sound tools for insect control. The good news is that we already have a number of "non-conventional" products available for use and many more in development.

Over the years we have seen several entomogenous nematode products on the market, but problems with consistent results, shelf life, formulations, and product viability have limited their success and marketability. Several companies are still actively involved in insect parasitic nematode and striving to overcome the shortcomings of current technology.

Recent improvements in the ability to mass produce the insect fungal pathogen *Beauveria bassiana* have allowed at least two companies to begin serious investigation into its application as a turfgrass bioinsecticide. One company, Troy Biosciences, currently has a product called Naturalis-T labeled for use against a number of turf insect pests. Independent test-

ing of this product is underway.

DowAgroSciences recently introduced Conserve SC, a natural compound that is in the spinosad class and is a fermentation product from a naturally-occurring soil organism. This insecticide has good efficacy against a number of Lepidopterous or caterpillar pests. It is most effective when applied against the smaller stages of worms.

A natural product that has been in use for many years is the active ingredient azadirachtin which is found in the oil of the leaves and seeds of the neem tree which grows in many tropical areas. This product is also effective against caterpillars and works as an insect growth regulator and is more effective when applied to the smaller worms. Trade names for azadirachtin-containing products include Azactin and Turplex.

Companies continue to experiment with various strains, of the bacterium *Bacillus thuringiensis*. This product has received limited use against caterpillars, but new strains may emerge in the future that are effective against turf insect pests.

Research has dramatically improved the formulation, shelf life, handling and application characteristics of these natural and biological products. Research is looking into isolating the toxins found in many natural controls and producing them synthetically. This has the potential of producing an even more cost effective and efficacious product for insect management.

the nymphs in the turf. In addition, the continued population growth observed in the warm-season turfgrass areas of the United States is creating the need for new housing developments. In the Southeast these developments are going up in what was previously pine forests. More and more commonly I am observ-







Pest identification and numbers can be determined by a variety of sampling tools, one of which is a flush with soapy water.

ing infestations of short-tailed crickets creating unsightly mounds throughout home lawns. These crickets create their tunnels and mounds in turf, but feed primarily on pine cones and bark. Their presence as a pest is a reflection of our invasion into their habitat.

#### What's ahead in 1998?

As we look ahead to 1998 it is, as usual, anyone's guess as to what will be the unexpected problems and which pests will be more troublesome than normal. Such

questions about predicting pest problems are often subject to pure speculation. The dry period in late summer may have reduced some of our grub population.

The other news about what's ahead for 1998 is a rapidly increasing arsenal of insect management tools that include conventional, natural, and biological products. **LM**

*The author is a research/extension entomologist in the North Carolina State University Department of Entomology.*

## Management of warm-season insect pests

### CUTWORMS, ARMYWORMS

**Hosts:** all warm-season grasses

**Field Diagnosis:** Clip turf off at soil level. Severe infestations may leave large bare areas where turf has been consumed.

#### Control Practices:

- ▶ use "soap flush" to detect
- ▶ treat late in day
- ▶ do not mow and remove clippings for 1-3 days
- ▶ may be present from early spring to late fall

### FIRE ANTS

**Hosts:** all warm-season grasses  
**Field Diagnosis:** Ants create unsightly mounds which may also damage mowing equipment.

Painful stings of concern in high traffic areas.

#### Control Practices:

- ▶ best controlled in spring and fall when workers are actively foraging for food.
- ▶ mound treatments generally most effective, but are labor-intensive
- ▶ controls must be continued once program is started (fire ants will return at higher levels if treatments are stopped)
- ▶ do not disturb mounds during treatment
- ▶ use baits prior to contact in-

secticides to allow workers to return baits to mound

### MOLE CRICKETS

**Hosts:** prefers bahiagrass and close-cut bermudagrass

**Field Diagnosis:** Extensive tunneling is unsightly. Root feeding causes dieback, thin spots.

#### Control Practices:

- ▶ use "soap flush" to detect
- ▶ treat in June/July as soon as egg hatch
- ▶ follow-up treatments usually necessary
- ▶ look for adult activity in March/April to define areas of high risk for egg hatch

### GROUND PEARLS

**Hosts:** most commonly attacks bermudagrass and centipede-grass

**Field Diagnosis:** Yellowing and then complete dieback of turf with no new regrowth the following season

#### Control Practices:

- ▶ no known effective control measure
- ▶ practice good turf management to increase turf tolerance
- ▶ irrigate during dry weather

### SOUTHERN CHINCH BUGS

**Hosts:** all warm-season grasses prefers St. Augustinegrass

**Field Diagnosis:** Feeding results

in turf becoming yellow and eventually turning reddish-brown.

#### Control Practices:

- ▶ avoid over-fertilizing
- ▶ manage thatch
- ▶ irrigate during dry spells
- ▶ apply pesticides with plenty of water
- ▶ multiple treatments often necessary

### TWOLINED SPITTLEBUGS

**Hosts:** all warm-season grasses

**Field Diagnosis:** Results in yellowing of infested turf and severe infestation have noticeable unsightly "spittle masses".

#### Control Practices:

- ▶ control adults on ornamentals like hollies
- ▶ treat on cloudy days when possible, since spittlebugs are higher up on turf
- ▶ begin monitoring in early summer

### WHITE GRUBS

**Hosts:** all warm-season grasses

**Field Diagnosis:** Grubs feed on roots and cause drought stress and turf dieback. May attract moles, skunks, etc. which damage turf searching for grubs.

#### Control Practices:

- ▶ attracted to low-cut, highly-maintained turf
- ▶ dig squares of sod 4-6" deep

in late August to detect small grubs

- ▶ treatments most effective in late August/early September
- ▶ avoid ornamentals attractive to adult stages of Japanese beetles or green June beetles

### BERMUDAGRASS MITES

**Hosts:** only bermudagrass

**Field Diagnosis:** Initial yellowing of leaf tips, followed by shortening of internodes causing a tufted growth. May die under severe infestations.

#### Control Practices:

- ▶ irrigate during dry spells
- ▶ proper fertilization helps turf outgrow damage
- ▶ Resistant cultivars Floratex, Midiron, and Tifdwarf
- ▶ multiple treatments often necessary

### BEES/WASPS

**Hosts:** all turf types

**Field Diagnosis:** Holes, mounds, tunneling in turf area. Insects flying over turf area.

#### Control Practices:

- ▶ maintain a healthy, lush stand of turf. Most bees and wasps that live in the soil prefer a thin stand of turf
- ▶ mulch areas under shrubs, trees, etc. and keep mulch fresh to discourage nesting.



# Tune in to wireless communications

By CURT HARLER

**W**hen it comes time to "reach out and touch" someone, wireless communications is definitely the way to go. Whether it's the boss assigning a task or a working calling in for advice or to have a spare part delivered, wireless is usually the best way for grounds workers to stay in touch.

Wireless radio and cell phones not only save trips back to the shop but are a safety feature for employees who often are working alone out on a course or at a customer site. Several new products and systems are available.

The Radius GP350 from Motorola is a popular, rugged portable unit. It is available as a VHF or UHF model and comes with programmable frequencies, multiple private line or digital private line, programmable power output, programmable internal VOX, time-out time and the Quik Call II feature for paging. The 16-channel model includes priority scan and signaling capabilities. A two-channel VHF unit, which operates in the 146-174 MHz range, will cost about \$730. The 16-channel version is about \$100 more. For the UHF models, running in the 403-470 MHz range, add about \$50 to the cost of either of the VHF's.

Icom, America of Bellevue, WA has a pair of simple, portable radios with a minimum of switches and keys to keep operation easy. The IC-F3S is the UHF model and the IC-F4S is the UHF transceiver. Both use SmarTrunk II for telephone interconnect and unit-to-unit calling. Conventional mode with CTCSS and DTCSS encode/decode is available for operation in out-of-service areas. The VHF units operate in the 163-150 or 146-174 frequency range. The UHF's are keyed to 400-430 or 440-470 MHz, according to version.

Maxon has a good line of two-channel and four-channel radios, especially suited for areas where interference is not expected to be a problem or for applications where cost is a major consideration. The CP-0510 is a five-watt VHF unit with a forgiving, flexible whip antenna. It comes with a charger, belt clip and a one year warranty for under \$190 at most distributors. Maxon also makes a line of mobile/base station radios.

Another line of low-cost units is put out by Uniden. For under \$150 they have a two-watt, single channel unit available in a range of fixed VHF or UHF frequencies. All come with a rechargeable battery and a one-year warranty.

Uniden's top-of-the-line SPH225 and SPU554 are far more powerful and feature 99 channels and a phone-like keypad as standard features. They are programmable by channel for 12.5-15 kHz narrowband or 25-30 kHz wideband operation. That feature allows compatibility with the mixed narrow/wideband systems which will become more common as the new FCC rules are applied to the marketplace.

Several dealers, including Radio Shack, offer CB-band

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***In any commercial application, it is vital to obtain an FCC station license.***

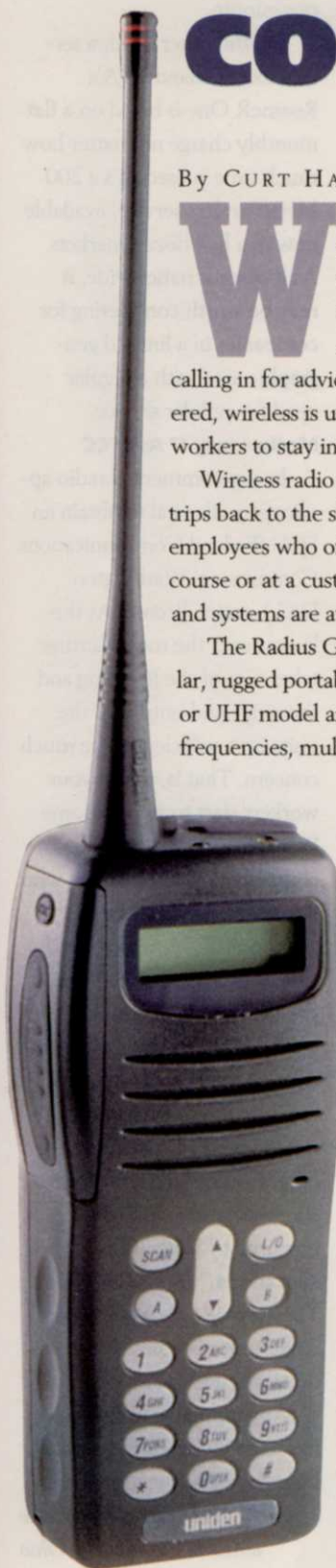
walkie-talkies. Good for short-range use, or linking to a mobile with a CB radio, they can provide good service as long as the operation can find a channel that is not being used by locals for chit-chat or the conversation is nothing proprietary or secret.

Watch out for GMRS units. That means General Mobile Radio Service and radios intended for personal use only. Sometimes they are marketed as Family Radios. While they're fine radios with decent range (up to two miles), commercial use of the radios isn't allowed.

## **Niceties of radio**

Depending on the application, there are a number of additions which make use of the radio more effective in the field.

Headsets are handy for workers in noisy environments or when they need to perform





a function (like a repair) and still have both hands free.

A host of antennas are available both for base stations and for mounting on pickup trucks or other mobile units. In buying a VHF antenna, the higher the gain figure the more expensive the antenna. Expect to pay about double for a 4.5 dB gain unit what the asking cost is for a 3.0 dB unit.

Before buying any unit, grab the radio and play with it for a while. If it will be used with a belt holster, wear it and see whether the antenna pokes the wearer in the ribs. Heavy is good if it means tougher de-

chargers and holsters (as well as radios from many manufacturers) is BearCom, Dallas. The company has outlets in many major cities. However, there is a lot more to efficient power systems than just re-charging the battery.

Most radios come with trickle chargers that work overnight. It is possible to buy rapid chargers that can do the same job in an hour. That can be convenient when crunch time comes. A rapid charger costs about double what a normal charger would run.

The best way to handle any unit with a battery is to allow

radio by the superintendent.

#### **Cellular solutions**

There are a host of cellular solutions available. When purchasing cellular phones, keep in mind that the phone is likely to be used only in a limited area — around an office park or within the city limits. Purchase a plan which allows the most unlimited local calling and forget about adding on low-cost roaming capability or the other niceties one might purchase if the phone were being used by a world traveler.

If cellular is chosen for certain applications, good cellular service can be purchased from the local phone company or even at a kiosk in a local mall. A word of advice: sign up for the shortest contract time possible.

Cellular rates are notoriously variable and have trended downward each year. Do not get locked into a long-term contract. Two years is the maximum term one should consider.

It is possible to buy pre-paid cellular time, recharging the card as needed. Topp Telecom's TracFone is an ultra-compact portable cellular phone well suited for occasional use. The advantages of the TracFone include its low initial retail price (\$99 at Radio Shack or Circuit City, which includes 60 minutes of air-time), no monthly fee, and limited exposure to abuse, since the amount of phone time which can be stolen is limited to whatever is left of the \$30 or \$50 credit stored with the phone. The need to recharge the phone could become a nuisance for units in frequent daily use, but for occasional emergency or back-up use it pro-

vides a means of controlling who makes calls. Each unit has its own phone number and local calls run about 80 cents per minute.

On the other hand, a service like Midland USA's Roamer One is billed on a flat monthly charge no matter how much time is used. It's a 200 MHz wireless service, available now in a half dozen markets. As it spreads nationwide, it may be worth considering for companies in a limited geographic area with a regular need for cellular service.

#### **Mother may I? Ask FCC**

In any commercial radio application, it's vital to obtain an FCC (Federal Communications Commission, Washington, D.C.) station license. At the lowest end, the manufacturer takes care of the licensing and the range and output of the units isn't sufficient to be much concern. That is, unless your workers start to step on some licensed operator (like a taxi company or other vendor) who has assigned frequencies.

The FCC requires a certificate of frequency coordination for any large-scale use. This would include most mobile uses where a base station is in touch with trucks operating around town. Contact the Personal Communications Industry Association, 500 Montgomery St., Suite 700, Alexandria, VA 22314-1561. They provide frequency coordination for businesses and educational users. **LM**

Any reputable radio dealer has free FCC applications and frequency coordination forms.

—Curt Harler is a freelance writer in Strongsville, Ohio

## ***Not all radio communications is person-to-person. Wireless is showing up in areas like golf course sprinkler system control.***

sign; heavy is bad if the unit will be carried around for a long time. Many firms are designing units which look more presentable. "Two-way radios are being used in a variety of businesses that want a cut above the old brick-style radio units," says Sal Farina, Uniden's national sales manager.

Portable battery packs are convenient to have for those long, overtime days. So are fast chargers. If several radios will be used in the business, consider a gang charger. Gang chargers will re-charge a half-dozen or more radios at once and they eliminate the mad scramble to find open power outlets at the end of the work day.

One good, commercial source for accessories like

the battery to discharge fully before re-charging. It is also a good idea to avoid over-charging a battery, allowing it to sit in the charger. Overcharging can damage a battery.

With some units, it's possible to erase the short-term memory effect that nic-cad batteries are prone to. Try operating the unit until the ni-cad is completely discharged, then recharge it fully. Repeat the process at least three times.

Not all radio communications is with people. Wireless is showing up in non-communications areas, as well, for instance, on wirelessly controlled golf course sprinkler systems. Timing, quantity, and specific areas of the course to be watered can be controlled from a portable



# Salt tolerant turf restores landscape

*Salt-tolerant turfgrasses make it possible to produce high-quality turf on sites where maintenance may not otherwise be possible or economically feasible.*

by MICHAEL DEPEW

**A**bout 2.5 billion acres world-wide are affected by salinity. Most are primarily located along coasts (including islands) and in arid and semi-arid regions.

Much of this marginal land and wasteland is only suitable for halophytic plant species—species with a set of ecological and physiological characteristics allowing growth and reproduction in a saline environment. Increased research and development on the selection and management of halophytic species for landscape use could lead to high quality vegetation of salt-affected land and/or the use of brackish or salt water.

The development of these turfs may be a significant contribution to the turf industry in areas with saline water.

## **Paspalum and dropseed**

Two halophytic turf species are currently available for utilization. This includes three ecotypes of seashore paspalum (*Paspalum vaginatum*) and one ecotype of seashore dropseed (*Sporobolus virginicus*). The seashore paspalum ecotypes include two fine-textured turfs (similar in texture to Tif 328) suitable for use on greens and tees and one medium-textured turf (similar in texture to Tif 419) suitable for use on

fairways, roughs, and athletic fields. The seashore dropseed turf is a very fine turf suitable for use on close cut fairways and athletic fields. Other halophytic turfgrasses are currently under development including salt grass (*Distichlis spicata*) with increased salinity tolerance (up to 60,000 ppm) and cold tolerance. High salinity tolerance and cold-tolerant warm-season turf is particularly important in climates which have high seasonal temperatures, poor quality water and periodic cold events.

"The key to the development of these turfs has been the utilization of a multiple high stress environment", says Stewart Bennett, CGCS of Environmental Turf Solutions, Pineland, Fla.

"The multiple high stress environment includes the use of low mow heights, high

salinity irrigation and high traffic stress."

The seashore paspalum ecotypes were developed utilizing brackish irrigation up to 15,000 ppm and in an environment receiving periodic flooding from salt water tidal surges. This results in a very high attrition rate of turf. The benefit is a remaining turf that can withstand these types of real-life stresses.

The seashore dropseed ecotype was developed under a similar high stress environment. An initial selection of a native forage cultivar from a Caribbean island formed the basis for the development of a turf.

"The seashore dropseed was collected off a beach that was frequently grazed by goats" says Paul Tillman, another member of the ETS research team.

"This turf was not irrigated except for

incoming tides. We placed the turf under close clipped conditions at about 1/2-inch, using salt water for irrigation. The turf struggled and most of it died initially under close mowing but once the remaining turf adapted to the high stress environment, the resulting turf was very fine textured and of high quality. From our development nursery we placed test areas on golf courses to see how well it stood up to traffic. The turf performed beautifully forming a very dense and stiff turf. Some of the test areas went for several weeks without irrigation of any kind and yet the



An application of table salt is made to the target weed species on a putting green. This is done by first wetting the area with a mist of water from a spray bottle. The wet leaf retains the salt, and thorough burning of the plant tissue is achieved. In full sun, extensive plant burning is observed in a matter of a couple of hours.





The following day, the weed species is completely burned leaving only the seashore paspalum turf. Don't try this on bermudagrass greens folks!



After one week the turf has already filled in two to three inches around the margin and is spreading throughout the center of the treated area.

turf still was green and of an acceptable quality. We are very excited about this turf for use in the Caribbean and similar areas. Some of the islands have no freshwater resources except for expensive desalinized water. A golf course in the Virgin Islands, for example, has expenditures for desalinizing irrigation water in excess of \$3 million dollars per year."

There has to be a lot of rounds of golf on a course like that just to break even financially. The use of seawater, either straight or diluted with limited fresh water can result in considerable savings in many

areas of the world.

The development and use of these turfs is not without challenges. Each has its own unique set of management and maintenance requirements.

"For example, when we placed the seashore paspalum turf onto a Florida golf course for trial we encountered weed encroachment that we did not experience in the nursery," says Tillman. "This presents a unique situation in that labeled herbicides are limited, especially for grassy weeds. The problem was not an inherent weakness in the turf but rather a situation in

which the salinity of the irrigation water was too low for optimal growth and development of the seashore paspalum. The irrigation water was already being diluted with culinary water so that the course could grow bermudagrass. A simple adjustment in the dilution ratio increased the salinity of the water and the seashore paspalum thrived. To speed the removal of weed invaders we experimented with the application of straight granular sodium chloride table salt to the plants. In the weedy areas in which only about 10 percent seashore paspalum was present, we had about 90 percent fill-in three weeks after the salt treatment."

Halophytic turfgrass has a unique and specialized role in the industry. While not needed in areas without salinity or severe water quality issues, the development of these turfs fills a niche in the industry. Halophytic turfgrass makes it possible to produce high quality turf on sites in which the maintenance of turf may not be possible or economically feasible. **LM**

—The author and Stewart Bennett and Paul Tillman make up the technical team of Environmental Turf Solutions, Pineland, FL, which markets and distributes halophytic turfs.

## Marketing the halophytics

Private research and development efforts have led to the availability of high quality turf species suitable for use in general landscapes, sports turf and golf courses. The three principals of Environmental Turf Solutions (ETS) headquartered in Pineland, Fla., have been working with the development of halophytic turfgrasses for the past seven years. With the successful development of high quality turf species, ETS was formed in 1997 to facilitate the marketing and distribution of these halophytic turfs. The ETS technical team consists of Paul Tillman, Michael DePew and Stewart Bennett. Paul holds a degree in engineering and a masters degree in turf agronomy. Michael holds bachelor degrees in turfgrass science and soil science and masters degrees in soil science and agronomy. Stewart is a certified golf course superintendent and holds an A.S. degree in golf course operations.

For more information, ETS can be contacted via e-mail through their web site at [www.etsturf.com](http://www.etsturf.com).





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- Wayne Mills  
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WEEK 1



WEEK 2



WEEK 3



WEEK 7



WEEK 8



WEEK 9

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WEEK 4



WEEK 5



WEEK 6



WEEK 10



WEEK 11



WEEK 12

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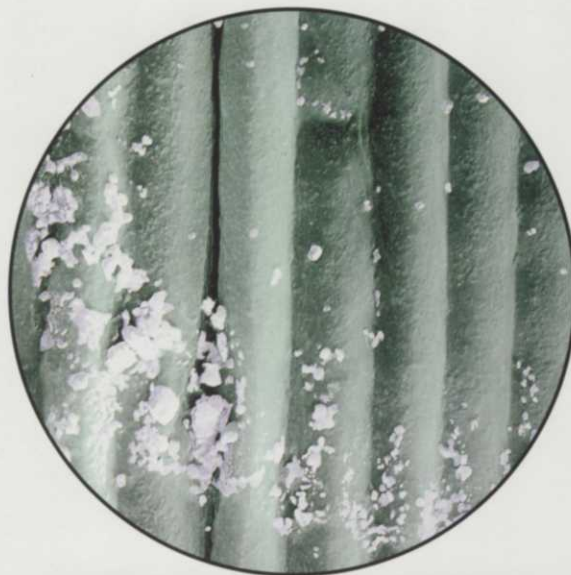






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†† Micrographs have been colorized for demonstration purposes.



**O**tis Golf Club is a nine-hole course, on Cape Cod. It was built in the early 1960s by the Air Force and it remains a military golf course. It's now owned and operated by the U.S. Coast Guard. It gets about 27,000 rounds a season.

The greens are push-up style, and most of the bunkers were built into the green slopes resulting in high bunker faces. These faces won't hold sand and allow stones in the subsoil to fall into the bunkers.

When I decided to renovate the bunkers I had three objectives. (See related article on page 14L)

1. Lower the faces so sand would hold better.
2. Eliminate the stones.
3. Make some of the existing greenside bunkers smaller.

We started with a bunker on 9 green. My boss and I decided to change its design by lowering the face and adding a cape to it. First we removed enough soil from the bunker face to lower it about two feet, then we removed the remaining sand.

We used ¼-inch plywood to mold the cape and backfilled against it with loam. We graded and rolled the bunker so that a landscape fabric would lay flat.

Next, we laid out the fabric and partially filled the bunker with a rock-free "infield" mix of sand and clay. After grading and rolling this mix we added the sand. The last step in the process was to grade and sod the cape and surrounding area.

The end result was a more manageable stone-free bunker. The cost for this project was \$359.25 in materials and about \$1275 in labor. Most of the labor cost resulted from hauling the material because we only had two Cushmans.

We have several other bunkers that we will be renovating and making smaller as money and time permit.

—Stuart W. Eymann is superintendent at Otis Golf Club, South Dennis, Mass.

