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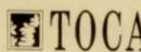
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Here's the deal: for \$35 each, you can treat your employees to lunch and a day of educational sessions designed to help them become better assets to your company.

That's what the Green Industry Expo is doing in Nashville this year with "Green Team Day."

Sure, you have to get them there, which, may or may not be a challenge, depending on where you are. But if your office is within one or two days of Nashville, you really ought to consider driving at least two or three of your crew in.

The GIE is held from Nov. 14-17, with Green Team Day on the 17th. The day starts early, so you'll probably want to get your crew there the night before.

If you feel your crew could use a brush-up on these topics, or if it's their first time exposure to the show, you should send them in for the day.

The GIE is the main event within the landscape, lawn care and grounds management industries. It's co-produced

by the Professional Lawn Care Association of America (PLCAA); Professional Grounds Management Society (PGMS); and Associated Landscape Contractors of America (ALCA).

PLCAA sessions during Green Team Day include: Six Sure Fire Ways to Make Your Day Shorter; Taming an Ormery Engine; How to Use a Spreader Correctly; and How to Reduce Call-Aheads.

The Professional Grounds Management Society's educational topics include: Pitfalls in Sports-field Construction; Customer Service from the Ground Up; Common Sense Tips for Landscape Design; and Growing Good Employees.

The Associated Landscape Contractors of America will offer sessions on How to Read Your Customer's Mind; Fleet Management; Equip-

ment Selection and Maintenance; and Ways to Make Your Day Shorter, among others.

The responsibility here cuts both ways. As a company manager or owner, you owe it to yourself, your employees and your company to ensure your employees have a well-rounded education. If you are stressing Green Industry "career opportunities" within your company, this is one way to show it. Employees often feel they are not learning enough, that they don't know enough about what this industry is all about. They need to see how other people work, what's going on in the Green Industry.

Your role has to be that of a mentor as well as a boss. If you take the time to nurture and educate the career-oriented members of your team, they will likely pay you back with dedication, quality work and much thanks.

Anyone we've asked has told us that yes, the employee retention equation includes opportunities for personal and professional growth.

It's getting to be a tired story, hearing about how hard it is to find good employees. Well, it's partly because not enough employers are making Green Industry jobs attractive, challenging, and career-based. It's no wonder that workers bolt for 50 cents an hour more. What are you offering them besides the work, which is hot, hard and sometimes exhausting?

If you send your team to the show alone, you have to make them accountable for what they do there. Let them know they will have to be teachers when they get back to the office, and will be expected to pass along what they learned to others in a classroom setting.

If all they can tell you is what they had for lunch, and hand you an unopened binder filled with unread handouts, you've made a mistake, and they slept in.

For more information, call ALCA: 800/395-2522; PLCAA: 800/458-3466; or PGMS: 410/584-9754.

Send your team to the GIE. It's well worth it.



Terry McIver

TERRY McIVER
Editor-in-Chief

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Gypsy moth in decline?

Last year we had a number of gypsy moth larvae dead or dying from something. We have seen this happening on our clients properties, even before we had a chance to treat them. This has been an observation of local communities in our area. It looks like a disease may be killing them. Also, last year we did not see much feeding damage from the gypsy moth compared to previous years. Are they in decline? What should we expect for the 1998 season?

—NEW JERSEY

Your observation regarding larval mortality is correct. They may be dying because of the fungal or viral infection. A fungal agent called *Entomophaga maimaiga* has been found in many states including New Jersey, Delaware, Michigan, Virginia, Pennsylvania and Ohio. This fungus causes a disease on gypsy moth larvae - killing them. As a result, even 4th and 5th instar generations may be found dead on tree trunks. Diseased and sick larvae look sluggish, and when touched or poked, the cell content comes out, which reportedly causes an itching irritation when in contact with the skin.

A typical gypsy moth outbreak would last for two to four years. But in recent years, because of these natural biological control agents, as well as concentrated treatment programs using commercial *Bacillus thuringiensis* (B.t.) products and traditional and/or alternative insecticide programs, their popu-

lations are in decline. Reports from United States Department of Agriculture Forest Service indicate that the gypsy moth defoliation was the lowest on record since 1968. They also report that the defoliation has declined more than 85% from 1995 to a low of 202,472 acres scattered across 11 states. They noted that most dramatic decline occurred in Virginia - from 850,000 acres in 1995 to 0 in 1996.