## One bunker done, a few more to do



STUART W. EYMAN  
GUEST COLUMNIST

[GOLF]

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Aerify desert greens

PAGE 8 G ▶

Wild Wing's team approach

PAGE 14 G ▶

A bunker project that works

PAGE 20 G ▶

Attract butterflies to your course

### [SUPERS ON COURSE]


#### Swanson oversees 3 courses

Environmental Golf announced the promotion of **Gregg Swanson** to regional superintendent. He will be responsible for overseeing golf course maintenance at three California courses—Canyon Lake CC, Lake Elsinore; Bernardo Heights CC, Rancho Bernardo; and Silver Lakes CC, Helendale. Other EC announcements include the naming of **Mike Robson** as superintendent at Cross Creek GC, Atlanta; **Stan Overton**, superintendent at Birkdale GC, Huntersville, NC; and Brad Rook, superintendent at Silver Lakes CC.

#### Zedreck's 2nd term as PA Turf prez

**Michael P. Zedreck**, CGCS, started his second term as president of the Pennsylvania Turfgrass Council. Zedreck is superintendent at Pittsburgh Field Club, and has been on the board of the PA Turfgrass Council since 1988. Re-elected to the Board were: **Thomas R. Bettie**, superintendent at Quicksilver, **Jeffrey Fry**, superintendent at Lebanon CC, and D. Todd Struse, superintendent of grounds, LuLu Temple CC.

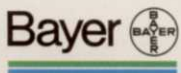




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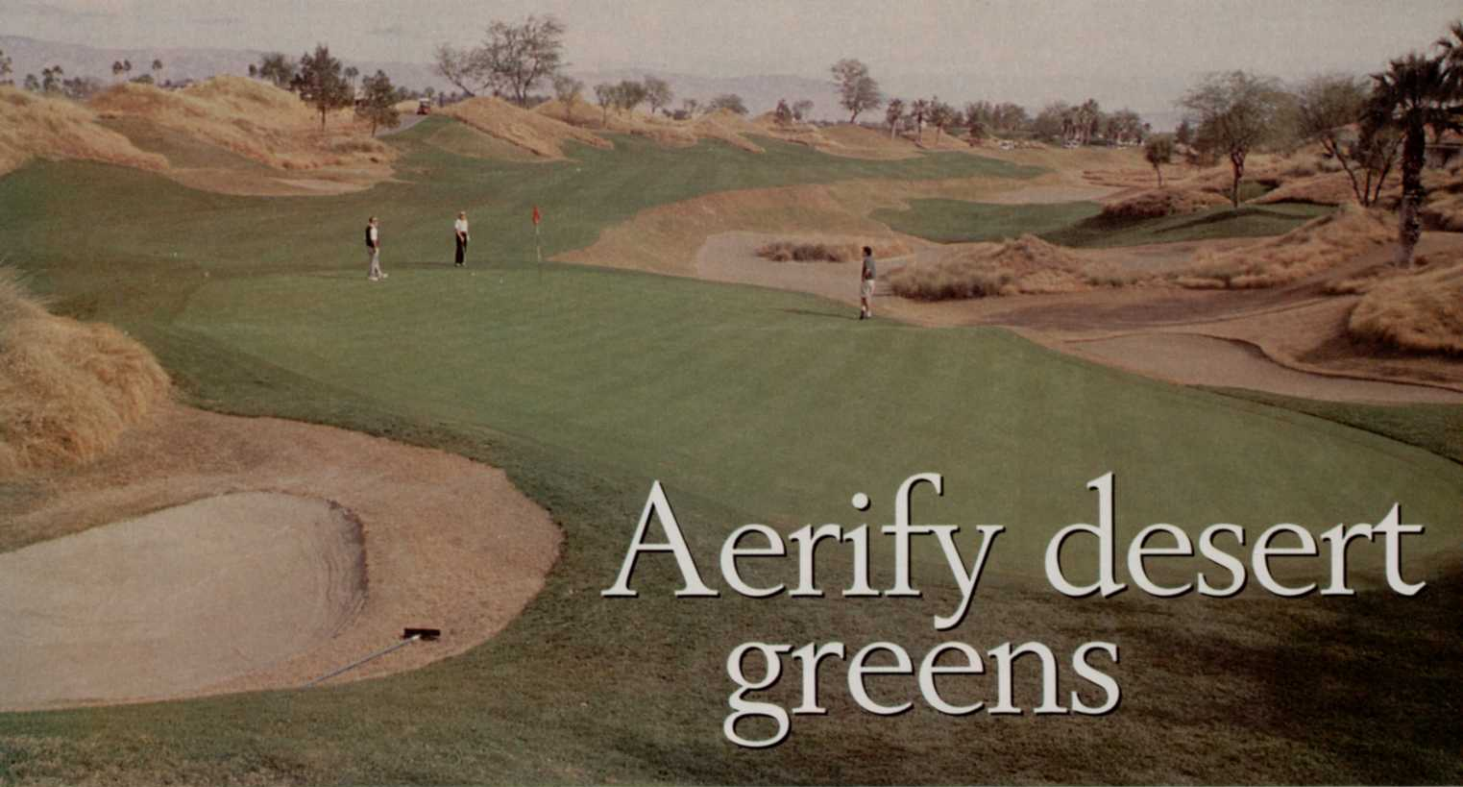
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# Aerify desert greens

By DON DALE

**I**f there are three major steps in preventing heat stress on desert bentgrass greens, Kurt Desiderio would probably list them in this order: aerify, aerify and aerify. It is aerification that has kept his greens at PGA West alive and kicking.

"Our goal in aerification is to keep as much air space in the soil as possible," says Desiderio, who is superintendent of two PGA West courses in La Quinta, California. La Quinta is near Palm Springs at about sea level in one of the hottest golfing regions in the world.

"This area was basically blow sand," Desiderio says, and the greens were built on sand. That might sound like a medium which water and air would penetrate freely, but it is not. And even finer sand gets blown around the Coachella Valley during storms, and that sand compacts on greens to form a hard surface soil.

Desiderio, who came here in 1996 after working in El Paso,

Texas, says the ideal greens base would be 50 percent soil and 50 percent pore space. Of that 50 percent pore space, 25 percent should be filled with water and 25 percent with air.

## Needing more air

"That's checked with laboratory analysis. We pull cores and send them off about twice a year," he says. It's usually done once in spring and once in the fall.

"We're probably only 40 percent pore space, and of that, only 15 percent is air space," he says. That puts his bentgrass, which is not ideally suited to the desert in any case, in a continual state of stress in the hot summers. The top three inches, because of wind-blown fines, needs to be opened up for air.

Desiderio's program begins in late winter with regular aerification with needle or pencil tines "to keep the greens loose." He does this until the weather warms up, driving the tines six inches deep to give roots room to grow through dense sand.

"I try to do it at least four

**The first hole on the Nicklaus Private Course at PGA West in La Quinta, California.**

times a year," he says. "My goal this year is to do it once a month, January through May." Then he will also do it at other times of the year as needed—even in summer if he feels it's necessary, though he has to be careful to not damage the turf in the heat.

In March he begins pulling cores with 5/8-inch tines on a Greenaire to open spaces in the soil. The idea is to give the turf a chance to drop good, healthy roots in the winter, because in the summer roots gradually wither back until they may only be down three inches or less.

On the Jack Nicklaus Private Course, which because of poor wind circulation is hotter than any other course, Desiderio does not use sand to backfill the cores. He uses Ecolite. That not only gives him a porous fill, it also is a light colored material that does not heat up in the sun.



**Kurt Desiderio, superintendent at the Nicklaus and Weiskopf Private Courses at PGA West.**



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Kurt Desiderio cuts samples on a green to look at soil consistency and water penetration

"This Ecolite does not hold a lot of heat," he says. Last year he actually pulled one-inch cores 10 inches deep and backfilled with Ecolite. Even so it has been a struggle to keep the bentgrass healthy.

"It really helped us," he says of last summer's program of pulling one-inch cores and filling them with Ecolite. He would like to do this twice a year in the spring.

#### Prescription fertility

Desiderio's soil fertility program on the bentgrass greens is designed to give good nutrition while adding to soil porosity. He has a regular organic granular fertilizer program, using products like Sustane, Green

Relief or Milorganite, supplementing that with foliar sprays.

"I spoon-feed on top of the organics," he says. That gives him good week-in, week-out growth built on a reserve of fertilizer in the organics. The result is very uniform growth and resistance to heat.

To create a consistent putting surface, Desiderio avoids quick-release fertilizers and uses a lot of potassium—something his desert soil needs. He applies from 15 to 20 pounds of potassium annually, parceled out as needed, and about eight pounds of nitrogen.

His normal program is a shot of organic granular 5-2-10 once a month at half a pound of nitrogen per 1,000 square feet of green. He supplements that about every 10 days with potassium nitrate and 6-30-30 or 20-20-20, applied foliar. He also uses B-Plus or other microbes to keep up organic action in the sandy soil, and adds iron at four ounces per 1,000 when needed.

Those are average annual figures. In the summer he uses less granular and more foliar, and in the winter more granular and less foliar.

#### Hold the salt please

Desiderio also can have a problem with salt buildup, so he applies a very heavy irrigation about once a month to flush salts down and away from the root zone. He puts it on top of an application of gypsum.

"That's a standard thing you do here," he notes. In fact, that's another reason for a good aerification program: salt flushing doesn't work unless you have a soil profile that will encourage water penetration.

"You wouldn't be able to apply water fast enough" if you didn't aerify religiously, Desiderio says.

To cut down on the heat quotient on the Nicklaus Private Course, which is built close to the mountains and gets poor air circulation, Desiderio tries everything he can to cool the course. He went so far as to cut some vegetation that was blocking air flow to the 16th green.

His crews also are active in removing blow sand from fairways, and wishes there was a way to remove it from greens. They use small loaders to take sand from fairways, there's that much at times. This is necessary both for aesthetics and to prevent those fines from compacting surface soil.

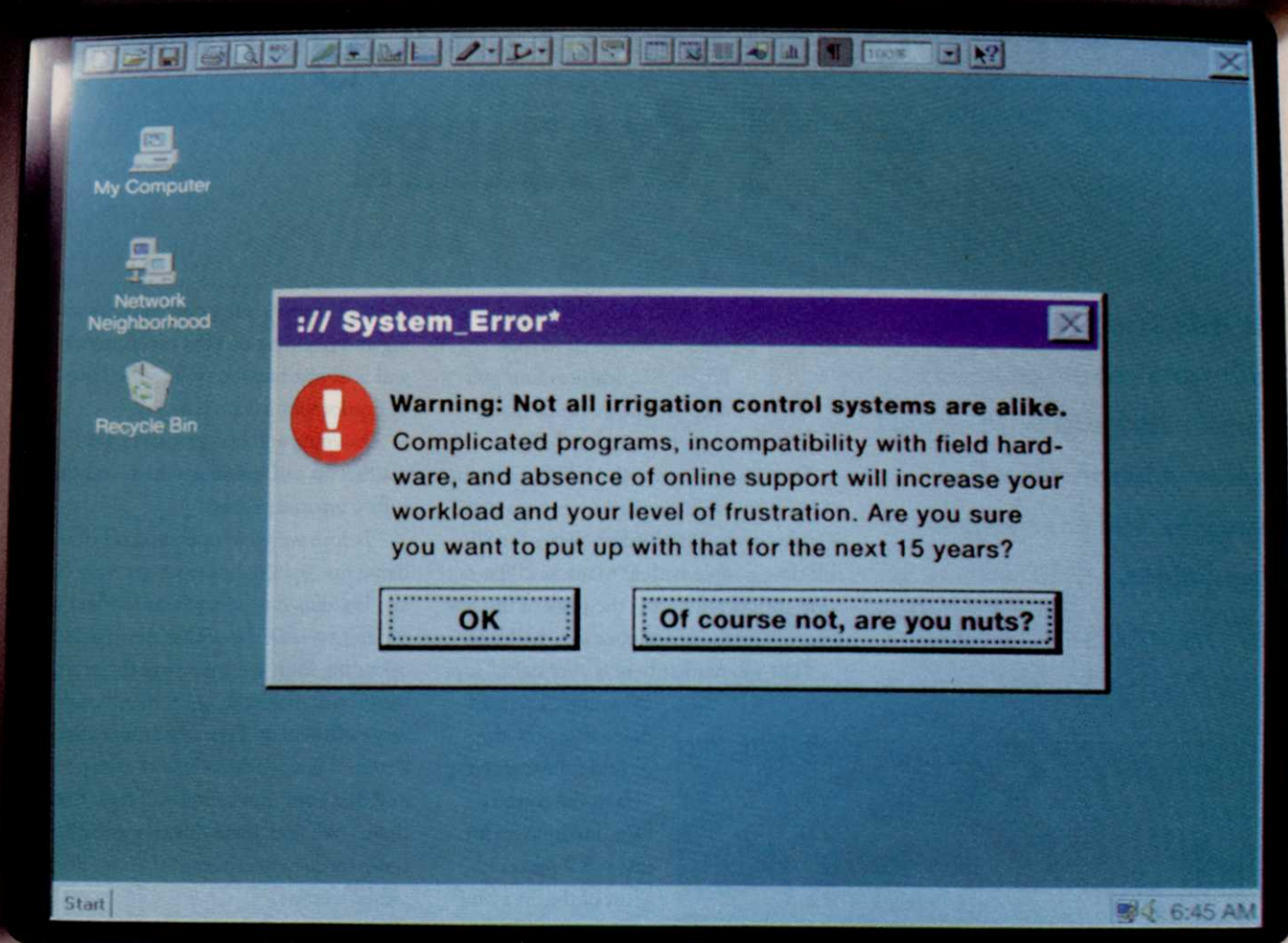
Heat is not as much of a concern on the hybrid Bermuda fairways and tees, he says, but he aerifies the fairways with 5/8-inch cores on a Renovaire once a year (in May or June) and the tees twice (the last time in August to give them time to heal before overseeding begins).

Because of the struggle with bentgrass, PGA West has decided to convert the greens of the Nicklaus Private Course to Tifdwarf Bermuda this summer, Desiderio points out.

His Weiskopf Private Course will retain its bentgrass, because its location is a little more open to air flow and its greens were built to USGA specs. They are better able to fend off the heat. □

—Don Dale is a freelance writer living and working in California.





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# 4 courses + 6 budgets = 1 team

*At Wild Wing, course playability and course demands blend with budgets, personnel issues, environmental concerns and government regulations.*

By STEVE & SUZ TRUSTY



The team from Cotton Creek Club, Gulf Shores, Ala., won the 11th Annual John Deere Team Championship Golf Tournament. Top row, from left: Andy Johnston, superintendent; Robert Craft, club president. Bottom row, from left: Herman Bloch, representing John Deere Golf and distributor Beard Equipment Co.; John Wright, club manager; Ed Nix, golf professional.

**T**he 1,050 acre Wild Wing Plantation complex in Myrtle Beach, SC, features four golf courses, each with its own style, but similar challenges.

David S. Downing, II, CGCS, Director of Golf Course Operations, oversees over 90 employees. His budget allows for 85 full-time people with as many as 20 part-time employees during the peak of the season. Filling those positions is a challenge.

"The job market here is very tight," says

Downing. "I've read that we're now the second fastest growing area in the country. Our unemployment rate is 3.2 percent. Most of the area businesses are in some aspect of the service industry and we're all trying to pay about the same wages.

"It's been a struggle, but we think we're starting to turn the corner.

Our turnover is about 50 percent this year. Before that, we were running about 66 percent. So we've dropped it about 16 percent in one year, a pretty good move. Our wages now are still average in the market but we think we're training people better and making them feel more part of the team."

#### **Delegate authority**

Originally Downing had set up his management system with a superintendent over each of the four courses. Each superintendent had a foreman for that course and their own crew. Recently, several personnel have moved up to higher positions

at other courses. He's currently restructuring and planning on two superintendents and four assistants as well as the Director of Equipment Maintenance.

Downing and his crew have got four courses up and running, which was thankfully a gradual process.

"Before we were operating off of one, fixing one up after grow in, growing one in, and building one, so each course had very different needs. Now that we're actively operating four, we anticipate the reorganization will make our equipment usage more efficient and our communications better. I'll work directly with two people and that communication will flow from there. We anticipate this change will put more focus on team spirit than on the individual courses."

Obviously Downing can't cover all 72 holes himself, so now comes the running of the employment gauntlet. Downing follows three steps:

- ▶ Find good people.
- ▶ Establish definitive quality standards with guidelines on how things should be done, when they should be done and how often procedures should be implemented.
- ▶ Delegate authority effectively.

"Our staff knows what is expected of them and assume ownership of their responsibilities," says Downing. "If I don't get to one course during a day, I'll be there the next, and I'm confident that our people will be taking care of things."

#### **Multiple budgets**

Downing operates with six budgets. Besides a general administration budget and a landscape crew budget, each course has its own individual budget. Along with the ob-

*cont. on page 13G*



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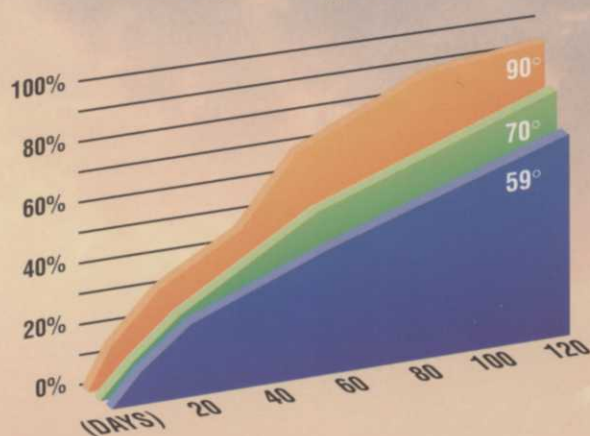
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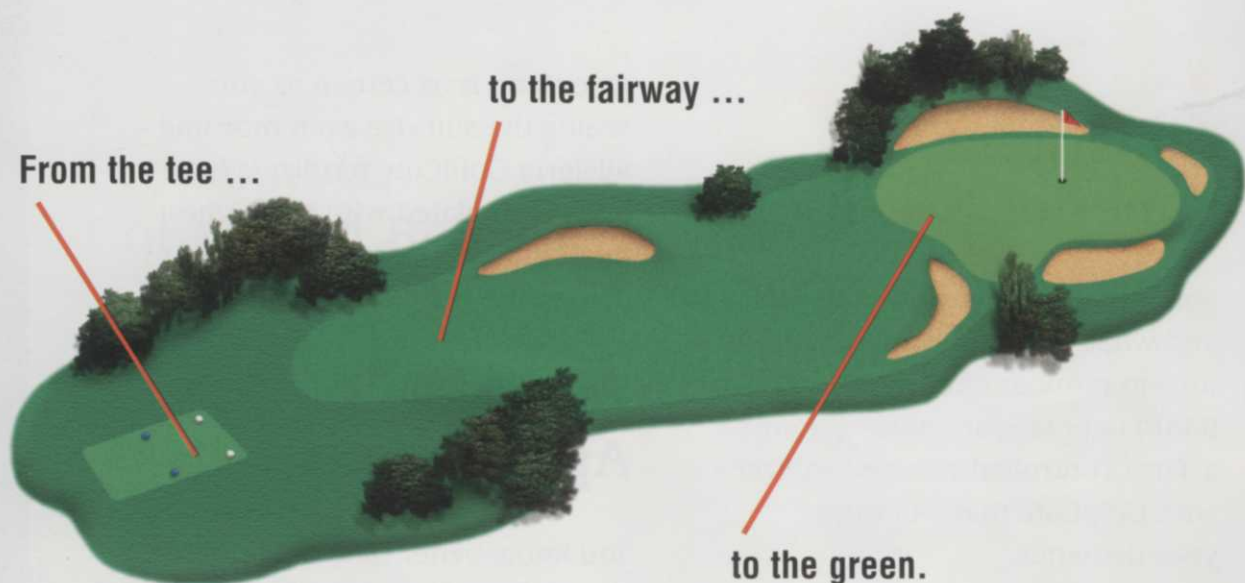


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*—David Downing*

David Downing, center, says more and more kids are playing golf. The game has to be kept at affordable prices.

## Host for manufacturer's tourney

On November 8th and 9th of 1997, the Falcon and Avocet Courses of Wild Wing Plantation hosted the finals of John Deere's eleventh annual Team Championship Golf Tournament. The tournament raised \$19,600 for the support of GCSAA and the Canadian GCSA. Downing says, "The John Deere Tournament is an important event in the golf business, especially for superintendents. It brings together all the people on a course's management team and provides an opportunity, at both the regional qualifiers and the finals, for these key people to get to know each other better and improve communications. It helps emphasize the importance of the superintendent's role in the success of the course and its appeal to the players."

The winning combination of availability, appeal and affordability add up to a solid future for golf.

S & S. T.

cont. from page 8G

vious control of funds, the multiple budgets provide a clearer picture of actual expenses, allowing Downing to fine-tune for greater profitability. This also helps train the superintendents and assistant superintendents about the budgeting process and tracking their budget during the year.

### Weather and competition

Tourists are a big business for all the Myrtle Beach golf courses. Most, including Wild Wing, work with the hotels on booking play. The increased level of competition from new courses impacts the number of rounds on the existing courses.

Weather patterns also have a huge influence on the amount of tourist play. Downing notes that 1995, the first year all four courses were open, had nearly ideal weather: little rain and mild temperatures. Wild Wing did 175,000 rounds that year.

"Since then we've been closer to 160,000 to 165,000 rounds," says Downing. "The last couple of winters we've had days we were forced to be closed because the ground was frozen. During the summer of 1996, we had two different hurricanes that we evacuated for in mid-week. While these hurricanes missed us, the people that were here for the weekend were gone and didn't come back."

### The superintendent's role

The role of the superintendent has become increasingly important as course playability and overall course demands blend with budgeting and personnel issues, environmental concerns, and governmental regulations. Establishing recognition of and support for that role within the course's management team is an essential ingredient in balancing the multiple challenges.

Challenges continue, but the future looks solid for golf, according to David S. Downing II, CGCS, "It comes down to making golfing opportunities available to a wide variety of players - and keeping it affordable," says Downing.

"The Tiger Woods phenomenon exists," continues Downing. "There are more and more elementary age kids playing golf. One fifth grade teacher reports that twelve kids in her class are players. We've never seen that amount of early involvement before. Part of it is the Tiger factor, but part of it is that kid-size equipment is available now. My son Alex is on his second or third set of clubs and he's 9 years old. As he grows, we're either able to find the clubs or get them made." □

*The Trustys write on a variety of Green Industry related topics from Council Bluffs, Iowa. Steve Trusty is executive director of the Sports Turf Managers Association.*



# No 'bunk' bunker program

*A Michigan superintendent discovers that the first step in delivering better bunkers to his members is to ask them for their help.*

By RON HALL/ Managing Editor

**I**f your bunkers are overdue for renovation, consider borrowing from a program that Alan C. Bathum used with good results at Cascade Hills Country Club, Grand Rapids, MI.

Like most things that turn out well, Bathum followed a simple step-by-step approach to accomplish his goal to upgrade the bunkers at Cascade Hills. Key to the process was the care he took to build cooperation with the club's management and members. This is, arguably, the most vital ingredient of any major course improvement project.

**Members at Cascade Hills CC appreciate the improved appearance and playability of bunkers at their course.**

Bathum, with 20 years golf course experience, five of them at Cascade Hills, knew that renovating all 56 bunkers on the original 18-holes of the 27 holes at the country club would be a big job. It needed the blessing, not only of management, but of the membership too.

That's why he *had* to have a plan.

Actually his plan is part of a larger vision that he and other Cascade Hills officials, like the club manager

and club professional, began developing soon after Bathum came to this club. At that time, each person identified capital improvements that they thought the club needed. The professionals have been addressing them one at a time ever since.

"Bunkers was definitely one of the improvements we needed, particularly bunkers that drained," said Bathum.

Thunderstorms and heavy rains often filled them with water.

"It really hurt the playing conditions," he admitted.

Even so, members of Cascade Hills (or any course, for that matter) often don't see bunkers at their worst because superintendents and their crews usually tidy them up before golfers can get to them. But the members at the club were well aware that their bunkers needed help.

"We asked them (members) to prioritize what they felt was most important. Bunkers came up real close to the top," said Bathum of a survey of members' wants.

Armed with the results of the survey, the superintendent formed a sub-committee made up of himself, the greens chairman (at the time the club president too), club manager, golf pro and several individuals from the greens committee to plan for bunker renovation.

After some discussion, and after meeting with other superintendents in their part of Michigan, the subcommittee tentatively chose a construction company out of Canada, Turf Drain Inc. The committee asked the company to rebuild two bunkers on the eighth green in the fall of 1995 on a trial basis so that members could judge them during the 1996 season. They were particularly concerned that they get the right sand for their bunkers.

Early in 1996 the committee gathered



**Superintendent Alan Bathum followed a plan for renovation.**





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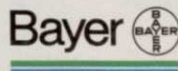
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## Two neat bunker tools

Terry Buchen, CGCS, sees a lot of neat things at golf courses because of his consulting business Terry Buchen Golf Agronomy, Williamsburg, VA. He mentioned the following two pieces of equipment at a fall turf conference at Penn State.

Marshall Fearing, superintendent at Castle Pines Golf Club, Castle Rock, Co, uses a giant vacuum to remove sand from bunkers. The vacuum is owned by the Hall-Irwin, a company based in Greeley, CO. Tom Briddle, director of golf services for Hall-Irwin, says industrial vacuums are often used to remove loose soil from utility or trench excavations. So, why not use one for taking sand from bunkers?

"When you use a mechanical device in a bunker you're taking a risk of destroying the bunker, and I've ruined a few in my career" says Briddle.

The vacuum was modified to work in a bunker by attaching the hose to a snow blower. "A man can't hold the suction hose," says Briddle who says the machine can move a couple of cubic yards of dry sand an hour.

In northeast Ohio, Frank Dobie at Sharon Golf Club, uses, an attachment he invented and sells, the Sandpacker, for the Toro Sandpro. The purpose of the Sandpacker, is to firm up the sand in a bunker, but still rake the top 1/4 to 1/2-inch.

"The whole concept is pretty simple," says Dobie. "Visualize a ski going through powder



cost estimates from the architect Bruce Matthews of Design 3, Lansing, MI, (who provided them with photos and drawings), and from the construction company. It then made its presentation to the greens committee and Cascade Hills board of directors.

Both bodies gathered in a special meeting about a month later and agreed to ask the membership for a special assessment to handle the costs. Within another three weeks the members voted positively on the assessment, and construction on the bunkers began in September 1996.

"The work went fairly quickly. We had half the bunkers done in the first 2 1/2 months," recalled Bathum. By the spring of 1997 they had all been renovated.

Bathum says members are now happy with the bunkers, and he is starting to prepare for a renovation to the course's irrigation in the next couple of years. □



snow. We took the shape of the front of the ski and put it where the cultivator bars were."

The weight of the steel on the front edge of the unit is enough to pack loose sand and the serration's on the back of the steel give the sand the raked, finished look.

Dobie's been selling the Sandpacker for 10 years, and most units are sold word of mouth, he says. To learn more about it, call Dobie at 330/239-2458 or Gary Bogdanski, who makes them, at 330/239-1939.

## Tips to smooth the process

Superintendent Alan C. Bathum makes the following suggestions for anybody contemplating a major bunker rebuilding program:

► **Document the condition of your bunkers with photographs.** They're a good tool to help convince members that improvements are in order—particularly when they're compared to photos of good bunkers.

► **Educate and gain the support** of your greens chairman or immediate supervisor on the scope of the project. Keep that person advised during the renovation. This is important.

► **Meet first with small groups** at your club and gain their support, so they can begin talking up a bunker improvement program.

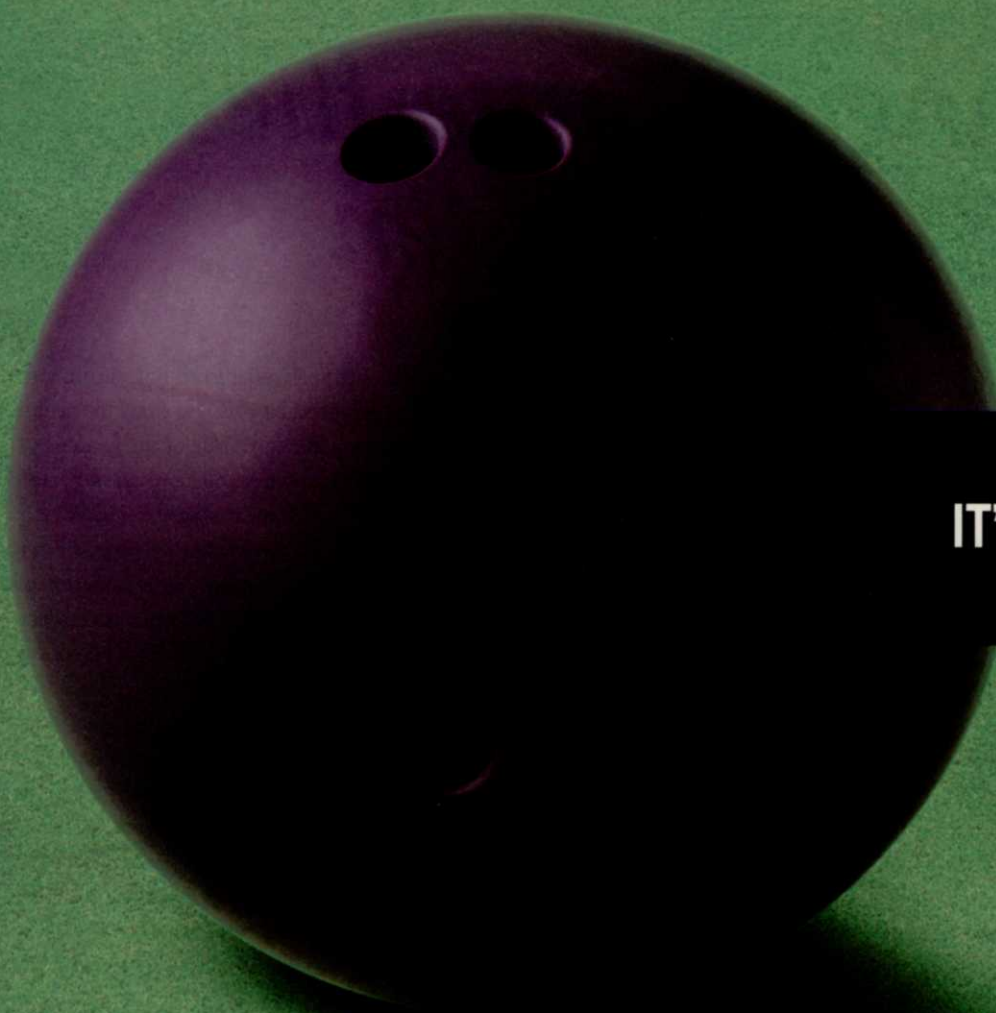
► **Keep your renovation subcommittee small.** "If you have 8 to 10 people making decisions, it makes it tough on the architect, tough on the superintendent, and tough on the construction company," says Bathum. Don't forget the golf professional who can give you valuable input from the players' perspective.

► **Hire an architect.** "We've done a lot of renovations in the past but we felt we needed an architect for this big of a project. An architect helps you early to recognize costs and concerns, and can also help sell the project to the membership."

► **Find out as much** as you can about the construction company that you intend to hire. Check with other superintendents who have used that company.

► **Don't become too rigid** with your improvement project. You want to be able to make changes early in the project if it will make the project go smoother.





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# Bringing butterflies to the garden

*Add a new dimension to your flower beds by attracting butterflies with particular nectar plants and techniques.*

By TONY BERTAUSKI

**P**erennial flower beds can add so much to the value of homes, businesses or golf courses. They provide soft textures against the hard angles of buildings, splendid colors that catch our eyes, and wonderful fragrances. With a few mindful adjustments you can increase another dimension to your next perennial flower bed design. Using certain plants and gardening techniques, you could attract more of nature's beautiful pollinators: butterflies.

The first step is to locate the flower garden in a sunny location. Butterflies thrive in well lit gardens. Shade gardens are not effective because butterflies need the sun to regulate their body temperature. There should, however, be some shade available for

the butterflies to seek relief from hot, summer days. This can be achieved by planting small to medium size shrubs along the north side of the garden.

Shrubs and nearby trees also provide a protective wind break. A garden located in the middle of a pasture will often be subject to sweeping winds that make it hard for butterflies to flutter from one plant to the next. Groupings of woody plants create a calm, micro-climate that butterflies will be drawn to and stay for a longer period of time.

There is no shortage of the variety of plants that attract butterflies (Table 1). The plants that attract butterflies will do so for two reasons. One is for nectar. Butterflies feed themselves on the sweet, sugary nectar that plants provide. It is good to plant groups of each species in the garden instead of spreading out the plants throughout. These groups will have greater appeal to passing butterflies and encourage them to skip easily from plant to plant.

Another reason why certain plants attract butterflies is to provide a food source for the larvae stage (Table 2). Butterflies will seek out particular plants to lay their eggs upon so that when the larvae hatch they have an immediate food source. For instance, Monarch larvae only feed on milkweed plants. Thus eggs of the Monarch will be found on milkweed plants. It is just as important to include food plants as well as nectar plants in your garden design.

Do some research about the butterflies indigenous to your area of the country. There are many species that can be found in most of the United States, such as Monarchs and Cabbage Whites. However, each area is different. Check books at the library or contact the entomology department at a local university. Choose your plants according to the butterflies you expect to find in your area.

There are a few additional things you can do to cater to behavioral characteristics of butterflies. One is to add groups of large rocks within the garden. Butterflies use warm rocks to regulate their temperature or to dry their wings. Most often but-

*cont. on page 22G*

**TABLE 1. A PLANT LIST FOUND IN TEMPERATE ZONE 5 THAT PROVIDES NECTAR TO ATTRACT BUTTERFLIES.**

PERENNIALS	ANNUALS	TREES/SHRUBS
Aster	French Marigold	Birch
Bee Balm	Hibiscus	Dogwood
Blanket Flower	Mexican Sunflower	Elm
Butterfly Weed	Sweet Pea	Hackberry
Coneflower	Salvias	Hawthorn
Gayfeather	Verbena	Hornbeam
Red Valerian	Zinnia	Lilac
Pincushion Flower	Poplar	
Phlox	Privet	
Viburnum	Willow	



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cont. from page 20G

terflies can be found sunning themselves in the early morning hours when the air is cool and dewy.

#### Add a source of water

Butterflies cannot drink from pools of water. They get their moisture and nutrient requirements from sipping water from damp, often muddy, areas. This phenomenon is sometimes referred to as "puddling." Swallowtails and Sulphurs can often be found in groups puddling. Some of the best places to find butterflies is at golf courses where equipment is continually washed off. This area always has piles of wet, muddy grass clippings that are perfect for butterflies to swarm around and feed.

We can address this behavior by creating a damp area in the garden. There are several creative approaches to this. One is simply burying a clean oil pan with top of the pan level with the soil surface. The

pan is filled with a mixture of soil and sand. The oil pan will retain water, keeping a damp area around a bit longer. Another approach is to create a slight depression in the ground and line it with plastic then cover with a layer of decorative rock. Moisture will be present between the rocks for the butterflies to feed on, especially in the morning dew. It can also serve as an area to sunbathe in the afternoon.

With these simple ideas in mind when selecting and placing plants in your next perennial flower design, butterflies may be the additional dimension of wonder your clients behold. □

**TABLE 2. FOOD PLANT LIST FOUND IN TEMPERATE ZONE 5 THAT LARVAE WILL FEED ON.**

BUTTERFLY/LARVAE	PLANT
Black Swallowtail	Fennel, Parsley, Dill
Great Spangled Fritillary	Violets
Buckeye	Snapdragons, Verbenas
Pearl Crescent	Asters
Viceroy	Willow, Poplar, Plum and Cherry
Cabbage White	Nasturtium, Cabbage
Monarch	Asclepias

*The author is assistant superintendent at Brookhill Golf Course, Rantoul, IL, and has published several articles concerning golf course maintenance.*

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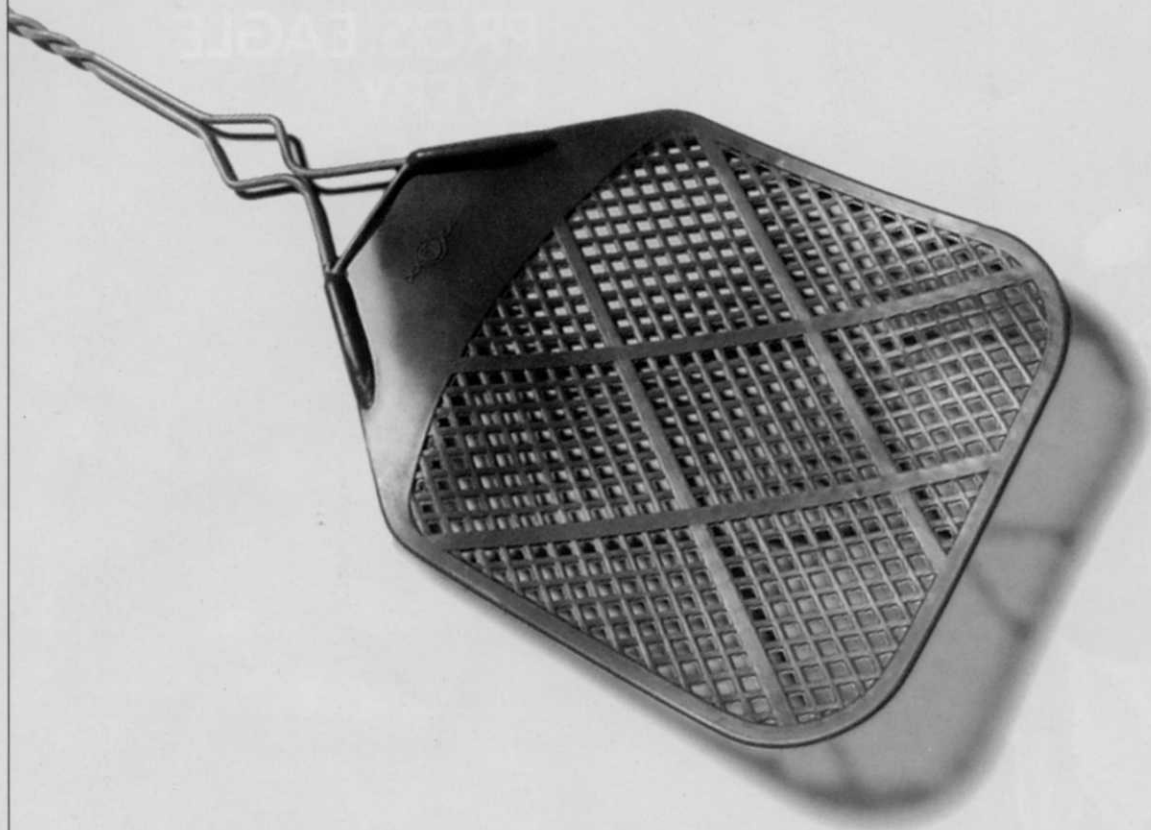


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# A spring break that starts careers



*Ron Hall*

**RON HALL**  
Managing Editor

**J**ack Hollerich dug the end of the shovel into the hump of gravel like he meant business. With beads of sweat glistening on his reddening forehead, he sent sprays of crushed limestone in the direction of partner Tony Cantelmo. Tony was tamping it smooth for all he was worth, never mind that the tamper's hickory handle had snapped in his hands.

Is this what college students do on spring break these days?

Yes, almost 600 of these students anyway. They competed for honors and for jobs—but mostly for jobs—at the 1998 ALCA Student Career Days in Raleigh, NC. They gave it their all.

The young men and young women tested their skills in a variety of landscaping events. (Yes, some young women are pretty darn good at climbing trees or operating skid steers and trenchers.)

Judging from the enthusiasm that they brought to Raleigh, you would have thought they were competing for the NCAA Division I basketball championships. And,

in a sense, they were competing for something just as important to them—their careers. They worked like the dickens to impress potential employers. Representatives from more than 90 landscape companies were on hand to attract these youths to their "teams".

The ACLA Student Career Days (See article on page 24L) is one of the landscape industry's most important, and fun, events each year. It showcases the young talent in our colleges, universities and vocational schools. It brings this talent, and lots of enthusiasm, to the companies that go out looking for it.

This year's event was the largest ever and the weather was just about perfect, thanks to blue Carolina skies. If you see Drew St. John, St. John & Associates, Hattiesburg, Miss., congratulate him

on another fine job. He's chaired the event the past several years. Also, congratulations to the students at North Carolina State University and all the other volunteers who made everybody feel at home in Raleigh. **LM**

[PEOPLE & PROJECTS]

## RBI tabs Jody Randall as vp

Jody Randall became vice president of **Randall & Blake, Inc. (RBI)**, a 20-year-old company with offices in Colorado, Texas, Utah and California. RBI also appointed Dave Burnley as president of its subsidiary Contra Costa Landscaping, Inc., and Dave Wolkenhauer as assistant secretary/treasurer of CCL. John Bollwinkel now manages the Utah Division of RBI Maintenance.

## New digs for Emerald Green LC

**Emerald Green Lawn Care**, which serves the Columbus, Ohio, market moved to a larger (6,000 sq. ft.) facility in Gahanna. Emerald Green expects a 30 percent sales jump in 1998. The company serves Franklin, Fairfield, and Licking counties.





# IRRIGATION EQUIPMENT & EDUCATION

*In Part III of our Irrigation Series, we get technical. Read about hydraulics and pumps; water properties; installation information; how to price it and explain it!*

By BRUCE SHANK, BioCom

**I**n these times of downsizing and less government, mandated competence of any profession is a low priority. However, water is one of the few resources that federal regulators refuse to hand over to states. As part of the national infrastructure, like highways and prisons, water supply is one of the standards by which a state is judged. States remain dependent upon federal subsidies for development of water resources, yet only three states have implemented licensing programs for irrigation. When you consider that irrigation, both agricultural and landscape, consumes 80 percent of developed water resources each year, most state legislators are overly trusting in others to regulate water.

State regulators will, however, welcome input from industry regarding competence. Even so, only Texas, New Jersey and some counties of Florida have irrigation licensing laws on the books. We can therefore assume that licensing in the other 47 states is not going to happen rapidly.

#### **Certification shows credibility**

Certification has tremendous value from a business perspective. It is one of the few ways to differentiate your company from other companies that may not be certified. You must establish a credible method of self-regulation before certification carries any significance. Consequently, self-regulation depends largely on associations, primarily state and national associations.

Since irrigation is a specialty, landscape associations look to irrigation associations for answers. One thing carries as much clout as a law, and that's bidding specifications.

Get architects and general contractors to require certification, and you will do more for technical irrigation competence than most laws will ever do.

#### **The properties of H<sub>2</sub>O**

Landscape irrigation systems are available that waste less than 10 percent of the water pumped through them. Most systems in use today still waste up to 40 percent of the water

*Get architects and general contractors to require their sub-contractors to be certified. It will do more than most laws will ever do.*

*cont. on page 4L*



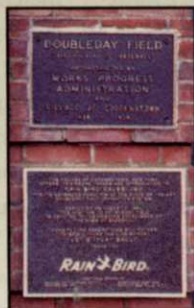
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cont. from page 2L

taken from the water source. That 30 percent difference represents a huge amount of opportunity.

Water is the liquid state of a chemical compound made up of hydrogen and oxygen. Water is relatively heavy and gravity has a lot of influence on it. When it freezes, water expands instead of contracts. Most things contract (get smaller) as temperature drops. That's why water breaks pipe and sprinklers as it freezes.

Water is a solvent and mixes with many minerals and salts. Those minerals and salts change its usefulness to plants. An amazing process called osmosis regulates the amount of water that enters a plant through its roots.

In simple terms, a plant will only take in water through its cell walls if the concentration of salt is higher on the inside of the plant than in the soil solution. If irrigation water is very salty, the high concentration of salt in the soil solution will cause the plant to stop letting water through its cell walls.

The salt concentration of water is usually measured by the amount of sodium in the solution because sodium is the primary positively charged ion in salts. If the water doesn't pass through the cell walls, the important elements dissolved in it won't pass through either. Water quality is important. It takes more salty water than regular water to meet a plant's needs.

#### **pH affect on nutrient use**

Another important chemical influence on water is something called pH. This is a measure of the amount of hydroxide ions in solution. A hydroxide ion consists of one atom of hydrogen and one of oxygen. The combination has a negative electrical charge.

Water is defined chemically as two



**Lateral pipe and wire are installed with vibratory plow.**

**Trenching is cut in for the main line.**



atoms of hydrogen and one of oxygen.

That's not really true. In most cases, water is a positively charged molecule of three hydrogens and one oxygen mixed with a negatively charged hydroxide ion. When the two are in the same concentration, the result is called neutral. But, when the hydroxide ion is present in a higher concentration, the result is called basic or sodic. When the hydroxide ion concentration is less than the water molecule, the combination is acidic.

Water is water, but the difference is when you fertilize. Important nutrients, such as nitrogen, phosphorus and potassium, can only be taken into the plant when the pH is in a certain range, usually somewhere between 6.5 and 7.5.

7.0 is neutral. If your water is either highly acidic or highly basic, nutrients are not available to the plant. Bad water is a bad carrier for nutrients.

#### **System hydraulics**

The science lesson continues with an explanation of pressure, flow and resistance. Two things greatly influence water pressure, gravity and friction. Gravity is controlled by elevation. A sprinkler head below the water source will have water pressure while one above the source won't even work without energy being used to pump water up to that point. Gravity is free energy in a matter of speaking.

Friction is energy lost by resistance. The amount of resistance is determined by the

amount of water dragging against the side of the pipe. The inside of a pipe resists flow. The longer the pipe is, the more resistance there is. Also, the more pressure the water is under, the faster it will flow and the more it will press against the sides of the pipe. Consequently, resistance is greater. Finally, the larger the pipe, the lower the resistance because a lower percentage of the water is in con-

tact with the walls of the pipe.

#### **Other fittings affect pressure**

Pipe isn't the only cause of resistance in an irrigation system. Constricting water flow or changing its direction causes resistance. Sprinklers, fittings, valves, tees, flow meters and backflow prevention devices all increase resistance and lower pressure. Every time you add one of the above to a stream of water, you lower pressure.

If sprinkler heads and emitters weren't designed to operate under certain ranges of pressure, it wouldn't matter. But they were. Without a certain pressure, sprinklers will not work properly.

You need to know the pressure at the source before you can begin to determine how many sprinkler heads or emitters can be used. Then, one by one, you subtract the pressure loss of the pipe and components until you reach the minimum oper-

cont. on page 6L



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cont. from page 4L

ating pressure of the sprinkler you want to use. Give yourself a little leeway to make sure you have the pressure you need.

For example, most pop-up sprayheads were designed to work properly with 15 to 20 pounds per square inch (psi) of pressure. Most impact sprinklers and gear-drive rotors need 40 psi to meet specs. Drip irrigation emitters deliver their gallons per hour at approximately 20 psi.

You need to know the pressure loss of the water meter, the backflow prevention



Main line tees are ready for thrust blocking.

device, each fitting, every valve, and each subsequent sprinkler head before you can determine when you run out of the pressure necessary to run the last head. Don't forget elevation. That's why there are irrigation consultants and computer aided design software to figure out all the pressure losses.

#### Equipment needed

The less dirt you have to move the cleaner the result will be. Trenches for half-inch and three-quarter-inch pipe can be cut with a small earth saw. These relatively inexpensive trenchers can cut eight or more inches deep. For larger mains and laterals, and in areas where codes require deeper trenching, you'll probably require a chain trencher. Large earth saws are made for cutting through rock.