Scientists also feel that the *E. maimaiga* fungus is rapidly spreading from state to state along with gypsy moth. They suggest that the increase in defoliation in newly infested areas may be because the fungus has not kept pace with the advancing front of gypsy moth.

The question always remains "speculative" as far as what to expect in 1998 and the future. Transmission of fungal pathogens to insects and subsequent population control require long periods of moist weather so gypsy moth population 'crashes' are hard to predict. In the Northeast, decline generally occurs after gypsy moth are in an area for a few years. However, gypsy moth activity may gradually move westward with time and environmental conditions may not be conducive to control by natural agents. Therefore, any efforts made to manage them should be continued with an open mind in regards to outbreaks or resistance to biological agents. Where feasible, mechanical removal and discarding of egg

mass and pupae should be maintained.

Thanks to mother nature help to keep the gypsy moth population to a level where we can maintain the remaining moths known, practical means of plant health care practices.

Ground ivy invasion

We have had a problem managing ground ivy. It creeps into lawns from adjacent areas. We have been using 3-way mixtures of 2,4-D, Dicamba and MCPP. Results are variable. Is there anything else we can use to get rid of these weeds?

—WEST VIRGINIA

Ground ivy can present a serious problem if not managed properly. The plants produce new growth wherever their stems come in contact with the ground. The 3-way mixture of 2,4-D, Dicamba and MCPP should work reasonably well. However, sometimes this perennial weed may be difficult to manage with a few applications. Ground ivy is considered to be 'intermediate' in susceptibility to the above herbicide mixture in some situations. That may explain why you are getting variable results.

Consider using products such as Turflon-II or Confront. Repeat applications may be necessary.

Read and follow label specifications for best results. **LM**



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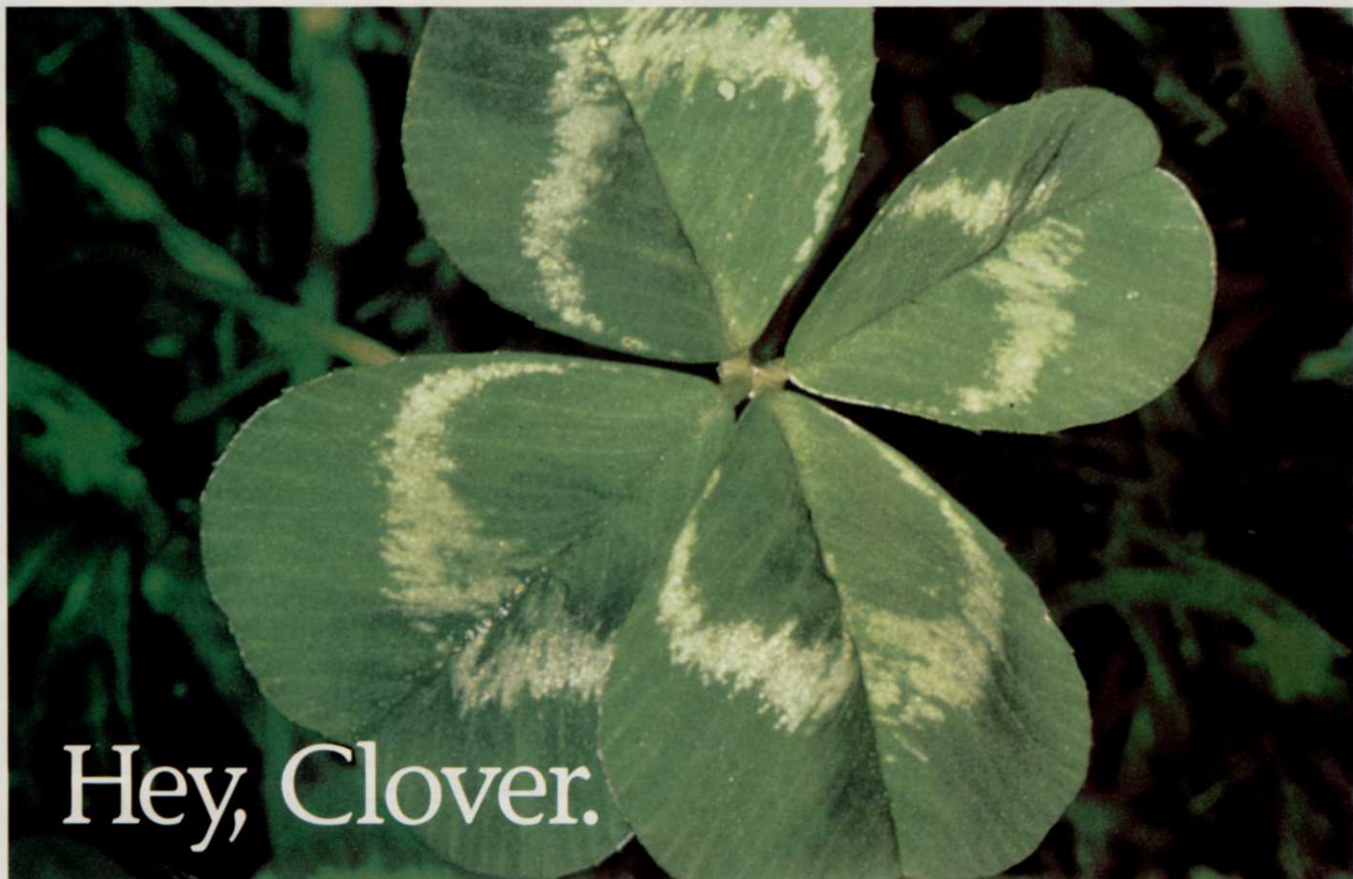
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After the rush of spring, and the demands of summer, the fall can be a time when things slow down enough that tree planting can be fit into the schedule. While not necessarily the best time for planting, as root regeneration will not be as great as when planting in the spring, good scheduling and proper post-planting care can mean successful tree establishment.