Assemble and glue pipe and fittings

cont. on page 12L

## 'Plug it in-and-go' pumps have service advantages

Over the last 10 years, turf and landscape professionals have seen a number of changes in prefabricated—or manufactured—pumping systems. Most agree that these advances successfully boost system reliability and increase the options for end-users. These changes

also simplify service issues, reduce repair needs and cut service costs.

Systems manufacturers select all components, assemble, ship and provide warranties to cover every system. Should a service need arise, the manufacturer is held responsible for it, no matter which component may have caused the problem.

"One call service" offered by prefabricated systems makers saves time and money.

Manufactured pumping systems also have been improved over time. Many in this field now have as much as 20 years of practical pumping system knowledge, in landscape, golf course and industrial applications.

The improvements in manufactured pumps include 'one call service' offered by prefabricated systems makers saves time and money.

Variable Frequency Drive takes the system up to desired pressure level slowly, rather than kicking in at full force as in earlier conventional systems.

Source: John Murtaugh, manager of product support for the Flowtronex PSI FLOBOY line of pumps, Columbus, Ohio.

### TOP THREE PUMP PROBLEMS & POSSIBLE CAUSES

#### Problem

Pump won't start automatically

#### Possible cause

Power is off  
H-O-A switch not in 'Auto' position  
Pressure switch sense line plugged  
Fuse blown  
Overload relay tripped  
Safety tripped  
Defective pressure gauge  
Pressure switch misadjusted  
Pressure switch defective  
Defective H-O-A switch  
Defective starter, motor or PLC

#### Problem

Pump operates but won't build pressure

#### Possible cause

Pump has lost prime  
Plugged intake

Suction pressure too low

Control valve malfunction

Isolation valve partially closed

System overdemand

Wrong pump rotation

#### Problem

Pump shuts down on low pressure

#### Possible cause

Pump has lost prime  
Plugged intake  
Suction pressure too low  
Control valve malfunction  
System overdemand  
Wrong pump rotation  
Pump is cavitating  
Material lodged in pump  
Bad pressure switch  
Bad PLC



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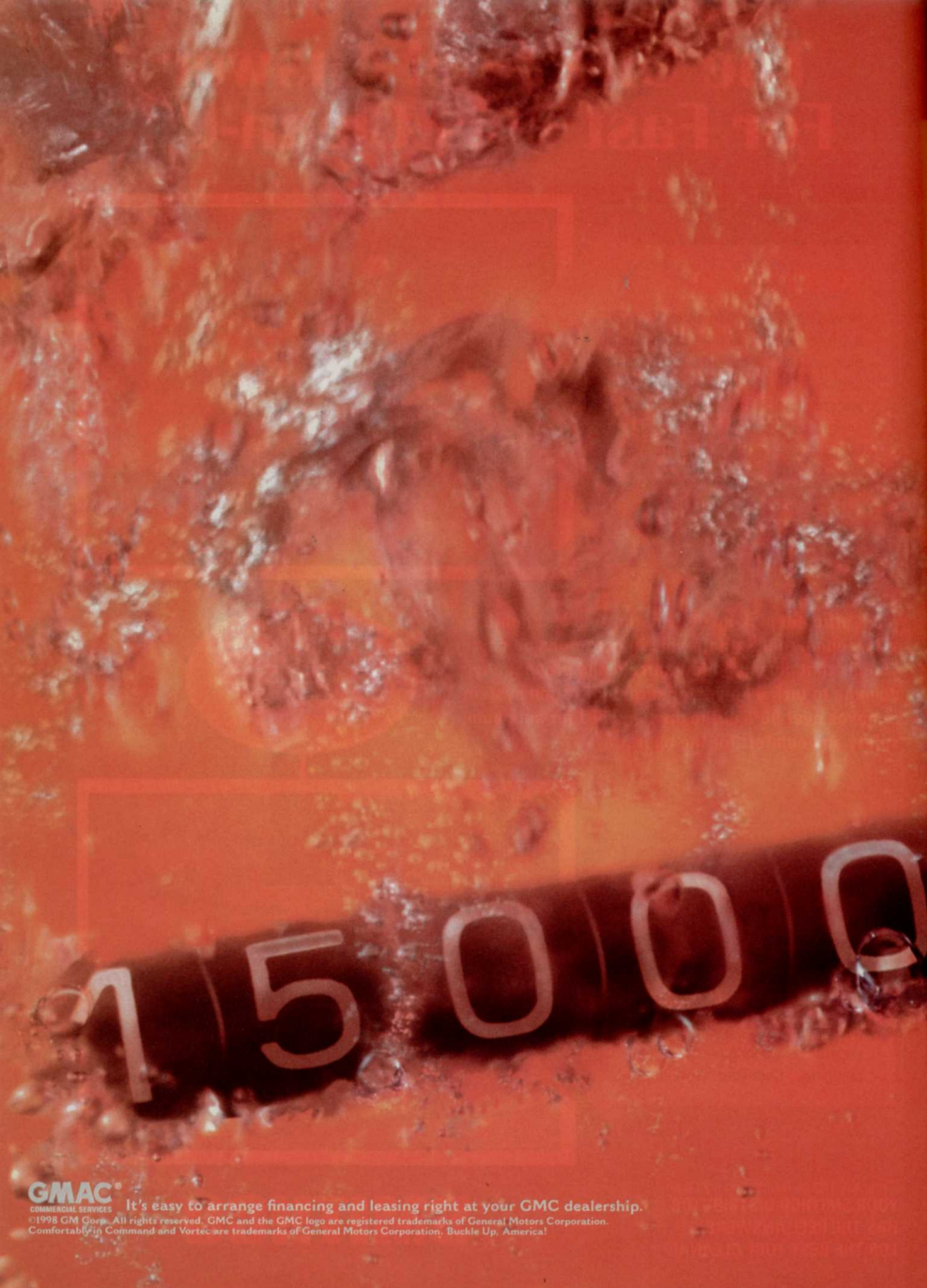
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\* Maintenance needs vary with different uses and driving conditions. See owner's manual for details.

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The staging area, where irrigation construction materials are held for use. Keep it organized.

above ground where possible. Give yourself more room for valve boxes and sprinkler heads. Use swing joints or flexible risers for sprinklers. Valve boxes should be accessible for maintenance later. Pre-assembled valve assemblies can save time and increase reliability while providing for system expansion. Keep in mind that valve-in-head sprinklers are available for larger-radius heads. If elevation changes exceed ten feet for a station, consider splitting the station into two stations.

Locate satellites to keep wire length to a minimum. You can use battery-powered controllers until power is brought to the satellite. Install receivers for remotes on satellites when the budget allows. Hand-held remotes are great time savers once the system is operational.

Make sure you meet local backflow prevention codes. In some areas, only licensed plumbers can install backflow prevention devices. If the system doesn't include a master valve, install a manual valve so repairs can be made with an unpressurized system.

**Pipe racks and bins on trucks** can save time. Buy bulk items like fittings, pipe and wire on sale. Try to buy sprinklers, valves and controllers by case loads. Sticking to a few brands will reduce your parts inventory considerably.

Theories regarding head spacing differ by the area and the dependence on irrigation for plant water needs. Two basic designs are rectangular and triangular. The application uniformity of any method is based on the overlap of sprinkler distribution at design pressure and flow. All designs re-

quire some overlap of application. Slope and wind can affect distribution. Do not mix sprinklers or brands within a station. Not only should the sprinklers be the same type, they should have the same nozzles.

#### Networking and education

Distributors and associations are the primary suppliers of educational support in the industry. Manufacturers also have schools during the year. For a list of books on irrigation, look up the Irrigation Association's web site at [www.irrigation.org](http://www.irrigation.org). You'll find a wide selection of books, many of which are used in the IA's certification programs. You can also find information on local irrigation organizations on the web site, as well as a list of members, manufacturers, distributors, and certified irrigation contractors, consultants, and designers.

The largest assortment of educational sessions on irrigation is available during the IA Irrigation Exposition each November.

The Expo also features the largest display of irrigation materials, in addition to installation equipment, computer software, and consulting services.

#### Explain the system to clients

DeSantis Landscapes, Salem, OR, gives clients detailed explanations of what the irrigation system includes, and how to avoid problems. Here are some excerpts (-ed.)

*"The system has been equipped with an up-to-code backflow device...to comply with water district, city county and/or state law. It allows for water to enter your irrigation system and not be allowed to return to your potable water. In most areas, your backflow device will need to be tested by a certified test, at least once a year, in compliance with water purveyors code.*

*XYZ valves have been installed. They will be found in the green valve boxes located in your yard. Please, do not cover these with bark dust, dirt, etc., as the location is easily forgotten. Each valve operates a number of sprinklers in a certain area called a 'zone' or 'station.'*

*XYZ popup heads are used in the lawn area and XYZ pop-ups in the shrub beds.*

*XYZ heads are used in larger areas because of the distance they spray and the ability to adjust their arc (radius) from 10 degrees to 350 degrees. □*

*Bruce Shank operates BioCOM Horticultural Communications out of Palmdale, CA.*



The main line and laterals are in, the area is cleaned up and seeded.



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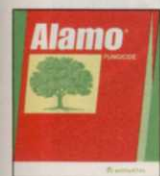


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# COMPANY PLAN STIFLES Dutch elm disease

By TOM PROSSER/ Rainbow Treecare

**D**utch elm disease ranks amongst the most devastating diseases of trees in North American history. While this may be old news, technology and chemicals used to protect elms from Dutch elm disease are not.

With dozens of cures or protective formulations for this disease proposed in the past 50 years, there has been a lot to choose from and a lot of information to wade through. Dutch elm disease is difficult to control, unfortunately most proposed cures do not work.

My job is to keep 5500 elms disease free. Clients pay us to do this. We guarantee these trees will remain disease free or we refund their money. We lose less than one percent of our treated trees over a three-year period. In the past 22 years, our company has treated more than 25,000 elms. Some of the earlier methods and chemicals we used gave much worse results than we get today. Disease mortality in Minneapolis/St. Paul and its surrounding suburbs ranges from approximately seven percent to over 30 percent, during a nor-

mal 3-year period, depending on the suburb. The intensity of the Dutch elm disease sanitation program is directly related to the percentages of trees lost.

Dutch elm disease is a fungus, which grows in the vascular system of elms. The disease is spread 2 ways: insect transfer and root-graft transfer. Approximately 90% of new infections are transferred by the Elm bark beetle whose life cycle revolves around elms. These beetles lay their eggs in dying or recently dead elms with the bark still attached. The newly-emerged adults then fly to nearby elms and feed on elm tissue in the crotches of two to four year old branches. If the beetle hatched in a diseased elm, the beetle will carry spores of the disease to another tree and infect the tree as the it feeds. This disease is so serious because of the ease with which it can move from elm to elm on this beetle. One diseased elm can produce thousands of disease-carrying beetles, all looking for a tree to feed on.

The second way this disease spreads is through root grafts. While only about 10 percent of all Dutch elm disease is spread this way, it is very important to be aware of grafting because current chemical injec-

**All of the elms in this Minneapolis neighborhood have been treated with Thiabendazole for more than 20 years. No elms, out of 41 trees have been lost to Dutch elm disease. Surrounding elms have had losses of more than 55 percent.**

tions will *not* stop this. Every tree injection chemical I have used or tested has not stopped or prevented root graft infection with Dutch elm disease.

The only way to stop root graft infections from occurring is to physically or chemically sever the roots between the dis-



**The purpose of injection is to evenly and completely cover the entire crown of the tree; especially the two four year old twigs and branches.**



***The only way to stop root graft infections is to physically or chemically sever the roots between diseased and healthy trees.***

eased tree and the healthy tree.

Root grafts must be taken into account when saving elms and be either physically broken, the neighboring tree removed, or uninfected root-grafted trees must be treated as well. If the elms are being monitored two or more times a season, the root graft issue can be dealt with after a neighboring tree becomes diseased. There must be a genetic similarity in the two elms for root grafts to exist. I have found that if two different elms are growing close together and they have very different shaped bark, they do not necessarily graft.

**How tree injections work**

Dutch elm disease only grows in the current year's xylem (water conducting vessels) of an elm. This is because elms only use the current year's xylem for transport and they plug last year's xylem with tyloses. This also means that any chemical injected into an elm will only move in the current years xylem.

The purpose of an injection is to evenly and completely cover the entire crown of the tree with enough chemical so that if a disease carrying beetle happens to feed on that tree, the chemical is there to either kill the disease spores or not allow the spore to germinate. Thorough distribution of a chemical in the vascular system of a tree is not easy to do and requires the excavation of the root flares. This gives a larger surface area in which to put the injection tees. Because this tissue is not as rigid as the trunk tissue, the chemical spreads out more laterally and moves up the tree more uniformly than trunk injection.

As a rule, you install 1.52 injection tees

per diameter inch. Never drill deeper than one inch as this causes unnecessary wounding. A good reference is the pamphlet "How to Inject Elms with Systemic Fungicides" from the University of Minnesota.

**Saving diseased elms**

In my experience, none of these chemicals are useful for saving diseased elms. However, we get predictably good results by using an innovative technique that removes the disease through mechanical means. Basically, we physically isolate all the diseased tissue from the healthy part of the tree. This goes a major step beyond

branch connection is different from a normal branch in that the vascular tissue is connected both at the top and the bottom. In a normal branch, the vascular tissue is only connected to the trunk at the bottom. Thus, if the disease grows directly into a co-dominant stem, it will move into the other co-dominant stem and grow back up the tree. When this situation happens, the disease can move fast and be very difficult to track down if not caught in time. This chainsaw procedure is not that difficult to learn, leaves shallow wounds on the tree and could save thousands of elms that are



**A diseased elm log can produce many thousands of beetles looking for a healthy elm to feed on. Notice the streaking of the fungus and the beetle galleries.**

just removing the diseased limb; it involves understanding how the disease grows in the tree and then tracing around all of it. This works well because the person doing the tracing will know if they can get all the disease or not. When we know we have gotten all of the disease, we rarely lose a tree. However, if the disease has already grown into the root system, I know of nothing that works. There are complications in using this procedure when dealing with disease that has grown into a co-dominant stem of the elm. A co-dominant

removed unnecessarily each year.

Elm injection is a valuable tool for the arborist. Its use should be limited to high value, irreplaceable elms. The most important aspect of Dutch elm disease control is the removal and disposal of diseased elms. Without sanitation, this disease can spread a very rapid path of destruction for elm trees.

Note: In oak wilt infected White or Burr oaks, *Ceratocystis fagacearum*, I have stopped the disease, with no return infections after 5 years. In numerous trees, the

*cont. on page 21L*

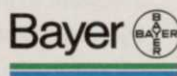






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Circle No. 133 on Reader Inquiry Card



# Chemical action in tree a key

It is important to note that the EPA, who gives a company the label and the legal right to sell a chemical, does not require that the chemical show efficacy for the uses listed on the label. As many people already know, it is a "buyer beware" market. Our company has found many chemicals ineffective in treating diseases listed on their product labels. I have found this to be especially so with chemicals claiming to prevent or cure Dutch elm disease. For a chemical to be effective at protecting an elm from Dutch elm disease, it must possess all the following properties and capabilities:

- ▶ Stay actively fungicidal or fungistatic inside the trees vascular tissue for an extended period of time.
- ▶ Be able to move in the xylem and distribute itself throughout the crown, especially in the two to four year old branches where the beetle feeds.
- ▶ Be water soluble, stay mobile, and remain in the tree in large enough quantities to be effective.
- ▶ The chemical must stay in the vascular tissue of the tree, and not move into the leaves in large quantities.
- ▶ Be able to move into newly-formed wood in large enough quantities to give multiple years of protection.
- ▶ Not harm the tree by being toxic or excessively low in pH.

Many chemicals have shown at least one of these properties; I have found only one material that possesses all of these properties. I have worked with a number of chemicals that have been proposed since 1976 with varying results.

**Thiabendazole (Arbotect 20-S & Elmsafe)**—Thiabendazole has been around since the late 70s. Research done at the University of Minnesota in the late 1970s, supervised by Dr. David French, showed that if the original label rate was multiplied by 12 times, there was efficacy. They built on an earlier discovery that below ground, root flare injection, could virtually give 100% distribution of the chemical in the tree. The fact that Thiabendazole both remains chemically stable (does not de-

grade) and is biologically mobile (moves into new sapwood); allows for multiple years of protection. Thiabendazole is the only chemical I have used that has given predictable and outstanding results. We believe the chemical is effective for 2 years. We retreat trees every 3 years because we want to keep injection wounding to a minimum, however we inspect all of our trees late in the 3rd season because 80% of our losses become infected at this time.

We have numerous examples of estates, golf courses and neighborhoods that still have 95% or more of their original treated elms, while next door every elm is dead. Our record of accomplishment over the past 10 years has been a loss rate of less than one percent over a three-year period.

We have found little or no necrosis

recommend injection as a cure for diseased elms. While there has been some success reported, I have personally never saved a tree by injection alone. I have caused the symptoms to disappear for as long as 2 years with Thiabendazole, but in every case, the disease came back. I have found a method of saving elms that works. But only as long as the infection has not moved into the roots. Even if the trunk is infected. I will describe this process using a unique method of pruning later in this article.

**Propiconazole (Alamo)**—Was introduced in the early 1990s and has shown promise as a material that is easy to inject and profitable to use. The recommended dose was 5-ml per inch diameter in 1993. In 1995, they raised the dose to 10-ml per inch diameter; now I have heard that the label



An elm tree being protected with Thiabendazole.

around the injection wound as long as the chemical is properly diluted and the injection wound is no deeper than one inch. It is important to treat healthy trees only. The injection process can do great harm to trees with root diseases.

**Thiabendazole**, like any other treatment, must be used in an appropriate and technically accurate way. It prevents insect-transmitted infections, but not infections transmitted through root-grafts. I do not

rate may be increased to 20-ml per inch diameter. Currently, research is being done on this higher rate in hopes that it works better than the 5-ml or 10-ml rates. We treated over 400 elms with the 10-ml rate in 1995. Our losses were zero in the first year. In the second and third year, our results were not very good, as the number of trees lost was nearly equal to the surrounding community losses. I am not sure this material has the capability of moving into new



wood. We will wait to see the results of the newest research.

#### **Copper Sulfate (Phyton 27)—**

Widely used as a flower preservative. My experience has shown that the material is not water-soluble and is very hard to inject. The manufacturer recommends trunk injection, claims it can save trees up to 30% diseased, and promotes it for many other tree diseases. We used this material on about 60 trees in 1986 as an informal test in a high disease area.

There was little or no reduction in disease compared to surrounding trees at any point after treatment.

#### **Lignasan—**

Is still used in parts of Canada and the East Coast. I used it for 3 years in the late 1970s. My experience was that it gave 1 year of protection. The chemical is very mobile and moves easily into the leaves. □



To get even and complete distribution in the tree, the root flares must be excavated.

*cont. from page 17L*

disease was stopped and did not return in almost every case with 2 exceptions. The chemical used was Propiconazole (Alamo) at the 10-ml rate. We believe this success has to do with the strong ability of these types of oaks to compartmentalize infections. Unfortunately, diseased elms we

have treated with Propiconazole failed in 23 out of 23 trees. □

*Tom Prosser is a Consulting Arborist and President of Rainbow Treecare in Minneapolis. Rainbow treats more than 5500 elms in a three-year period. They claim a consistent loss rate of one percent over that period of time.*

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




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# Career Days a big hit

*Go-go economy gives green industry students lots of choices at record-breaking event in Raleigh, NC*

By RON HALL/ Managing Editor

**H**ere's a plug for the 23rd Annual ALCA Career Days. It's already set for next March. That's right, March 18-21, 1999, in Lexington, KY.

If your landscape company needs bright, enthusiastic young people, plan to attend. You may even want to help out. ALCA is always looking for volunteers and sponsors for Career Days.

The event's purpose is simple. Landscape companies come looking for employees. Not laborers but young people with the ability and desire to be crew leaders, designers, potential managers, young people looking to make landscaping their careers.

Students come to Career Days to compete (see sidebar) but mostly seeking opportunity.

That's exactly what hap-



**Mike Cooper sponsored irrigation.**



**John Gachina seeks quality interns.**



**Dean Snodgrass interviewed hopefuls.**

pened again in March in Raleigh, NC. About 600 students from across the United States got an opportunity to meet with 300 landscape professionals, representing just over 100 companies. The first day gave the students the opportu-

John Gachina, CLT, CCLP, of Gachina Landscape Management, Menlo Park, CA. "My company continues to grow and we have to keep getting good people. That's not so easy to do. We're all competing for these good employees."

Gachina, a contractor for 24 years and the owner of his own landscape company the past 10, attended his third Career Days. He helped oversee and judge the irrigation competition.

"You have to keep with this program," Gachina added. "You can't



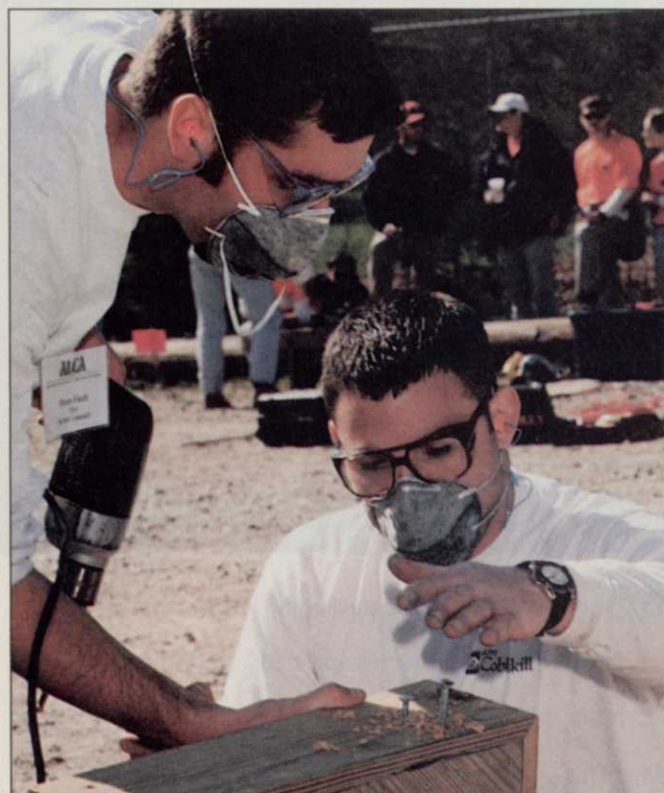
**Michael Currin, right, Greenscape, Holly Springs, NC, and son Daniel at Career Days.**

nity to visit, and set up interviews, at the 90 booths set up by landscape companies in the Raleigh Convention Center. The second day they displayed their landscaping skills at a variety of competitive events at nearby North Carolina State University.

"I'm looking for some young people that have the potential to move into management," said

just show up once, and recruit. You have to build your program, and hopefully the young person you hire has a good experience and the word gets out to other students."

Tom Pruett, president of LanArc, a landscape company located in Raleigh, said he was looking for a designer/sales person. "If we could get the right person, it would free up some



**Two-person teams from across the U.S. competed in deck building.**



of my time. I think it would take our company to next level."

Dean Snodgrass flew from Portland, OR, with an eye to hiring production people with the ability to be crew leaders for Dennis' Seven Dees Landscaping. "Hopefully, we can find some young people who can move up to foremen pretty quickly. We had three good interviews, and took some résumés," he said.

Michael Currin, president of Greenscape, Holly Springs, NC, said his company needs "lead people and design people." He also hoped to attract summer interns to his growing company.

A number of the companies at the annual Career Days offered internship programs to attract young talent. These programs provide young people with valuable industry experience and training. It also gives both the companies and interns that they hire a couple of months to assess each other.

Bland Landscaping, Inc., Apex, NC, for instance, adver-



Lebo Newman, center, Redwood Landscaping, Santa Rosa, CA, talks about career opportunities with Janet Burk, Richland College, Dallas.

tised that it takes two or three interns at a time.

"Students will have a department manager assigned to them throughout their internship. The manager will be responsible for overseeing the student's progress and development within each department," said literature from Bland Landscaping. "Each student will have the opportunity to sample a department for a period of no more than a month." Departments include: commercial maintenance, floriculture, commercial installation, resi-

dential maintenance among others.

John Gachina's company offered a similarly rewarding program, promising to give students "a real taste of what it means to be involved in an award-winning company."

This year's Career Days, with unemployment so low and landscaping companies hungry for young talent, must have seemed like a smorgasbord of opportunity for participating students. □

## Californians take top honors

Dave Bakke, a student at Cal Poly-Pomona, was the Number 1 Superstar at Career Days after all the competition had been completed. Jason Green, Cal Poly-San Luis Obispo, was second and Jeremy Parker, Virginia Tech, third.

Cal Poly, San Luis-Obispo took team honors earning the Robert Callaway Trophy, followed by Cal Poly-Pomona and Colorado State University.

Students from these schools competed too: Auburn, Brigham Young, Cincinnati State Technical and Community College (CC), Clackamas CC, Columbus State CC, Cornell, Cuyahoga CC, Dakota Technical, Hinds CC, Illinois Central.

Joliet Junior College, Louisiana State, Meridian CC, Michigan State, Milwaukee Area Technical, Mississippi State, North Carolina State, North Metro Tech, Ohio State, ATI, Oklahoma State, Oklahoma State-OKC, Oregon State, Penn State, Richland College, Sandhills CC.

Shasta CC, Southeast Technical, Spokane CC, SUNY Cobleskill, SUNY Delhi, Tennessee Tech, Arkansas, Illinois, Kentucky, Maryland, Tennessee, Virginia Tech, Western Texas. □



Michigan State's Bob Barkham did well in irrigation event.



Jack Hollerich, left, and Tony Cantelmo from Columbus State (Ohio) had a plan and followed it in building this small patio.



# Blueprint for Yellow Pages success

By LARRY SMALL

**A**dvertising is a tricky thing. What catches the eye and what pricks the ears is subjective at best. And, yet every day—in our living rooms watching television, in our cars listening to the radio, at work reading the newspaper, in a doctor's office where we pick up a magazine in the waiting room—we are bombarded with thousands of images, each one vying for our attention, and trying to convince us to spend our hard-earned dollars.



**Small:** Millions seek landscapers.

Some of these images work and some don't.

Understanding this tricky and subjective equation can seem daunting. But this understanding is essential for every member of the lawn maintenance industry, especially when each year, nearly 36 million references are made to the "Lawn Maintenance" heading in the Yellow Pages.

The "Landscape Contractors" heading is referred to 38.3 million times every year.

According to a recent usage survey:

18 percent of American adults refer to the Yellow Pages every day;

-the average adult refers to the Yellow Pages an average of 1.8 times a week;

-there are 18.6 billion Yellow Pages references made every year.

In 52 percent of references, consumers

have no name, or two or more store or business names in mind, and report that what they see and read in a Yellow Pages ad will influence which business they choose.

Customers are using the Yellow Pages when they're in the need of landscaping or lawn maintenance. But what makes a perspective client choose one Yellow Pages ad over another? Here are some tips to creating a successful Yellow Pages ad:

## Ad flow and design.

A successful ad design draws the reader's eye directly to the ad. Keep the reader's eye heading directly toward the business' phone number. Vary the size of the type to keep the reader's interest and don't use a type style that is too ornate or distracting. Highlight with reverse type, especially for the company name and phone number. Make sure your ad is clean, uncluttered and easy to read: make use of "white" (empty) space.

## Headline and copy

A successful headline is catchy and draws readers to your ad. Make your headline funny or bold or in the form of a question. Make your headline act as a quick identification for customers referred to your business. Identify the single most important feature of your business that sets you apart from the competition and highlight it.

Because you are competing for the reader's attention as well as for space, keep your copy succinct and to the point. Emphasize the benefits of your product or service. Specify brand names and areas of specialization and emphasize information that sets you apart from the competition. Give special attention to your phone number.



## Color & logo

When used, color can enhance your ad and creatively illustrate your product.

If you have a distinctive logo, use it to gain attention for your ad. This also encourages people to associate your logo with your business.

## Illustrations, borders

An illustration is one of the most effective ways to attract attention to your ad. Use large, graphically pleasing images. Use an illustration to break the border for added visual interest and appeal. Illustrations should always point to your ad, not your competitor's ad.

Borders can be very effective, especially if all of the other ads on the page use a bold or a hairline border and you choose the opposite.

## Spot color, process color, white knockout

These pages capture attention regardless of ad placement on the page; the illustrations look more realistic. Ads that use these techniques make strong statements and stress unique selling points. These ads can also convey prestige.

With the average adult referring to the Yellow Pages about 1.8 times a week, and with almost 19 billion Yellow Pages references made every year, advertising in the Yellow Pages is clearly a must for any successful lawn or landscape business. □

—The author is vice president marketing services, Yellow Pages Publishers Association.



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Pressure	Flow	Area	Flow	Area
50	30	140	40	280
55	32	150	44	308
60	34	160	48	336
65	36	170	52	364
70	38	180	56	392
75	40	190	60	420
80	42	200	64	448
85	44	210	68	476
90	46	220	72	504
95	48	230	76	532
100	50	240	80	560

Pressure	Flow	Area	Flow	Area
50	30	140	40	280
55	32	150	44	308
60	34	160	48	336
65	36	170	52	364
70	38	180	56	392
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## Petelle leads OLCA in '98

Carl Petelle, Leisure Lawn, West Carrollton, Ohio, president of the Ohio Lawn Care Association, says the association plans to offer members more for their membership dollar. "We want to offer further education opportunities in agronomics and business," says Petelle. OLA's 1998 officers: vice president, Mark Grunkemeyer, Buckeye Ecocare, Dayton; secretary/treasurer, Fred Schillinger, Turf Doctor, Mt. Vernon. Board members: Gene Pool, Emerald Green; Don Gallagor, Buckeye Power Sales; Bill Clutter, TurfGard Co.; Doug Hague, Lawn Classics; John Lucas, Lucas Lawns; and Joe Popovic, Firelands Lawn & Landscape Co. □

### [LM EXCLUSIVE INTERVIEW]

## Write to 'President Gore' urges PLCAA's Delaney

Professional Lawn Care Association of America executive vice president Tom Delaney, in an exclusive interview with *LANDSCAPE MANAGEMENT*, urged PLCAA members and other Green Industry professionals to act *now* to prevent the Environmental Protection Agency's Food Quality Protection Act from removing useful control products from supplier's shelves.

The Food Quality Protection Act substantially changes the way pesticides are evaluated for their alleged—but still unproven—health effects.

"If you're not worried now, you're going to be worried later," said Delaney to members, and suggested that many lawn care applicators feel that the EPA will select only certain products for removal. The danger, reminded Delaney, is that the EPA's "Risk Cup" assessments apply to classes of pesticides, not just formulations.

Delaney suggested that letters also be written to Vice President Gore, who, as De-

laney described it, supports EPA, and "wants to be president someday." According to Delaney, Gore has also suggested the EPA's Carol Browner would be a good vice presidential candidate, though not necessarily in an Al Gore administration.

Voter realization of Gore's role in support of the potential product purge, suggested Delaney, could dim Gore's hopes for life in the White House.

"[FQPA] doesn't stop and start with the insecticides," said Delaney. "Right now, it's the organophosphates; then come the carbamates, then, who knows what else."

Delaney told LM that the concern he sees among control product manufacturers over the potential upshot of FQPA is unprecedented.

"The manufacturers have the biggest push on this, bigger than anything I've ever seen before. To some of them, this is 'do or die,' as far as continued use of current products."

Manufacturers, said Delaney, are using lobbying, let-

## ALCA's new leaders

Cynthia Peterson, CCLP, McCaren Designs, Inc., is president of the Associated Landscape Contractors of America this year. Other officers include: president-elect, Steven Glover, CLP, L&L Landscape Services; secretary/treasurer, Emily Thompson, ET Sales, Inc.; immediate past president, Judson Griggs, Lied's Landscape Design & Development.

Directors: Rick Doesburg, CCLP, Thornton Gardens, Inc.; Dale Elkins, CLP, ISS Management Services; Kurt Kluznik, CCLP, Yardmaster, Inc.; Gary Mangum, CLP, Creative

Plantscapes, Inc.; Wayne Richards, CCLP, Cagwin & Dorward Landscape Contractors; Drew St. John, II, CLP, St. John & Associates; associate director: Gary Thornton, CCLP, Thornton Computer Management Systems; executive director: Debra Holder, ALCA; state association member: Barbara Scheibe, Wisconsin Landscape Contractors Association

Serving on the Exterior Landscape Council: chairperson, David Luse, Artek Corporation; chairperson-elect, Dale Elkins, CLP, ISS Landscape Management Systems; vice chairperson, Kurt Kluznik, CCLP, Yardmaster, Inc.

Members: Bob Grover, CLP, Northwest Landscapes Industries; Don Jarratt, Rupert Landscape Company, Inc.; Eric Keesen, CLP, Allen Keesen Landscape, Inc.; Chris Kujawa, CCLP, Kujawa Enterprises, Inc.; Ed Laflamme, CCLP, Laflamme Services, Inc.; Michael Rorie, Groundmasters, Inc.; Drew St. John, II, CLP, St. John & Associates □

ters and postcards to get their customers to call or write to their legislators. Politicians too, said Delaney, are beginning to wonder how much the EPA will continue to flex its legislative muscles.

"Republicans have been scared [of EPA activity relative to FQPA], but now, even democrats have been sending letters to EPA. The EPA has too much latitude," said Delaney, who asked rhetorically whether politicians have lost their voice.

"Is the EPA so powerful," Delaney wondered, "that they can thumb their nose at Congress?"

The Alliance for Environmental Concerns, Inc., (AEC), Warren N.J., and other associations such as Responsible Industry for a Sound Environment and the Golf Course Superintendents Association of America have also urged members to contact their representatives in Washington, to let them know how FQPA will affect business operations. □





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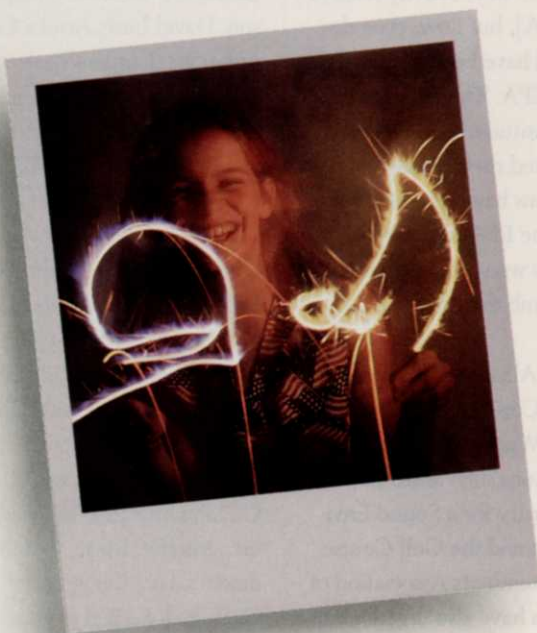
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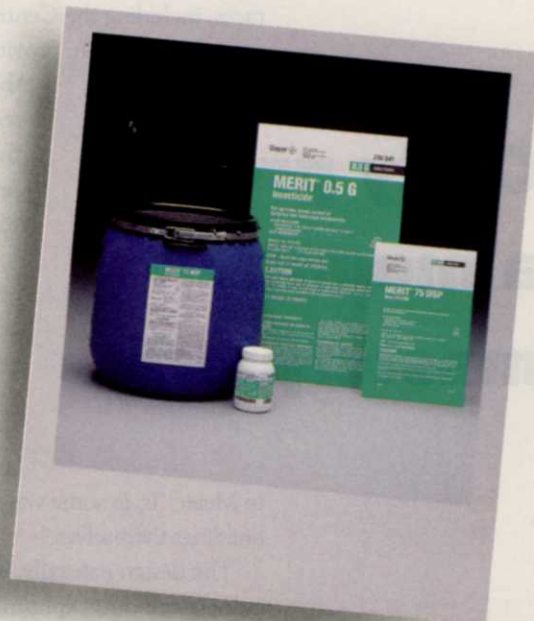
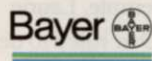
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**T**he landscaping at the new \$1 billion Getty Center flows with the construction details of the world-class facility. The elements of landscaping and architecture unite to create a seamless design.

Eighty-six acres of landscaped gardens and terraces, including the Central Garden designed by artist Robert Irwin, provide sweeping views of the Los Angeles basin, the mountains, the ocean, and the surrounding 600 acres preserved in their natural state.

Architect Richard Meier collaborated with landscape architects Emmet Wemple, Laurie Olen and Dan Kiley to develop a master plan for the landscape that, according

to Meier, "is, in some ways, as important as the buildings themselves."

The design naturally invites visitors to wander indoors and out, exploring galleries and gardens alike. The plan encourages visitors to come and go as they please, making their own routes, and pausing in the courtyard to listen to a fountain.

Inspired by the garden traditions of California and the ancient Mediterranean, the landscaping

contributes to the Center's mix of ancient and modern artistry. Visitors are surrounded by recurring colors, textures and scents.

Under the direction of the design team and grounds superintendent Richard Naranjo, the landscape will evolve, "with the intent of creating an intimate, ever-changing tableau that enhances the visitor's experience of the Getty's artistic and educational mission," says Meier.

## The view

Perhaps the most important element of the Getty Center is its hilltop site in the Santa Monica Mountains, just off the San Diego Freeway. From there, visitors can take in prominent features of the Los Angeles landscape—the Pacific Ocean, the snow-capped San Gabriel Mountains, the vast street-grid of the city, the Palos Verdes peninsula, plus sunsets over the Pacific Ocean.

Inspired by this interplay, architect Richard Meier sought to design the new complex "so that it highlights both nature and culture," he says.

## The buildings

When approached from the south, the modernist complex appears almost to grow from the 110-acre hillside. Two three-car, computer-operated trams ferry visitors from street-level parking to the hilltop site. The campus, clad largely in cleft-cut, Italian travertine, is organized around a central arrival plaza, and offers framed panoramic views of the city. The Getty Center's six buildings follow a natural ridge in the hilltop. Working with this natural topography, Meier's plan suggests a connection between the organization of the Center and the layout of the city's grid. Galleries, offices and the Auditorium lead out to courtyards and terraces; all offices receive natural light. Because the Getty's neighbors requested that the complex be no more than two stories above grade, all of the buildings extend underground and are linked with subterranean corridors that facilitate the moving of artwork and other materials.

## Stones

The use of stone—1.2 million square feet of it—is perhaps one of the most remarked-upon elements of the new complex. "This beige-colored, cleft-cut, textured, fossilized travertine catches the

*cont. on page 34L*

## Getty project a mountain masterpiece



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\*Dependability based on longevity: 1981-1996 full-line light-duty truck company registrations. Excludes other GM divisions. ©1997 GM Corp. Buckle up, America!



cont. from page 32L

bright Southern California daylight, reflecting sharply during morning hours and emitting a honeyed warmth in the afternoon," according to Meier.

The 16,000 tons of travertine used in the project were quarried in Bagni di Tivoli, Italy, 15 miles east of Rome. Split along its natural grain, detailed impressions of leaves, feathers, fish, and shells can be seen in the Canter's travertine; one particularly unusual piece holds the fossilized remains of a deer antler. Meier and his staff worked for a year with the Bagni di Tivoli quarries to invent a "guilotine" process that would result in a rough, textured finish. "About a dozen of these stones," Meier explains, "are incorporated into the regular grid for a change of scale and color—to break things up—and mark a key point."

Travertine panels cover not only the retaining walls and the bases of all buildings, but also serve as paving stones for the arrival plaza and Museum courtyard.

### **Dramatic arrival**

Upon entering the front gate, visitors may notice the groves of sycamores planted by the entryway. The trees are meant to evoke the Getty Villa in Malibu, whose Canyon Drive entryway is also lined with sycamores.

The Lower Tram Station introduces visitors to the lush plantings that await them at the top of the hill. Beyond the station, picnickers can lounge on the grass, shaded by white-flowering wisteria on a lavender-colored trellis. Purple blossoms hang from the jacaranda trees, while across the tramway, a row of crepe myrtles bloom white. Through the leafy screen of a California pepper tree grove, one can see a view of the Getty Center.

From the tram, visitors can see the more than 8,500 native oak trees planted in rows on the hillside; deer, birds and other local wildlife are sometimes visible there as well. The hillside's ground layer has been planted with poverty weed,

local chaparral and shrubs, in order to prevent erosion and fire and to preserve the natural environment. More than 100 Italian stone pines are planted along Getty Center Drive. The grid pattern of the oak plantings sets the tone for the organic order of the architecture on the hilltop.

Four tall stone pines stand at the center of the open Arrival Plaza. In years to come, these pines, which will be trimmed flat so as not to obstruct views from other points of the Center, are expected to produce a 50- to 60-foot wide canopy that will shade visitors from the Southern California sun. To the north, toward Mt. St. Mary's College, Aleppo pines appear just beyond the travertine wall; they are expected to reach 60 to 70 feet in height.

Along the left side of the Museum steps, water cascades down into a fountain. A bed of blue-flowering ceanthos and rosemary follows the water's path, tumbling down, to and over the lower wall. Visitors ascending the stairs to the Museum catch glimpses of the foliage through portals in the travertine wall.

The cooler temperature of the campus' north side is reflected in the cooler colors of the plantings—pale greens, blues, purples and grays being the dominant hues. On the north side, in between the grass-covered helipad and the Auditorium, a series of terraces serve as shaded, outdoor "rooms"—separated by trimmed hedges and Italian stone pines—from which to observe the hillside and the southern face of the Getty Center.

At the Auditorium Plaza, a stand of purple- and white-flowering jacarandas echoes the colors of the Lower Tram Sta-

tion. In the cool, shady "canyon" between the North and East Buildings, tree ferns, tall kantara palms, and Asian jasmine groundcover create a lush palm court. The East Building features its own outdoor courtyard—an open lawn shaded with flowering trees—where staff can gather and eat lunch. The walkway between the North and East Buildings to the Museum is connected by an "aerial" hedge of white crepe myrtle, Spanish

lavender and star jasmine, all of which accent the colors and scents of the campus.

The star jasmine that borders the North Building walkway ends at the Museum's entrance with a grove of California sycamores. Inside the Museum courtyard, graceful Mexican cypress trees hang over the 120-foot linear fountain. A small grove of camphor trees rises from the dark green phittosporum

groundcover. Come spring, hundreds of yellow daffodils will bloom here. Boston ivy climbs up one of the pavilion's travertine walls from a bed of fragrant jewel mint.

On the Museum's South Terrace, near a trellis covered with classic California red bougainvillea and hundreds of birds of paradise (Los Angeles' official flower), visitors can take in views of the city—a cactus garden is located at the southern end of the courtyard, the hottest and driest point on the Getty Center campus. Here, the warm yellow-orange of the agave and fresh green of the cacti are positioned to remind visitors of the desert environment from which Los Angeles has grown.

### **Restaurant/Cafe and Upper Central Garden**

Located to the west of the Museum entrance, the Restaurant and Cafe build-

cont. on page 36L

*The warm yellow-orange of the agave and fresh green of cacti remind visitors of LA's desert environment.*



# GET SERIOUS WITH STMA!

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**"Promoting Better and Safer Sports Turf Areas"**



cont. from page 34L

ing is set apart by a distinctive, lavender-colored trellis covered by white-blooming wisteria. Beside the trellis, at the Restaurant Terrace, diners can enjoy the shade of leafy London plane trees. During the winter, these deciduous trees allow sunlight in to warm the setting.

They were chosen for this location, in part, because they are close relatives of the sycamores planted at the Getty Center entryway and the Museum entrance. This theme continues in a line of sycamores that extends from the Restaurant Building to the Central Garden.

### Central Garden

Robert Irwin's 134,000-square-foot Central Garden was commissioned by the Getty Trust as a work of art. The garden offers visitors constantly changing experiences, conditioned by the weather, the hour of day, the time of year, and the use of seasonal plants. A tree-lined walkway traverses a stream planted on each side with a variety of grasses and gradually descends to a plaza where bougainvillea arbors provide scale and a sense of intimacy. The stream continues through the plaza and ends in a cascade of water over a stone waterfall or "chadar," into a pool in which a maze of azaleas floats. Around the pool is a series of specialty gardens, each with a variety of plant material. All of the foliage and materials of the garden have been selected to accentuate the interplay of light, color and reflection. While Irwin's plan for the garden sprang from the powerful, controlled geometries of the architecture and from the site itself, he conceived the garden as a "conditional" work of art: In contrast to the more static nature of the buildings, the Central Garden is always in flux.

### Water Gardens

The sound and movement of five dis-

tinct fountains and water features are at the heart of the architecture of the Getty Center. In addition to heightening the visitor's sensory experience, the location and design of each fountain and water feature is geared towards accentuating an important axis running through the site.

- The first water feature encountered by visitors is the cascading waterfall alongside the grand stairway connecting the Arrival Plaza to the Museum Entrance Hall. The water flows directly into a long narrow pool, built so shallow as to seem an extension of the Plaza floor. Within that pool, fountain jets shoot streams of water directly upward, creating a

soothing sound which, Meier explains, "helps create the sense that one has indeed arrived in a refreshing place." The placement of this fountain is in perfect alignment with both fountains in the Museum Courtyard and the center of the round Museum Entrance Hall.

- In the Museum Courtyard, 46 jets shoot streams of water from right to left forming perfect arcs over the 120-foot linear basin, situated beside a row of Mexican cypress trees. The eye is directed both to the left edge of the fountain, which is the center axis of the site, and back along that same elongated line to the center of the large boulder fountain, whose center is in perfect alignment with the center of the Museum's circular entrance hall, the linear basin's edge, and the edge of the cascading fountain at the Arrival Plaza.

- In the tradition of Asian gardens, the boulder fountain at the south end of the Museum Courtyard is part sculpture, part reflection. The circular pool, with its sculptural boulders and "playful" water, is meant to contrast with the geometric design of the surrounding archi-

tecture, yet is placed not only on the center line to the Museum, but also the axis to the Scholar offices in the Research Institute.

Each boulder comes from Columbia, Calif., the heart of gold country, and was hand-picked by a design team that included Meier and the main landscape architects, Hickok and Olin, and staff members of the Getty. Blown smooth by the heavy blasting of old gold mining techniques, each rock was chosen for its sheer sculptural form, as a contrast to the rough textured grids of travertine stone. A calm pool reflects the curvature of the West Pavilion, outside the circular divide that separates it from the splashing waters of the fountains. Travertine blocks, spaced across the water like lily pads, form a floating bridge; with the water's surface less than half an inch from the edge of each block.

- Tucked between the East and South Pavilions, a smaller boulder fountain rests at floor level, almost an extension of the East Pavilion's lobby.

- The final water feature is located west of the Museum entrance, at the top of the Central Garden. It begins with a travertine headstone, designed by Meier, where a constant flow of water rises as if from an eternal spring. The water runs down the front of the headstone and along a dramatic chute, finally emptying into a hole that delivers the water to the Irwin's Central Garden. From below, the water trickles into a grotto of chiseled travertine. The extra-rough texture of the large dome shape "recreates the tranquil sounds of springtime rain," according to Meier. Aligned perfectly with the centerline through the Central Garden, the fountain not only connects the garden to the buildings, but serves as the source of its own stream.

*An intimate,  
ever-changing  
tableau that  
enhances the  
visitor's experience.*



# Made FOR THE shade

*There are woody plants that do well in partial shade and those that prefer full shade. Most varieties do best in partial shade conditions.*

By STEVEN GUSTAFSON, Ph. D.

Good landscape design takes its clues from nature. A forest is a good model of plants growing in a shade environment. A forest consists of the overstory and the understory of living plants. Dominant trees compose the overstory providing various degrees of shade. The understory consists of smaller tree species, shrubs, vines and groundcovers (annuals and perennials).

Understory plants are well suited to conditions beneath the much larger dominant trees. Environmental factors such as the degree of shade, soil moisture and soil pH determine which plants thrive in a particular understory. These same factors help determine which plants will grow well in a manmade landscape.

In horticulture we often use the terms partial and full shade. Full shade defines an area that receives no direct sunlight. Partial shade refers to an area that receives filtered sunlight or some full sunlight part of the day, and less or none at other times. There are plants that do well in both, but more that do well with partial shade.

That's why it's so important to do a careful site analysis before determining which plants to put in a particular area. The site may be sunny when you visit the site, but receive shade most of the rest of the day. Or it may receive just morning or afternoon shade. In a site analysis, take into account other factors like topography and pertinent architectural features of the adjacent building(s). Be aware of microclimates in the planting area you select. They're a product of geographical orientation and anything affecting exposure to prevailing weather and exposure to the sun.

Equally important to the process of determining plants for a particular landscape is your "customer needs" analysis. Consider the needs, desires and tastes of your clients, whether they're landscape clients or members of your golf course. This includes the use of the area, specific preferences, and the amount of maintenance the plants will require after planting.

—The author is horticulturist and grounds manager at  
The University of Tennessee, Martin.



*Trees that generally do well in shade. Check with local nurseries or extension service for new, popular cultivars.*

Scientific name	Zones	Common name
<i>Acer circinatum</i>	1-6	vine maple
<i>Acer palmatum</i>	5-8	Japanese maple
<i>Acer pennsylvanicum</i>	3-8	striped maple
<i>Alnus sp.</i>	2-7	alders
<i>Cercis canadensis</i>	4-9	eastern redbud
<i>Cornus sp.</i>	1-9	dogwoods
<i>Corylus sp.</i>	4-9	hazels
<i>Illex sp.</i>	3-8	hollies
<i>Podocarpus macrophylla</i>	4-9	yew pine
<i>Thuja occidentalis</i>	5-9	arborvitae
<i>Tsuga sp.</i>	3-8	hemlocks

*Shrubs that generally do well in shade. Check with local nurseries or extension service for new, popular cultivars.*

Scientific name	Zones	Common name
<i>Berberis sp.</i>	5-8	barberry
<i>Euonymus japonicus</i>	7-9	evergreen euonymous
<i>Fatsia japonica</i>	8-10	fatsia
<i>Illex sp.</i>	3-8	hollies
<i>Ligustrum sp.</i>	3-7	privets
<i>Lonicera sp.</i>	5-7	honeysuckles
<i>Nandina domestica</i>	6-9	heavenly bamboo



# '3 x 3' program *controls apple scab*

*Crabapple trees on this program stayed green and healthy looking, with little or no leaf yellowing or defoliation.*

By PAUL C. PECKNOLD/  
Purdue University

**I**t's not too early to begin planning your spray program for apple scab of crabapple, especially after five or six consecutive years of epidemic scab.

We suggest you use Banner fungicide in a "three-by-three" (3 x 3) spray program.

## **Why three sprays?**

All spray programs should strive to be as minimal, efficient, and efficacious as possible. The challenge with landscape plants is to determine the fewest number of sprays that will provide the most "aesthetically acceptable" disease control; realizing that perfect scab control is not needed for landscape crabapples. Over the past number of years we have field-tested both a 2-spray and 3-spray program for season-long control of apple scab on crabapples. While the 2-spray program generally gave acceptable early season scab control, it often resulted in poor mid- and late season control; trees on the 2-spray program frequently showed light to moderate leaf yellowing and defoliation by late July. However, the 3-spray program has proven to be very reliable in providing season-long control of scab. In all years tested (most of those being epidemic years for apple scab), trees on the 3-spray program remained green and healthy appearing with little or no leaf yellowing or defolia-

tion at the time final evaluations were made, generally in late August or September. Scab lesions did develop during the latter part of summer on trees treated with the 3-spray program, but never to the extent of causing significant defoliation.

## **Why a three week interval?**

In those years when we attempted to stretch the interval from 3 to 4 weeks the program was a distinct failure. For example, the percent of leaf scab jumped from 10 percent to nearly 80 percent by late June, when a four week rather than three week interval was used in our early field trials. Growers are advised to mark their calendar with three week intervals and "stick to it", being sure not to stretch the interval.

In those years when infection periods are few, you could get away with stretching the interval between sprays or using just two sprays.

However, a primary benefit of the program is that it takes the guessing out of scab control, it's a "no-brainer"; you simply spray when the calendar tells you to spray.

## **Why begin at pink?**

The first spray should be applied at the phenological pink stage, just prior to bloom. We recommend early pink if wet conditions have predominated before pink; however, if conditions have been dry, late pink is preferred. On average, the pink stage of tree phenology coincides with the time primary scab spores are at their peak. Before pink, there would be the probability of too much scab coming in later in the season, while if sprays are started after pink, there is the risk of having so much primary scab build-up you could never bring it under control. Trials in which the initial spray was delayed until petal fall showed severe cluster leaf scab before the

initial spray was even applied, and much defoliation by late summer.

## **Why Banner?**

The excellent curative abilities of the new sterol demethylation inhibitor (DMI) fungicides have allowed us to stretch spray intervals and reduce the number of applications for numerous landscape foliar diseases, such as powdery mildew, dogwood anthracnose, and cedar-apple rust. Recently, DMI fungicides have also been used to reduce the number of sprays to control primary apple scab on commercial apples; where an accepted alternative to early season primary scab control is to make just

*Starting at the pink stage, trees are sprayed three times at three-week intervals.*

four spray applications starting at tight cluster. The DMI fungicide, Banner, has been the primary fungicide used in our field trials, because of its broad ornamental labeling and excellent systemicity and curative abilities. Most years we used a Banner 1.1EC formulation at 2-oz. per 100 gallons. This past year we re-evaluated our 3-spray program using the newly improved formulation of Banner (Banner Maxx), at 2- 5- and 8 oz. per 100 gallons of water. All rates gave excellent season-long scab control. However, the higher 5- and 8-oz. rate gave significantly better control of early season scab than the lower 2-oz. rate. Based on these findings, we believe the best season-long control of apple scab can be achieved by using a 5-oz. rate of Banner Maxx with the 3 x 3 program. **LM**

*Paul C. Pecknold is professor of plant pathology at Purdue University.*



# Crew mobility!

## Guide to Landscape Vehicles

*The key to getting your job done each day is mobility; getting from place to place quickly, safely and with the tools you need to complete the job with maximum efficiency. You need a dependable vehicle.*

By DANIEL INGHAM

**F**or the landscaper, mobility means his truck. For the golf course superintendent, athletic field manager or grounds manager, it's his utility vehicle. For both, it means the options and accessories they choose to outfit them with.

### **The truck you have, the one you want**

The most important, and expensive, purchase most landscapers will ever make is their truck, or trucks. The truck you choose is the one you will be stuck with for the next several years, so you need to choose carefully, matching the truck to the job being performed. The place

► Will you regularly be pulling a trailer with this truck?

► How long do you plan to keep the truck?

Matching the vehicle to the job is the most important part of the selection process. Because so much depends on your vehicle, price is not going to be the key factor in choosing it. Durability and functionality will be. The biggest mistake a contractor can make is to buy a vehicle that is not going to be up to the demands placed upon it because of price considerations, or one that will actually hamper him on the job.

Identify problems you may be experiencing with your current vehicle choice.

These may include things like seating space

for work crews that can be solved with an extended cab option. Perhaps you want to eliminate the use of trailers, in which case you might consider a box van. A flat-bed or stake-bed truck can make it easier to

haul equipment or debris. Your current vehicle may be wearing itself out pulling trailers in addition to the load in the bed, so you need more power or might want to consider a diesel engine. Perhaps you need a truck with more all around versatility, or one that is more specialized. A heavy-duty vehicle with reserve power and capacity to handle all you will throw at it will last longer and incur less downtime than one that is worked to capacity every day.

There are a number of questions you need to ask and then answer before you head to the dealer. These include:

► What problems are you having with your current truck or truck/ configuration, and how might a different type or model of truck correct them?

► What will be the main purpose of the vehicle (landscape maintenance, irrigation maintenance, material hauling), and how much flexibility do you need to perform varied functions?

► What are your crew transportation needs?

► What accessories (equipment racks, dump inserts, specialty bodies), are you planning to install?

The most commonly used truck in the industry is an unmodified, 3/4-ton or larger fleet-side or stake-bed.

With that in mind, let's look at a few of the trucks available to you today:

### **LONG-HAUL WINNERS**

GMC trucks have long been leaders in the heavy commercial truck market. They also have a solid reputation in the light commercial truck segment and one of their



## Price, size, 4WD considerations

Kevin L. Dilliard, Superintendent of Parks, Collinsville Area Recreation District, Collinsville, IL

**Big acreage for Ford, Dodge:** "We have about 150 acres split between parks and a number of municipal and school athletic fields.

"We have a one-ton dump truck that we use for hauling rock and gravel and sand, and which also has snow-plow hook-up on. We have a four-wheel drive Dodge truck that we use to pull the trailers to transport our mowers during the summer.

"We've got a four-wheel drive Ford Ranger that our mechanic uses for running errands. He is also in charge of the ball fields and the cleaning maintenance crews, so he uses that during the day. We have a Dodge Ram 3/4-ton that is used by the sports complex maintenance crew. And then we have a GMC Sierra 3/4-ton truck that I use. We also have a Ford bucket truck that we use for tree work, hanging nets on the field, and any other work where we need to get up in the air.

**What's it cost:** "The major thing we look for is the price. We have to use Illinois State bid sheets to go by and see what's available and we pick and choose from what they've got on the bid sheets. We also look at the size of the truck and its capacity. Whether it is four-wheel drive or not. Whether its an extended cab. The durability of the truck in general, especially if we're going to put a snow plow on it."

**Configuration:** "The pickup trucks are standard fleet-side bodies. We don't do any customizing them other than to add some tool boxes and bed-liners."

latest offerings is the Sierra 3500 HD cab chassis. "Commercial operators are becoming increasingly sophisticated in their truck purchases," says Dick Pennell, GMC brand manager for commercial trucks. "They recognize that, long term, premium trucks like ours provide the biggest return on their investment by allowing them to do more work and do it more easily and efficiently. We're finding that vocational operators want to do as many things as possible with their trucks."

The Sierra 3500 HD has a gross vehicle weight rating (GVWR) of 15,000-pounds with a payload of from 8,587- to 9,036-pounds, depending upon the bed choice. Add to that a pulling capacity of 12,000-pounds and you have a truck that can easily handle a daily landscaping regimen. Fitted with a dump or a stake bed, it has a large material handling and towing capacity that is augmented by a heavy-duty 5-speed transmission with a deep low gear and overdrive fifth. Engine options include a 195-hp turbo diesel or a 290-hp Vortec V8.

If you don't mind going with the smaller 2500 Sierra, you can purchase a bi-fuel engine that runs on both gasoline and compressed natural gas (CNG). This package will add about \$5,000 to the sticker

price, but much of that will be recouped by greatly reduced fuel costs, a longer lasting engine and a total driving range of over 550 miles which can eliminate some of your daily fuel stops.

**Chevrolet's C/K Series** pickup trucks have probably been their biggest seller in just about all market segments. In fact, they sold over a half million of them in 1996. This has to do, no doubt to the wide range of options and configurations available.

Payload capacities range from 1,656-pounds in the C/K 1500 to 4,155-pounds in the C/K 3500. Towing capacities range from 7,000- to 10,000-pounds, respectively. Depending on the C/K you want, engine options range from a 200-hp Vortec V6 to a 290-hp Vortec V8 or a turbo-charged V8 Diesel in either 180 or 195 hp. Plenty of power to haul materials.

Transmission options include a heavy-duty 5-speed manual transmission with overdrive or a 4-speed, electronically controlled automatic. The heavy-duty manual transmission is available on the 2500 and 3500 C/K's and features a single-piece countershaft for increased durability. The electronically controlled automatic has a number of improvements, including a second-gear start feature which provides extra



The GMC Sierra 3500 HD Cab Chassis with dump body provides plenty of hauling and towing capacity.



control in slippery driving conditions. A nice feature for those doing snow removal. It also has a wide range of gear ratios which provide good low-gear torque and increased mileage in overdrive.

Finally, there are both the extended and crew-cab options. The extended cab is available on the 1500 and the 2500, while the crew-cab is available on the 3500. The



The Chevrolet C/K Series trucks offer an extended-cab version with a passenger-side third door.

extended cab can seat six adults and comes with an optional passenger-side third door. The crew-cab offers a full back seat with four-door access.

Ford has been making all sorts of trucks for a long time, favorites of quite a few contractors. "We discovered that the real volume opportunities with our work trucks depend on our ability to compete in multiple niche markets," said Ross Roberts, Ford Motor Company Vice President and General Manager of Ford Division. "So we've added four-wheel drive to the dual-rear-wheel trucks and raised the GVW ratings, increased the horsepower and torque on our engines, and designed the vehicle to be capable of snowplowing in Super Cab and Crew Cab configurations."

In January, 1999, Ford debuts its Super Duty F-Series. The Super Duty F-Series is an all-new full-size truck developed and built on a separate platform from the F-150 and F-250, and extends to the F-350, F-450 and F-550 models. The Super Duty F-Series trucks feature the new 5.4-liter Triton V8 and V10 engines and an im-

## Box van user

*Thomas "Cooper" Lee, Country Heritage Landscaping, Fayetteville, AR*

"In the landscaping division we use one-and-a-half ton flat-bed dumps, two GMC's and two Fords. In our maintenance end, in years past, we have always used 1/2-ton pickups pulling a trailer.

years ago we had to break those people of only driving a truck and teach them to drive a truck and trailer combo. They became confident with that, then had to switch again. But, after a week, nobody wanted to back to the half-ton trucks."

**Likes his Fords:** "We have worked the

'big three': Dodge, GMC and Ford vehicles. We have looked at the strength and power of the vehicles — the durability behind the truck. In the half-ton class our people have been pleased with either the Ford or Chevy truck. When you get into the larger work trucks, one-ton and ton-and-a-half, there is no doubt that our people have been more impressed with the Ford. Why? I can't answer that, but they have been. We've worked some of these trucks, the Dodges, Chevy's and GMC's

**Box vans:** "Last year, we purchased two, 14-foot Isuzu NPR box vans and are now looking to get two more of them. We've really enjoyed them. We don't need to pull a trailer with these trucks unless we are cleaning up debris. Another is that there were always things laying on the bed of the trailer or truck that now hang on the walls of the van. We've actually made shelving for the inside of the box vans which eliminates having to step on things.

"With the vans we have everything and more that we had with the truck and trailer combination. The crews just love them. Its like their own little workshop there in the back of the truck, and its tall enough that they can stand up inside. Also, there is better security because we can lock it up, and everything is protected from the elements. Things like fertilizer don't need to be tarped and covered-up when it rains."

**Box van maneuvering:** "At first, our drivers were hesitant and didn't want to drive the box van because of the height — they were real concerned about that. Two

for 10 to 12 years. We've only been working the Fords for about four to five years.

"Overall, the guys are much more pleased with the Ford product in the heavy trucks. These are all gasoline powered trucks, too."

**Configuration:** "Our one-tons are typically a 12-foot dump bed. They're flat-beds with a hydraulic dump and removable sides. We usually buy the cab and chassis and have them done locally."

**Racks:** "We are installing racks that extend over the cab on our dumping trucks. We can put tools and wheelbarrows up there and not have to unload them when we want to dump. Also, around the bed, we have welded 12- to 14-inch lengths of pipe that the tool handles can slip into and stay in place while we dump. This eliminates a lot of the time that was spent loading and unloading when we used to pile the stuff on top of the load. We've also fastened water-proof tool boxes to the under frame. On the front bumpers we have a rack we built to hold the plastic traffic safety-cones."



# Pirates like durable Mules

John Adler, Pittsburgh Pirates, Asst. Superintendent, Bradenton, FL

**Infield team player:** "We have two 2500 Kawasaki Mules and one 500 Kawasaki Mule that we use.

"The main thing we use them for is hauling the packing clay for the infield. We do this on a daily basis because we are continually having to pack all the bases and mounds. We also use them for

edging our fields. We use the Mules to haul the debris and for other general clean-up."

**Considerations:** "Other than price, the most important consideration was durability.

"We opted for the hydraulic dump-bed, which is not a standard option. Also, we went for the 2500 because it is wider than others we looked at, so we can sit two people comfortably. Lights, too, were important because we start work very early in the morning and end late at night.

"I like the air-intake on the Mule. They route it through the roll-bar. Obviously, on a ball-field, it gets rather dusty when we move all that clay and debris, so this is really a nifty way to keep clean air going to the engine and help with maintenance."

proved 7.3-liter diesel engine.

The new Super Duty trucks will offer over 44 vehicle configurations, compared with the 24 currently available. Among the choices are: pickups or chassis cabs available as Regular Cab, Super Cab, or Crew Cab models; a 19,000-pound gross weight vehicle offering designated as the F-



Ford will introduce its Super Duty F-Series truck in January, 1999.

550; two- or four-wheel drive; short-or long-box configurations and a box-delete option; and transmission choices ranging from a 4-speed automatic, heavy-duty 5-speed manual, or a 6-speed manual standard with the diesel engine.

The redesigned Dodge Ram Series trucks have only been on the market a few short years but have been making serious inroads in the contractor market. One of the reasons is the wide choice of power trains. Five different engine options, a choice of 5-speed manual or 4-speed auto-

matic overdrive transmissions, and a wide variety of rear axle gear ratios allow you choose a drive train that will provide you with optimum performance.

Engine options include a 3.9-liter V-6, 5.2- and 5.9-liter V-8's, an 8-liter V-10, and a 5.9-liter straight-six Cummins turbo diesel. The V-10 gives the Ram 2500 a towing capacity of 13,200-pounds — more than the diesel and more than other trucks in that weight class. If you are looking for a good towing vehicle the Dodge Ram is definitely worth looking at.

Another interesting feature of the Dodge Ram series is the design of their crew-cab. The Quad Cab, as it is called, has rear doors that swing opposite of the front doors, creating a large, single, pillarless opening for easy passenger access and cargo loading. Another nice design feature takes into account that people who work with their truck often wear gloves. Many of the controls inside of the cab are designed to be easily used while wearing gloves.

Toyota has long been a favorite of light truck aficionados. In 1993 they rolled the T-100 out into the full-size truck market. Since then, they have proved themselves to be reliable work trucks for contractors in spite of the limited number of configurations available.

Engines available with the T-100 are either a 190 hp V-6 or a 150 hp in-line 4-cylinder engine. The 4-cylinder engine allows a payload capacity of 1,650 pounds and a towing capacity of 4,000-pounds.

The V-6 provides a payload up to 2,150-pounds and a towing capacity up to 9,500-pounds.

The T-100 is available in an extended-cab version in both the 4- and 6-cylinder packages. Other features include side impact airbags and door impact



The Dodge Ram Series offers a variety of powerful power train options.



beams, three point seat belt restraints and anti-lock brakes.

#### TILT-CAB TRUCKS GAINING

Compact, tilt-cab trucks, usually configured as delivery vans, have been a common sight on our roads for quite a few years. It has only been in the last few that landscape contractors have turned a serious eye towards them. These trucks are easy to drive, maneuverable, and offer superior visibility to the driver.

One of these is the **Mitsubishi/Fuso FG** 4-wheel drive. According to Mitsubishi, this is the only medium-duty cabover with 4-wheel drive available in the United States. Body options for the FG include dumpers, utility, tool carriers, drop-side stake bodies and dry vans up to 14-feet in length. It seats three passengers in the cab.

The FG comes with a 135-hp, 4-cylinder, turbo diesel engine and a 5-speed manual transmission with a 2-speed transfer case. The gvw is 12,000 pounds and it can carry a payload of 6,590-pounds.

**Isuzu's NPR Series** of tilt-cab trucks offer both a gasoline and diesel versions in two different sizes. The gas NPR's are available in either 11,050- or 14,050-pounds GVWR, and come with a 250-hp V-8 engine coupled to a 4-speed automatic transmission. The diesel NPR's come in a 12,000- or 14,500-pound GVWR version, powered by either a 142- or 172-hp turbo-charged engine, coupled to your choice of a 5-speed manual or 4-speed automatic transmission. The payloads for these vehicles range from 4,700- to 9,880-pounds.

#### SUPER UTILITIES

A utility vehicle may not be the most expensive purchase a grounds superintendent might make, but it can be one of the most important. Because of the wide variety of situations they are put to use in,

## The power of diesel

*Cornelius Brady, Community Landscape Services, Chantilly, VA*

**Ford loyal:** "Our entire fleet is made up of Ford trucks. We have a variety of F-250, F-350 and F-450's. We also have several larger trucks in the 600 and 700 series (over 10,000 lbs. Gross Vehicle Weight)."

**Diesel power:** "All of our trucks are diesel. The diesel engines have more power which is important. And, all of our trucks are four-wheel drive. We do a lot of snow plowing in winter, so we need that and so we purchase the trucks with plow kits."

**Attachments:** "The fleet-sides are easily available when we need them, are not as costly as a custom body and they're easier to sell when we want to trade them for a new truck."



Toyota's T-100 Series trucks offer extended cabs for contractors.

utility vehicles need to be more flexible, and able to perform more jobs, than ever before.



Tilt-cabs like this 4-wheel drive Mitsubishi/Fuso are gaining in popularity among landscapers.

## Dependable pick-ups

*Marc Ames, Ames Lawn & Landscape Svc., Inc., Huntsville, AL*

**Two brands:** "We've got four Chevy's, two GMC's and a Ford. The Ford's a one-ton, one of the Chevy's is a ton, one is a ¾-ton, and the GMC's are ½-tons. All of the one-tons are dumps and the rest are fleet-sides."

**Can it do the work:** "When choosing a truck, the most important consideration is dependability and workability. By workability, I mean how functional and how easy the truck is to use on the job site."



# Variety for multi-service company

Eric Spalsbury, Albuquerque Grounds Maintenance, Inc., Albuquerque, NM

**Dual axles:** "For the maintenance division we primarily use Ford F-250 pickup trucks with an extended cab so our crews can ride comfortably. Our landscaping division uses one-ton Ford dual-tire axles, usually with a stake body. Our chemical spray rigs are also mounted on one-ton Ford 'duallies.'"

**Racks are neat:** "We have an irrigation division as well and for that we use Chevy  $\frac{3}{4}$ -ton vans, with interior racks. We find that it gives a neater appearance on the job-site and it eliminated the problem of parts walking away from the trucks crews had their backs turned. Our interior division also uses Chevy vans, which we also use for all of our color installation because they have slide-out interior rack that can hold the flower trays."

**Utility vehicles:** "We have a couple of on-site, full-time jobs that we maintain with utility vehicles. At one we use a gas-powered Cushman with a pickup container on the back. The other site is a mall where we don't haul as much material and we use a gas-powered E-Z Go there."

**No down time:** "Dependability is the most important factor for us, by far. A down day costs us so much money."

**Go with gas:** "All of our vehicles are gasoline-powered. That's what we started with and I've stayed with it because I didn't want to switch horses mid-stream."

**Configuration:** "Our maintenance division uses the fleet-side pickup truck body while our maintenance division uses stake beds. On the stake beds we installed Tommy-Lifts [lift gates], and the trailers for the maintenance trucks have Trimmer-Traps installed on them. We had tried to make our own but that didn't work out too well."

**Snow removal:** "We have a combination of two and four-wheel drive vehicles. We have a total of 27 trucks and of those seven are four-wheel drive with plow kits."

The options available on many of today's utility vehicles include everything from live hydraulic hook-ups for hydraulic tools, to scissors lifts that can help with tree-trimming duties. They can operate a variety of attachments like aerators and core-harvesting using a variety of PTO systems or do double duty as a spray rig. Take a good look at all the options before you decide. And before you make that decision, go through the same question and answer process outlined for trucks earlier in this article.

E-Z-Go/Textron's *Workhorse* was introduced in 1996. The *Workhorse* 800 turf vehicle is a new addition to this line. It is powered by a 9-hp gasoline engine coupled to an automatic, continuously variable transmission. If you prefer an electric vehicle, the 800E is powered by a heavy-duty 36-volt, high-efficiency motor. The 46 x 35 x 10-inch cargo bed has an 800-pound payload capacity which, when combined with the dump option, makes material handling quick and easy.

Features include a heavy-duty bed liner for durability, a center console with drink and radio holders, and rack-and-pinion steering. Options include a cab with doors, flatbed, light package (headlights, taillights and brake lights), light bar, power dump bed, top, trailer hitch, and an all-weather enclosure and windshield.

Club Car's latest offering is the *Carryall Turf II*. Powered by an 11-hp gas engine, it has a top speed of 15 mph when married to its synchromesh directional-shifting transmission. It has 1,200-pound payload capacity and has a 49 x 50-inch cargo box with 15 cubic feet of cargo space.

Standard features include: an anti-sway torsion bar, a differential guard, synchromesh transmission, maintenance-free rack and pinion steering, reduced speed reverse, pedal start, and dash-mounted instrument package. Another important feature of the Carryall is its rustproof, welded aluminum frame and rear body.

Available with a choice of either gas or electric power, the *Cushman Hawk* features a heavy-duty steel frame, reinforced



Club Car's Carryall Turf II has a 1,200-pound payload.



The E-Z-Go Workhorse can be had in gas and electric versions.





The Jacobsen SV's can now be fitted with the new SDI turf spraying system.

front suspension and rack-and-pinion steering to make it both stable and maneuverable. The gas version comes with a 14-hp air-cooled engine equipped with a maintenance-free remote air intake system. The electric version has a powerful 6.5-horsepower, 48-volt industrial electric motor supplied by eight 225-amp batteries.

The Hawk's payload is rated at 1,200-pounds and comes standard with a 40 x 48-inch wide cargo box. Other features include: a 50-amp alternator to allow the use of electrical accessories; a drum-type parking brake and rear-wheel hydraulic brakes for added stopping power; and powerful 35-watt halogen headlights.

Jacobsen/Textron produces the SV Series of utility vehicles. They're available with either diesel or gasoline engines and rated for payloads up to 2,800-pounds. In addition to the standard dump box, SV's can be mounted with sprayers, spreaders and topdressers for turf work. SV's come equipped with hook-ups for hydraulic landscaping tools which also is available from Jacobsen. Other options include a R.O.P.S. cab; a fully enclosed cab with heater and detachable doors; hydraulically driven mechanical PTO kits; and mounting kits for aerators and core harvesters.

New for the SV this year is the SDI line of sprayers. They come in 100-, 160-, 225-, and 300-gallon capacities. All are vehicle mounted except for the 300-gallon trailer mounted sprayer. The others offer easy to install with a choice of skid or pin-mountings. Customers can choose between diaphragm and centrifugal pumps; a choice of one manual and two electronic-lift

## Longevity of service

Curt Hart, Alderwood Landscaping, Mead, WA

**Big trucks:** "We have a couple of Ford one tons, a one-and-a-half ton, and we also have an International that is rated at 48,000 lbs. GVW."

**Important factors:** "We look for how long its going to last in our fleet. For that reason we go with the bigger trucks and choose diesel engines. The diesels last longer and have more power. We look for whatever truck is going to give us the best value for durability, whether its a Ford or any other make."

"We like the dump capable flat-beds or stake -beds."

**Builds racks:** "We build our own racks for the sides of the trucks. They're removable so that we can get plant material or whatever we are hauling, in and out easier. We don't buy equipment racks or anything else, though."

booms; and boom lengths of 15- or 20-feet. The SDI sprayers come with a host of other features to ensure easy and efficient spraying.

John Deere's Gator Series of utility vehicles offer superintendents a utility with a heavy payload as well as a low ground pressure to minimize turf damage in sensitive areas. Although available in four and six-

## Smaller vehicles get the job done

Robert Berglund, Superintendent, Pine Crest Golf Club, Sharon, MA

**Price & power:** "We have two Cushman three-wheel Trucksters, two Yamaha's and a new Cushman Hawk. We've also just ordered another Truckster.

Price, strength and reliability were the most important factors in choosing them."

**Versatility:** "We like the Cushman because you can use it for a lot of different things. For example we use it for core-harvesting when we aerate. We use it for general clean-up on the course and other things as well; its just an all-utility vehicle. It has the features we need. I don't think you can beat a Cushman."



The Cushman Hawk comes equipped with a 50-amp alternator for running electric tools.

wheel versions, the six-wheeler provides the weight distribution that many find so important, especially when loaded to its 1,200-pound capacity. It is available with either a gasoline or diesel engine and can reach speeds of 15-mph.

The Gator can be set up for many dif-

**Cushman PTO:** "The Cushman's have the hydraulic PTO hook-ups for using the core harvester and 110 AC plugs so we can use electric trimmers and stuff like that. The new Truckster that we have on order also has the hydraulic plug-ins for hydraulic tools. We don't have any hydraulic tools at this time, but we'll be looking into that."



ferent uses including as a fire fighting vehicle that can handle emergencies in stadiums or on the course until help arrives. Options for the Gator include: a power dump; a bed liner; a rear towing hitch; a 72-inch front mount blade; seeder, spreader and sprayer attachments; a tail-gate ramp; back-up alarm kits; alternate fuel conversion kit; and equipment racks from Green Touch Industries.

**Kawasaki's Mule Series** range from the 550 which can fit in the back of a full-size pickup truck, to the 2520 Turf model. The 2520 is powered by a 617cc V-Twin engine, has a payload capacity of 1,330-pounds and a towing capacity of 800-pounds. Each model comes with a dual-mode differential that can be unlocked to minimize damage to turf, or locked to provide better traction.

Among the *Mule's* many features are: a continuously variable belt-drive transmission; a dual mode differential; full four-wheel suspension; high flotation, low pressure tires; noise insulated engine compartment; and a tilt steering wheel. In addition to the standard tilt-bed, stake-bed gates are available as are cargo baskets, toolboxes and tool holders. To keep things secure and out of the weather a locking van box is also available.

The *Groundforce 150*, new from **The CheTech Company** this year, has an impressive 1,500-pound payload which is moved with the help of 16-horsepower Vanguard V-Twin engine. The drive system uses an infinitely variable clutch and a Dana automotive-type transaxle for smooth operation and fingertip shifting. A dual tubular frame chassis with dual front and rear shocks provide a smooth stable ride as well. Options include a heavy-duty alternator; hydraulic bed lift; modular cab enclosure; and lighting package.

**Columbia Par Car** produces the *Util-*

*truck Series*. The *Util-truck* is available in both gas and electric versions. The GUXB uses a nine-hp engine that gives the vehicle a top governed speed of 15 mph (the GU4 electric version attains the same speed). Payload capacities range from 1,100- to 2,400-pounds and come with a variety of dump and flatbed cargo options. Options include van enclosures; dump beds; back-up alarms; suntops; and a direct tracking trailer with a 1,000 pound capacity.

**Toro** manufactures the *Workman* utility vehicles.



The Kawasaki Mule routes its air intake through the roll bar to keep clean air going to the engine.

These versatile utilities come in two and four-wheel drive versions, can reach speeds over 20-mph, and have payload capacities up to 2,500-pounds. The *Workman* can be configured to perform an almost endless variety of functions ranging from spraying



The Che Tech Groundforce 150 is equipped with an automotive style transaxle.

and top-dressing, to tree and aerial work. It can be fitted with a variety of hydraulic, pneumatic and electrical power units for using power tools of all types.

Some of the *Workman's* options include a choice of gas or diesel engines; dump, flat and stake-beds; spreaders, aerators and core harvesters; remote hydraulic and PTO kits; elevating work platforms; and a variety of different sprayer options, to name a few.

**Smithco's Red Rider** has been around for quite a while, and probably will be for some time to come.

The Red Rider has been providing superintendents with a versatile, low-cost utility vehicle for years. Using a tricycle design and low-to-the-ground rear bed, it is excellent for transporting mowers and personnel from one job to another. It comes fully-equipped from the factory except for an optional lighting package.

*Equipment authority Daniel Ingham resides in Desert Hot Springs, Calif.*



# MANUFACTURERS OF TRUCKS, UVs & ACCESSORIES

## Trucks

For more information of the vehicles discussed in this article you should visit the following websites:

Chevrolet; [www.chevrolet.com](http://www.chevrolet.com)

Dodge; [www.4dodge.com](http://www.4dodge.com)

Ford; [www.ford.com](http://www.ford.com)

GMC; [www.gmc.com](http://www.gmc.com)

Isuzu; [www.isuzucv.com](http://www.isuzucv.com)

Mitsubishi/Fuso; [www.mitfuso.com](http://www.mitfuso.com)

Toyota; [www.toyota.com](http://www.toyota.com)

## Utility Vehicles

American Power Products; (714) 633-7613.

American Pride Golf Products; (800) 932-4227.

Bel-Air Turf Products, Inc.; (800) 279-2233.

Che Tech Co., The; (715) 924-3192.

Club Car Inc.; (800) 643-1010.

Columbia Car, Inc.; (800) 248-5278.

Country Home Products; (800) 446-8746.

Cushman; (800) 228-4444.

E-Z-Go/Textron; (800) 241-5855.

Haul-Master, Inc.; (800) 848-4285.

Jacobsen/Textron; (414) 637-6711.

John Deere; (800) 537-8233.

Kawasaki Motors Corp.; (616) 949-6500.

Kimball Products, Inc.; (800) 358-4586.

Polaris Industries; (614) 471-4800.

PWTL Inc.; (800) 843-9273.

Smithco; (610) 688-4009.

Taylor-Dunn Mfg.; (714) 956-4040.

The Toro Co.; (612) 888-8801.

Yamaha USA; (800) 843-3354.

## Truck & Utility Vehicle Accessories

Access Rack Systems; (800) 862-9954.

Action Fabrication; (800) 330-1229.

Adrian Steel Company; (800) 677-2726.

Alum-Line; (800) 446-1407.

American Truck Equipment; (800) 852-0528.

BackRack; (800) 256-8137.

BG Industries; (800) 446-9271.

BH Workman & Son; (800) 422-4069.

BL Industries; (701) 549-3838.

B&M Sales; (800) 338-2236.

Bil-Jax; (800) 537-0540.

Bloomfield Mfg.; (800) 233-2051.

Cambridge Industries; (810) 616-0500.

Daws Mfg.; (800) 366-8269.

Dee Zee; (800) 799-2102.

Delta Consolidated; (919) 832-6351.

Diamond Liners; (213) 567-1032.

Donovan Enterprises; (800) 327-8287.

Dyna-Hoist; (414) 362-3928.

D&S Sales/Western Mule; (800) 288-6853.

Duraliner USA; (810) 664-0850.

Easy-Up Ind.; (800) 795-2736.

Emmett Equip.; (800) 659-5520.

Executive Auto Desk; 612-888-4106.

Extendo Bed; (800) 752-0706.

Geoquip; (800) 834-0271.

Green Touch Ind.; (800) 621-6919.

H&H Sales Co.; (800) 551-9341.

Handy Ramp; (800) 783-1069.

Highway Products; (800) 866-5269.

Hitch Quick; (602) 829-1039.

Innovative Industries; (800) 374-1134.

Klippping King; 308-635-1511.

Jungle Jim's; (502) 244-7934.

Masterbuilt; (800) 489-1581.

Maxi Products; (608) 755-1199.

Modern Inc.; (409) 833-2665.

Nation Wide Ladder & Equip.; (800) 228-2519.

Ohio Steel Ind.; (614) 471-4800.

Ox-lite, Inc.; (800) 256-2408.

Phenix Enterprises; 800-736-9790.

Phoenix USA; (615) 526-6128.

Prairie View Ind.; (800) 554-7267.

Pultarps Mfg.; (800) 368-3075.

Rack-It Truck Racks; (800) 445-7666.

Ramparts; (800) 342-7267.

Ramp Solutions; (800) 969-7267.

Rawson-Koenig; (713) 688-4414.

Reading Body Works; (800) 458-2226.

Rhino Linings; (800) 447-1471.

Roll-Rite; (800) 297-9905.

Stahl; (800) 392-7251.

Stor-It Company; (800) 545-1848.

System One; (800) 627-9783.

Tommy Gate Co.; (800) 543-8428.

Trimmer Trap, Inc.; (800) 279-8727.

Util-A-Top Products; (414) 857-2614.

Valley Mfg.; (800) 233-5532.

Wabasso Products; 800-658-2322.

Wilcox Bodies, Ltd.; (905) 826-3722.



Heavy-duty aluminum ramps like these from Ox-lite can make equipment loading easier.



# Events

## APRIL

**6: ASCA Arboricultural Consulting Academy**, Arbor Day Farm (Lied Conference Center), Nebraska City, Neb. Call ASCA 301/947-0483.

**18: Garden Fair & Plant Sale**, U.S.

National Arboretum, 3501 New York Ave., N.E., admission free.

**19-22: North American Snow Conference**, sponsored by the American Public Works Association, Edmonton, Alberta, Canada. Call 816/472-6100; 816/472-1610.

**25-26: Eighth Annual Leesburg Flower & Garden Festival**, Leesburg, Va.; Leesburg Parks & Rec, 703/777-

1368.

**26-30: American Society of Golf Course Architects Annual Meeting**, Los Angeles, Chad Ritterbusch, 312/372-7090.

## MAY

**2-4: Turf & Ornamental Communicators Annual Meeting**, Wyndham Hotel at Playhouse Square, Cleveland; 612/758-6340.

**4: Equipment and Engine Training Council**, Briggs & Stratton Distribution Center, Menomonee Falls, WI. Contact EETC at 512/442-1788 or email: opecert@io.com.

**4-6: Southeastern Turfgrass Conference**, Rural Development Center, Tifton, GA. Call 912/386-3177 or email: whanna@tifton.cpes.peachnet.edu.

**5-7: Soil Erosion and Sediment Control**, Program 1: Utilizing the Basic and Revised Standards, Rutgers University, New Brunswick, NJ. Contact Cook College Office of Continuing Professional Education at 732/932-9271.

**7-8: Color Magic**, Florida Nurserymen & Growers Assn., Epcot/Orlando; Marry Mott, 407/295-7994; 407/295-1619.

**18-19: Sports Turfgrass Management for Professionals**, University of California Extension-Davis. Call University Extension, Davis, 530/757-8899 or 800/752-0881.

**18-20: Storms Over the Urban Forest National Conference**, Arbor Day Farm's Lied Conference Center, Nebraska City, NB. Contact The National Arbor Day Foundation at 402/474-5655.

**20: North Carolina Turf & Landscape Research Field Day**, North Carolina State University, Raleigh, N.C.; Gene Maples, 910/695-1333; 910/695-1222.

**21: Pond Dredging, Maintenance and the Natural Landscape**, Cook College, Rutgers University, New Brunswick, NJ. Call Cook College at 732-932-9271.

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As of February 1, **Biobarrier Root Control** system will cost 20 percent less than it has in the past, reported its manufacturer, Reemay, Inc., Old Hickory, TN. Biobarrier uses a time-release system to create a zone on either side of it which deflects roots. "We've really concentrated on our manufacturing efficiencies in the last year, working to find ways to streamline the process while still producing the highest quality product, and our greatly increased sales volume

has also contributed to our reduced costs," said Harry Barnes, Biobarrier manager at Reemay, Inc. (The price of Biobarrier II Weed Control System will not change.)

**Briggs & Stratton**, the world's largest manufacturer of small engines, recently sponsored a Small Engine School for WSD Small Engine Repair teachers. Eleven teachers attended the 3-day school at Engine Warehouse in Houston. Bruce Radcliff, national training director for B&S, conducted the training. He was helped by Andy Caldwell of **Engine Warehouse** and Albert Herron, service manager for **Texas Outdoor Power Equipment**, Georgetown, TX.

**A.H. Hoffman, Inc.**, a leading provider of high-quality pot-

ting soils, soil conditioners and fertilizers since 1934, has relocated its corporate headquarters to production and warehouse facilities in Lancaster, Pa. New address: 167 Greenfield Rd., Lancaster, PA 17601; 717/293-9521; 800/877-0848.

**JacklinGolf** named Lee Hetrick as manager of marketing and golf development. He joins Hiromi Yanagisawa, Jim Connolly and Dr. Eric Nelson on the JacklinGolf team. Lee will be working directly with architects and builders developing grass seed specifications for golf courses. He will also coordinate golf course turf-grass marketing and sales programs for JacklinGolf and Medalist America.

**The Lange-Stegmann Company**, a St. Louis-based fertil-

izer formulator, is offering POLYON-coated controlled-release fertilizers throughout the central U.S. Michael Stegmann, vp of Lange-Stegmann, said POLYON-coated nutrients will soon be available in many of the company's fertilizer blends. The patented POLYON fertilizer is manufactured by **Pursell Technologies, Inc.**, based in Sylacauga, AL.

**Price/McNabb**, Charlotte, NC, is the new public relations agency of record for **Husqvarna Forest & Garden Co.** The agency has been Husqvarna's ad agency for more than seven years. Handling the public relations duties are Sherri Oosterhouse and Tom Scharfe.

**The Scotts Company's** Professional Turf Division has realigned its marketing department and expanded its resources to become more responsive to market needs. The company has also appointed managers for particular new product lines. Dan Paradiso leads the Professional Turf group as director of marketing. Wayne Horman is marketing manager of seed and fertilizers for the US and Canada. Mike Bandy is marketing manager of control products, including herbicides, fungicides, insecticides and mechanicals. Tina Marshall is marketing assistant for the Professional Turf Division since 1995. Nikie Schooley is a marketing coordinator for the Professional Turf Division. **LM**

## Info center

VIDEOS AND LITERATURE FOR THE GREEN INDUSTRY

**EXCELLENT GARDEN VIDEOS...** from The Larkspur Company. Five available: Growing Good Roses, The Great Gardens of England, English Cottage and Country Gardens, Gardening with Summer Perennials and, the latest, Gardens of Northern California's Wine Country. The latest video explores nine outstanding winery gardens and covers garden design, plantings, relationship to the wineries and gardeners' viewpoints. Cost \$19.95 each. Contact: The Larkspur Company, P.O. Box 938, Larkspur, CA 94977. 800/772-4884 or e-mail: [larkspur@hooked.net](mailto:larkspur@hooked.net). Larkspur's garden web site: [www.hooked.net/~larkspur](http://www.hooked.net/~larkspur).

**"1998 NEWLY REVISED INSECTICIDE, HERBICIDE, FUNGICIDE QUICK GUIDE"...** cross references pesticides to registered usage and lists the pests that each individual material will control. Cost is \$18.50 plus tax. Contact Thomson Publications, P.O. Box 9335, Fresno, CA 93791. Telephone: 209/435-2163. Fax: 209/435-8319.

**"SAFE AND EFFICIENT LAWNMOWING TECHNIQUES"...** training/safety video. English and Spanish versions, 40-minutes. Valuable safety information. Proven tips for more efficient mowing in all conditions. Easy finish-up techniques. Free handout with text and answers included. Cost \$59.95 plus \$5 S&H. Contact: Progress Products, 5074 Masheena Lane, Colorado Springs, CO 80917-2675. Phone/fax 719/637-0811.



## Liquid injection system from Ransomes

The Cushman Envirojet 160 liquid injection system delivers turfgrass pesticides, liquid organic fertilizers, wetting agents or polymers directly into the subsurface soil structure, at the root zone. Because products are distributed directly from the system's tank into the soil, it virtually eliminates waste, personnel contact, runoff, UV degradation, and surface and airborne contamination.

Mounted on a Cushman Turf-Truckster, the Envirojet 160 uses high pressure pulses of water to create a small elongated hole on the turf surface. It then creates subsurface fracturing, the patented "jetation" sequencing process, of up to six inches in diameter. This pattern allows for nearly 100 percent distribution of chemicals and other products within the root zone and soil structure.

- Features of the unit include:
- A 16-jet, 64-inch-wide injection platform,
- Power brush,
- Mechanical tank agitation,
- An 8.7 gpm high pressure positive displacement pump,
- Low maintenance mechanical pulse sequencer
- Easy mounting/dismounting for Turf-Truckster use.

Appropriate for use on golf greens, tees, fair-



ways or sports fields, the unit's subsurface shattering process also helps reduce soil compaction, increase microbial activity and improve percolation.

The Envirojet 160 is equipped with a large external filter to allow fill up from any clean water source. Its 160-gallon tank can also be filled and used for effective spot irrigation in places where a water source is not available.

For more information on the Envirojet 160, contact Ransomes America Corporation at 800/228-4444, or

Circle No. 268

## Rain Bird weather station aids irrigation

The WS-PRO series weather stations from Rain Bird's Golf Division deliver the sophisticated meteorological data needed to optimize golf course irrigation schedules and reduce watering costs. Two models are available: WS-PRO-SH (short-haul) and WS-PRO-PH (phone modem).

They can be used with most Rain Bird central control systems, including the new Windows-based Cirrus system. The weather station provides data such as air temperature, solar radiation, relative humidity, wind speed, wind direction and rainfall. This information is continually collected by central control to automatically adjust watering schedules.

The WS-PRO's built-in micrologger can collect, record and analyze up to three months worth of meteorological data. Additionally, the weather station's state-of-the-art instrumentation can accurately calculate evapotranspiration (Et) rates.



Circle No. 269

## BEST's herbicide choices

The new range of BEST products containing Dimension turf herbicides are designed for reliable pre- and postemergent control of crabgrass, up to the four-leaf stage. The products also control goosegrass, chickweed, spurge and other tough-to-kill annual grasses and broadleaf weeds.

Dimension helps provide BEST products with the widest application window in the turfgrass industry, up to 13 weeks. It's available as a stand-alone product, granular Dimension 270-G, or with two fertilizer formulations for healthy turf growth; BEST 24-3-8 with 2 percent Dimension; and BEST 16-8-8 with 2 percent Dimension. The mini-sized fertilizer combinations are created to have uniform distribution and deliver more pellets per square inch, thus reducing the chance of skips or breakthroughs.

The BEST Dimension granular formulations, which work at rates up to 12 times lower than similar herbicides, bind tightly to soil, have low solubility and won't harm adjacent trees, shrubs and ground cover.

Available throughout the western United States and the Pacific Rim, the BEST product line includes many fertilizer/herbicide combinations. Contact BEST/J.R. Simplot Company, 800/992-6066; [www.bestfertilizer.com](http://www.bestfertilizer.com), or

Circle No. 270



## Improved commercial 36" spreader



The PrizeLAWN ProClassic 36" features larger 13" pneumatic tires and an improved handle which re-

duces operator fatigue. The dual stainless steel agitators ride in ball bearings. Dual agitators also mean turning corners with this 100-lb. capacity unit is never a problem. The spring-loaded on-off lever assures immediate opening at the beginning of the pass and positive shut-off at the end. Spread width is 36".

The hopper bottom has a diamond grid screen which prevents fertilizer lumps from reaching the ground. Frame paint is heavy duty epoxy powder-coat. All fasteners and metal components touching fertilizer are stainless steel. The hopper is welded steel.

For more information, contact PSB Company 614/228-5781 and mention Landscape Management, or

Circle No. 271

## Retaining walls with style

The Versa-Lok segmental retaining wall system is a permanent, attractive alternative to ordinary retaining wall types.

Versa-Lok walls are economically installed without mortar and do not require concrete footings. In addition, the standard unit is used to build straight walls, inside corners, outside corners, curves and steps. No special units need to be ordered or estimated. These walls display a natural split-face texture. Once installed, they are virtually maintenance free.

To get information about Versa-Lok, visit the web site: [www.versa-lok.com/wall](http://www.versa-lok.com/wall) or call 800/770-4525.

Circle No. 272



## Parker Truck Loader moves bulk debris

Parker Sweeper's 16-hp Truck Loader picks up large quantities of leaves, grass clippings, mulch and other bulk debris. Its high-speed, 4-blade impeller is made of computer-balanced steel to provide maximum vacuum power and durability. The housing is made of 12-gauge steel and the frame with 1 1/8" tubular steel. Features a 16-hp Briggs & Stratton twin overhead valve Vanguard engine.

The 16-hp Truck Loader is equipped with a durable 10" X 15" steel ribbed flexible industrial pickup hose and two operator comfort handles. Stacking 18" extensions provide an efficient discharge system. Additionally, its exhaust chute can swivel 360 degrees to discharge debris in any direction and features an adjustable locking deflector. The unit is available with a wide variety of accessories.

Contact Parker at 630/627-6900, and say you saw their loader in Landscape Management, or

Circle No. 274

## Liquid plant nutrient products

Tessenderlo KERLEY, Inc., offers a new line of liquid plant nutrient products under the firstTurf liquid fertilizer label. These products have been especially formulated for the golf course, sports turf and lawn care markets.

The firstTurf line consists of seven different formulations that provide a variety of nitrogen, phosphorous, potassium, sulfur and other nutrients. The plant nutrient line includes KTSR (0-0-25-17S), as well as 5 different formulations containing slow-release triazone nitrogen. These are: N-SURER (28-0-0-), N-SURER-PRO (30-0-0), N-SURER-LF (26-0-0), N-SURER-KS (15-0-12-8S), and N-SURER-TG (9-6-8). Rounding out the line is NFE (14-0-0-4Fe), a liquid combination of nitrogen and iron for the correction of iron deficiencies in turf, trees and ornamentals.

Contact Tessenderlo KERLEY at 602/528-0607, or

Circle No. 273



## Kubota's two new small tractors

Kubota's two new lawn and garden tractors, the TG1860 and TG1860G, are equipped with either a 48" or 54" mower and are powered by liquid cooled engines. Rated at 18 hp/35.7 cubic inches, the Kubota TG1860G offers the convenience of fuel-efficient, quiet gasoline engine power. The TG1860 features Kubota's 18-hp diesel engine.

Kubota's electronic rack-and-pinion steering is introduced on the TG-Series. The speed-sensitive steering system allows precise



control without loss of horsepower while turning. Also standard on the TG series is Kubota's Cushion Ride suspension system, two spring-loaded shocks connected to the flat operator's deck.

Kubota markets a complete line of tractors from 12.5 to 91 PTO horsepower, along with a line of performance-matched implements and related equipment. For more information, contact Kubota at 888/458-2682 or

Circle No. 275

## New central control system

Cirrus, the newest, computer-based central control system from Rain Bird's Golf Division, uses the latest technologies for golf course irrigation management.

Cirrus uses Global Positioning System technology and CAD to produce detailed, on-screen course images. It also can alert the superintendent of conditions favorable to pests and various turf diseases.

Cirrus is designed to run on the Microsoft Windows 95 operating system. It uses all the features of the Stratus and Nimbus central control system series introduced in 1995 and 1996.

For more information, call 626/812-3600 and tell them you read about it in Landscape Management, or

Circle No. 276



## WaterStax cleans golf course wastewater

Landa, Camas, WA, acquired WaterStax, a bioremediation wastewater treatment system for golf courses.

The WaterStax, with nearly 50 installations nationwide, consists



of three tanks, a grass clipping removal assembly, and automated pumps for controlling the use of BioStax GC, the proprietary solution of microbes that breaks waste like oil, grease, hydrocarbons, and grass clippings into harmless substances consisting mainly of carbon dioxide and water. The resultant water can either be dis-

charged to the sanitary sewer or irrigated back onto the course.

The WaterStax processes wash water at a rate of 1,000 gallons per day with peak flow capacity at up to 15 gallons per minute, well within the ranged needed for a typical wash operation.

For more information about WaterStax, contact Landa at 800/547-8672, and tell them that you saw their product in LANDSCAPE MANAGEMENT, or

Circle No. 277

## Fungal antagonists at work

Soil Technologies Corp.'s TurfTech Bio combines the proven effectiveness of TurfTech II with a selection of fungal antagonists. It's the ideal product for those seeking a biological alternative to improve soils and plant health.

TurfTech Bio comes in an easy-to-use dry, dormant form which is mixed with water for spraying or injecting into irrigation systems. When compared with expensive on-site fermenters, TurfTech Bio is an excellent choice for enhancing the rhizosphere and optimizing plant health.

When applied in the soil TurfTech Bio's blend of beneficial organisms goes to work enhancing the rootzone and improving soil and plant health. By preventing the growth of harmful soil fungi such as Pythium, Fusarium and Rhizoctonia, fungicide usage can be minimized.

For more information contact Soil Technologies Corp. at 515/472-3963 or e-mail: [soiltech@lisco.com](mailto:soiltech@lisco.com), or

Circle No. 278



Receive **FREE** information on products and services advertised in this issue.

# LANDSCAPE management

**April 1998**

This card is void after June 15, 1998

I would like to receive (continue receiving) **LANDSCAPE MANAGEMENT** free each month: ☐ Yes ☐ no

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Fill in ovals as shown: ●

1. My primary business at this location is: (fill in ONE only)

01 ☐ 250 **GOLF COURSES** (Also fill in questions #3 & #4)

02 ☐ 255 Landscape Contractors (installation and maintenance)

03 ☐ 260 Lawn Care Service Companies

04 ☐ 265 Custom Chemical Applicators (ground and air)

05 ☐ 270 Tree Service Companies/Arborists

06 ☐ 275 Landscape Architects

07 ☐ 280 Land Reclamation and Erosion Control

08 ☐ 285 Irrigation Contractors

☐ Other (please specify) \_\_\_\_\_

09 ☐ 290 Sports Complexes

10 ☐ 295 Parks

11 ☐ 300 Right-of-Way Maintenance for Highways, Railroads or Utilities

12 ☐ 305 Schools, Colleges, Universities

13 ☐ 310 Industrial or Office Parks/Plants

14 ☐ 315 Shopping Centers, Plazas or Malls

15 ☐ 320 Private/Public Estates or Museums

16 ☐ 325 Condos/Apartments/Housing Developments/Hotels/Resorts

17 ☐ 330 Cemeteries/Memorial Gardens

18 ☐ 335 Hospitals/Health Care Institutions

19 ☐ 340 Military Installations or Prisons

20 ☐ 345 Airports

21 ☐ 350 Multiple Government Municipal Facilities

☐ Other (please specify) \_\_\_\_\_

22 ☐ 355 Extension Agents/Consultants for Horticulture

23 ☐ 360 Sod Growers/Turf Seed Growers/Nurseries

24 ☐ 365 Dealers/Distributors/Formulators/Brokers

25 ☐ 370 Manufacturers

☐ Other (please specify) \_\_\_\_\_

2. Which of the following best describes your title? (fill in ONE only)

26 ☐ 10 **Executive/Administrator**- President, Owner, Partner, Director, General Manager,

Chairman of the Board, Purchasing Agent, Director of Physical Plant

27 ☐ 20 **Manager/Superintendent**- Arborist, Architect, Landscape/Grounds Manager,

Superintendent, Foreman, Supervisor

28 ☐ 30 **Government Official**- Government Commissioner, Agent, Other Government Official

29 ☐ 40 **Specialist**- Forester, Consultant, Agronomist, Pilot, Instructor, Researcher,

Horticulturist, Certified Specialist

30 ☐ 50 **Other Titled and Non-Titled Personnel** (please specify) \_\_\_\_\_

NAME (please print) \_\_\_\_\_  
TITLE \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
PHONE (\_\_\_\_\_) \_\_\_\_\_ FAX (\_\_\_\_\_) \_\_\_\_\_  
INTERNET/E-MAIL ADDRESS \_\_\_\_\_

3. Is your golf course:

31 ☐ A Public 32 ☐ B Semi Private 33 ☐ C Private 34 ☐ D Hotel/Resort 35 ☐ E Municipal

4. If you work for a golf course, how many holes are on your grounds?

36 ☐ 1 9 37 ☐ 2 18 38 ☐ 3 27 39 ☐ 4 36+

5. How many acres are maintained at your facility? \_\_\_\_\_

6. SERVICES PERFORMED (fill in ALL that apply)

40 ☐ A Mowing 45 ☐ F Turf Fertilization 50 ☐ K Paving, Deck & Patio Installation

41 ☐ B Turf Insect Control 46 ☐ G Turf Disease Control 51 ☐ L Pond/Lake Care

42 ☐ C Tree Care 47 ☐ H Ornamental Care 52 ☐ M Landscape Installation

43 ☐ D Turf Aeration 48 ☐ I Landscape/Golf Design 53 ☐ N Snow Removal

44 ☐ E Irrigation Services 49 ☐ J Turf Weed Control 54 ☐ O Other (please specify) \_\_\_\_\_

7a. Do you specify, purchase or influence the selection of landscape products?

☐ Yes ☐ No

7b. If yes, check which products you buy or specify: (fill in ALL that apply)

55 ☐ 1 Aerator 62 ☐ 8 Herbicides 69 ☐ 15 Sweepers

56 ☐ 2 Blowers 63 ☐ 9 Insecticides 70 ☐ 16 Tractors

57 ☐ 3 Chain Saws 64 ☐ 10 Line Trimmers 71 ☐ 17 Truck Trailers/Attachments

58 ☐ 4 Chipper-Shredders 65 ☐ 11 Mowers (reel/rotary) 72 ☐ 18 Trucks

59 ☐ 5 De-icers 66 ☐ 12 Snow Removal Equipment 73 ☐ 19 Turfseed

60 ☐ 6 Fertilizers 67 ☐ 13 Sprayers 74 ☐ 20 Utility Vehicles

61 ☐ 7 Fungicides 68 ☐ 14 Spreaders

8. Do you have a modem? ☐ Yes ☐ No

101	113	125	137	149	161	173	185	197	209	221	233	245	257	269	281	293	305
102	114	126	138	150	162	174	186	198	210	222	234	246	258	270	282	294	306
103	115	127	139	151	163	175	187	199	211	223	235	247	259	271	283	295	307
104	116	128	140	152	164	176	188	200	212	224	236	248	260	272	284	296	308
105	117	129	141	153	165	177	189	201	213	225	237	249	261	273	285	297	309
106	118	130	142	154	166	178	190	202	214	226	238	250	262	274	286	298	310
107	119	131	143	155	167	179	191	203	215	227	239	251	263	275	287	299	311
108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312
109	121	133	145	157	169	181	193	205	217	229	241	253	265	277	289	301	313
110	122	134	146	158	170	182	194	206	218	230	242	254	266	278	290	302	314
111	123	135	147	159	171	183	195	207	219	231	243	255	267	279	291	303	315
112	124	136	148	160	172	184	196	208	220	232	244	256	268	280	292	304	316

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April 1998

This card is void after June 15, 1998



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TITLE \_\_\_\_\_  
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106	118	130	142	154	166	178	190	202	214	226	238	250	262	274	286	298	310
107	119	131	143	155	167	179	191	203	215	227	239	251	263	275	287	299	311
108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312
109	121	133	145	157	169	181	193	205	217	229	241	253	265	277	289	301	313
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112	124	136	148	160	172	184	196	208	220	232	244	256	268	280	292	304	316





# 1998 EMERALD AWARDS

**ANNOUNCING:** the third annual LANDSCAPE MANAGEMENT "Emerald Awards". LANDSCAPE MANAGEMENT magazine is offering a \$500 first prize to the winner of a random drawing to be held on July 1, 1998. Second prize is \$300 and third prize is \$200 in cash. To be eligible for the drawing, simply fill out the questionnaire at right and return it to LM's editorial offices.

Answers to the questions will determine our "1998 Emerald Awards" winners, to be revealed—along with the contest winner—in our August issue.



**CONTEST REQUIREMENTS:** Contestants must be owners or employees of landscape maintenance companies or lawn care companies; or maintenance employees of a golf course or country club, including superintendents and assistant superintendents; or an athletic field manager or member of an athletic field maintenance crew; or manager or member of a facility landscape management crew.

Product selections must be currently used by entrant. Employees of Advanstar Communications or their families not eligible.

All questions on this entry form must be completed, and all blanks filled. One entry per person. No more than five entries from any one employer will be allowed. Entry forms will appear in the February-June, 1998 issues of LANDSCAPE MANAGEMENT.

Completed questionnaires should be mailed to: Emerald Awards, LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. They must be received by noon, July 1, 1998.

A random drawing of all eligible entry forms will be held July 1, 1998. Winners will be notified within 24 hours.

## OFFICIAL ENTRY FORM

### QUESTION:

*What is your favorite brand name of...*

CHECK HERE  
IF YOU  
DO NOT USE

riding mower?	<input type="checkbox"/>
walk-behind mower?	<input type="checkbox"/>
turf fertilizer?	<input type="checkbox"/>
pre-emergence herbicide?	<input type="checkbox"/>
post-emergence herbicide?	<input type="checkbox"/>
turf insecticide?	<input type="checkbox"/>
turf fungicide?	<input type="checkbox"/>
plant growth regulator?	<input type="checkbox"/>
compact tractor?	<input type="checkbox"/>
turf aerator?	<input type="checkbox"/>
pick-up truck?	<input type="checkbox"/>
leaf blower?	<input type="checkbox"/>
line trimmer?	<input type="checkbox"/>
chain saw?	<input type="checkbox"/>
Kentucky bluegrass?	<input type="checkbox"/>
perennial ryegrass?	<input type="checkbox"/>
turf-type tall fescue?	<input type="checkbox"/>
turfgrass mix or blend?	<input type="checkbox"/>
biological control product?	<input type="checkbox"/>

NAME:

EMPLOYER:

CITY/STATE:

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Circle No. 144

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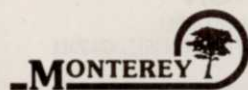
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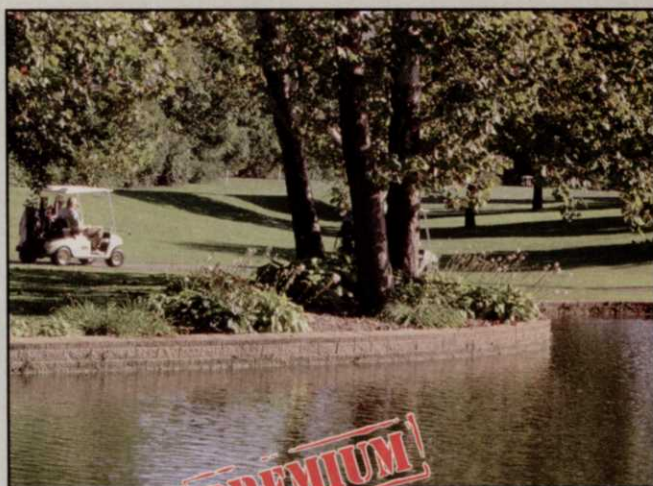
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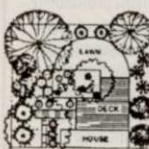
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June 1998  
July 1998  
August 1998  
September 1998  
October 1998  
November 1998  
December 1998

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5-8-98  
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# Grab Bag

## Family business succession facts

According to the Arthur Andersen/Mass Mutual American Family Business Survey '97, two-fifths of the family businesses in the US are expecting to change leadership by the year 2002. Therefore, says Ross Nager, executive director of the Arthur Andersen Center for Family Business, succession has taken on greater importance. The survey of more than 3000 family business owners revealed that 79 percent of respondents want the business to stay in the family. Seventeen percent of respondents said they are not confident of the next generation's commitment to the business.

## The year in golf should be big

The National Golf Foundation reports that the US golf industry will have a record number of new courses built in 1998, "if history repeats itself." A record 932 courses were under construction in the US as of Dec. 31, 1997, reports NGF. 728 of those are due to be finished this year, but based on history, about 35 percent will be pushed into 1999. Still, we can look for about 485 new courses to be ready to go this year, the NGF estimates.

Grab Bag features brief observations and prognostications throughout the green industry. If you have an unusual photo or comment you'd like to share with us, please send it in...



## Special effects landscape project

*An award winner in the California Landscape Contractors Association 39th Annual Beautification Awards was this residential design by Pierre Charles Landscape. Highlights of the "Excelsior Award" winning project were stylish paving stones lined with ornamental plants, a rustic wagon and inviting, soothing night lighting.*

## OLCA's 'Man of the Year'

Steve Bailey (right), owner and operator of Grassroots Lawn & Irrigation, Upper Arlington, Ohio, the Ohio Lawn Care Association's "Man of the Year". Phil Fogarty (left), OLCA's first



president, made the surprise presentation at the Ohio Turfgrass Conference this past winter, and warmly thanked Bailey for his hard work in OLCA's founding years.

## Paul Wolfe new NAA president

Paul Wolfe II was installed as president of the National Arborist Association in February. Wolfe has a BS in soil science from Michigan State University. He founded Integrated Plant Care, Rockville, Md. in 1988.


## Pine-straw for the Midwest?

Researchers at the University of Missouri-Columbia are searching the world to find pine varieties that will thrive in Missouri and make good pine-straw mulch.

A cross between the pitch pine and the loblolly pine is the farthest along, and it looks the most promising, says Steven Kirk, MU forestry research specialist.


Another variety being grown at the research center is Apache pine.





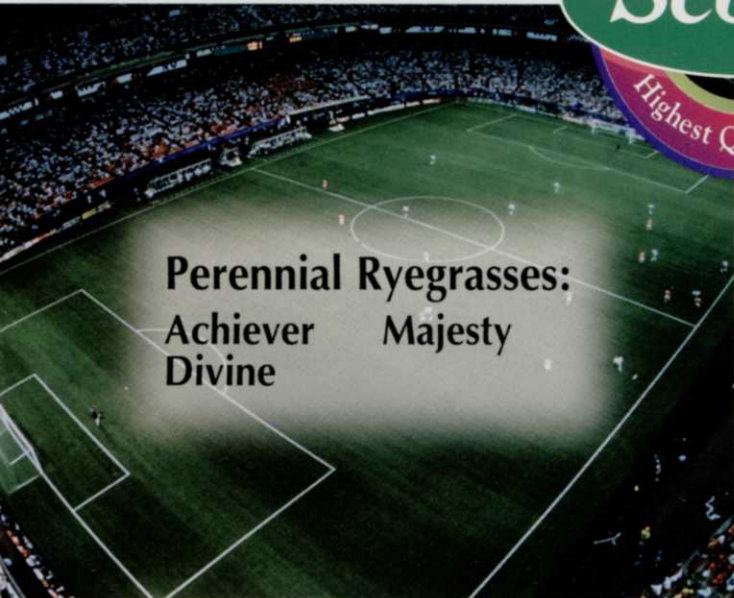
### Bentgrasses:

Procup	Penncross
G-1	Penneagle
Backspin	Pennlinks



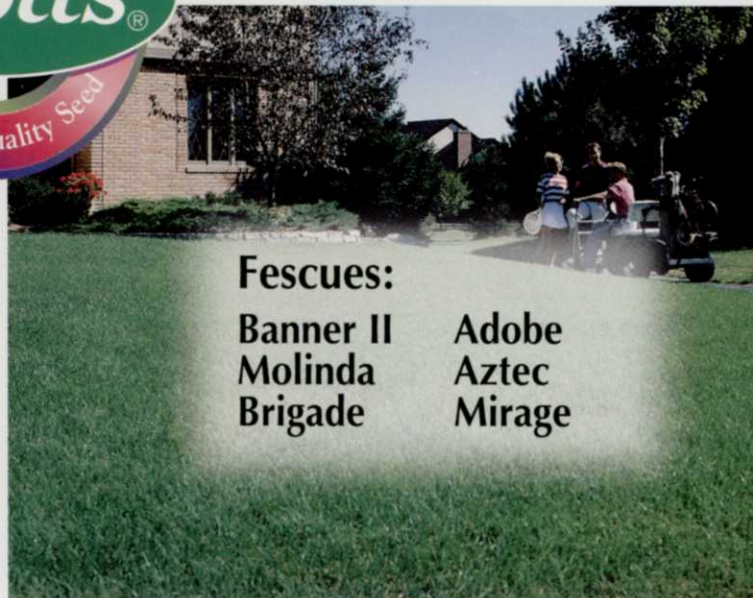
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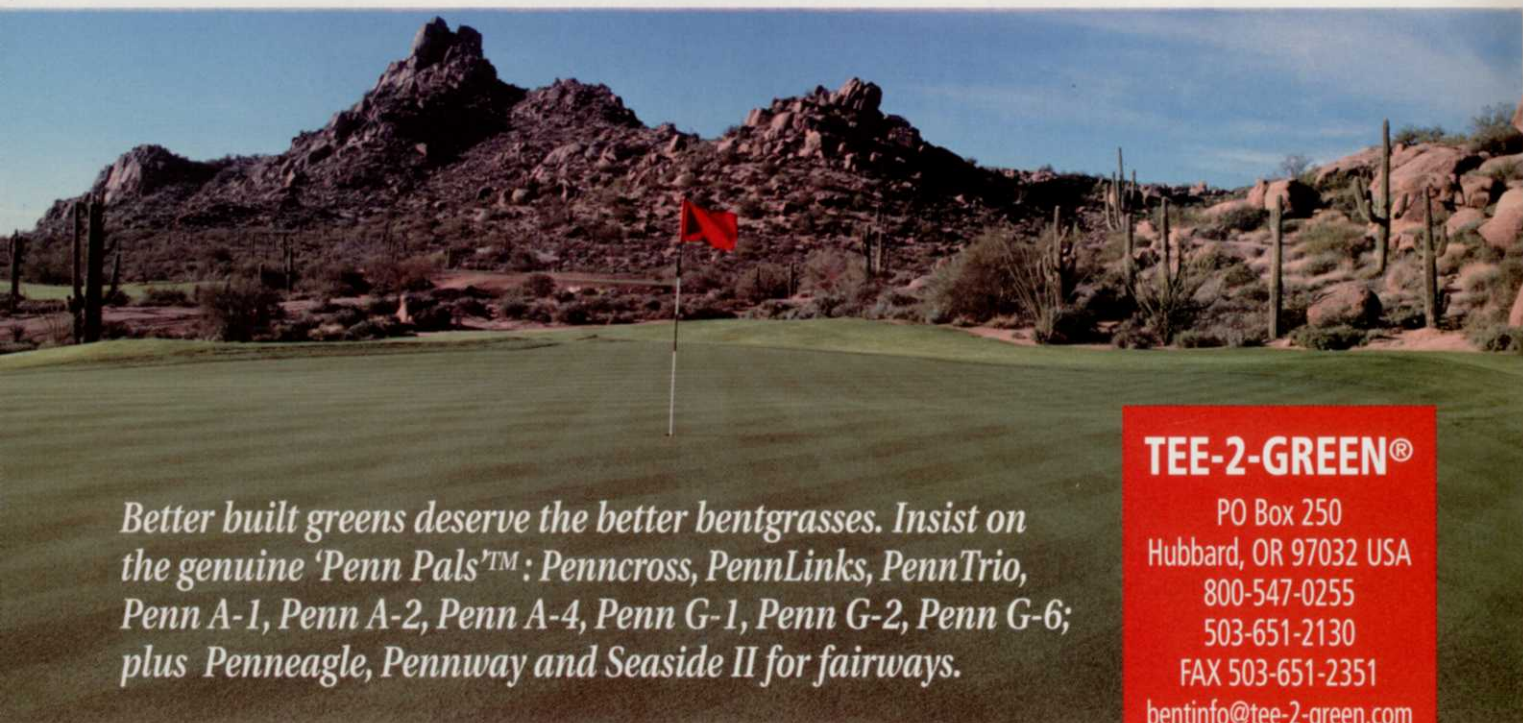
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