As when planting in the spring, efforts must be made to keep the roots from drying out and moving trees on dry, hot, windy or cold days should be avoided. Trees should be well watered as a dry fall and a cold winter are not conducive to tree vitality or survival. But the soil should not be too wet either. Mulching is also important,

even at this time of year. If the site is prone to winter winds, this may be a situation where staking (with suitable materials and not ... wire through a piece of garden hose) is appropriate as the recently planted tree may not have sufficient root growth into the parent soil to keep it up-right, or winter winds may cause excessive tree movement,

tearing the newly established roots in the transition area between the planting hole and the parent soil. Thin-barked trees may be more susceptible to sunscald in the winter as they are not likely to be acclimatized to the new situation; so protective wrapping can be left on the tree trunk but must be removed in the early spring. Young trees can actually photosynthesize through their bark tissue and will need all the available surface area.

Balled-and burlapped or container stock are most suitable for fall planting and use of bareroot should be avoided. Double-check the root condition of the planting stock to be sure that the roots are in reasonable condition.

Deciduous trees are best transplanted after the leaves have turned color and dropped. In colder climates this is best done at least a month

before the soil freezes to allow time for some root development. In warmer climates, the window of opportunity is much larger. Conifers can be transplanted in the late summer and early fall. Once the buds have set and shoot elongation is completed the trees are better able to withstand transplanting, however, high temperatures and water stress should be avoided so take local climate into account.

There are benefits to fall planting: the soil is warmer and may have more moisture (or the climate may be subject to autumnal rains), encouraging some root growth prior to the winter. Transpiration of conifers and broad-leaved evergreens should be reduced due to shorter days and cooler temperatures.

There are species which should not be planted and some nurseries will not guarantee some tree species for fall planting. It is a good idea to check with your nursery supplier to make sure your trees are guaranteed if planted in the fall. According to information from the Morton Arboretum in Lisle, IL, species commonly recommended for spring planting only include: the families of birches (*Betula* spp.), beeches (*Fagus* spp.), dogwoods (*Cornus* spp.), cherries, apricots and plums (*Prunus* spp.), hickories (*Carya* spp.), poplars (*Populus* spp.), larches (*Larix* spp.), willows (*Salix* spp.), hemlocks (*Tsuga* spp.), magnolias (*Magnolia* spp.) and most of the oaks (*Quercus* spp.) except English and pin. Other tree species include: yellowwood (*Cladastris lutea*), tuliptree (*Liriodendron tulipifera*) and baldcypress (*Taxodium distichum*).

On the other hand, keep in mind that planting failures may be as much due to poor planting stock condition, poor site selection, poor planting practices or poor post-planting care as to tree species. The extremes of winter can be even less forgiving to a poorly planted tree than the summer because you can't see the response of the tree reflected in the leaves. Exercise care in these aspects and tree survival should be more likely and hopefully those that do survive look good too. **LM**

Agree/Disagree? Comments/Questions? Column Suggestions? Let Nancy Stairs know at 440/891-2623. Fax: 440/891-2675. E-Mail: nstairs@advanstar.com

Thoughts on fall planting



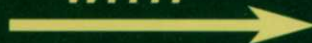
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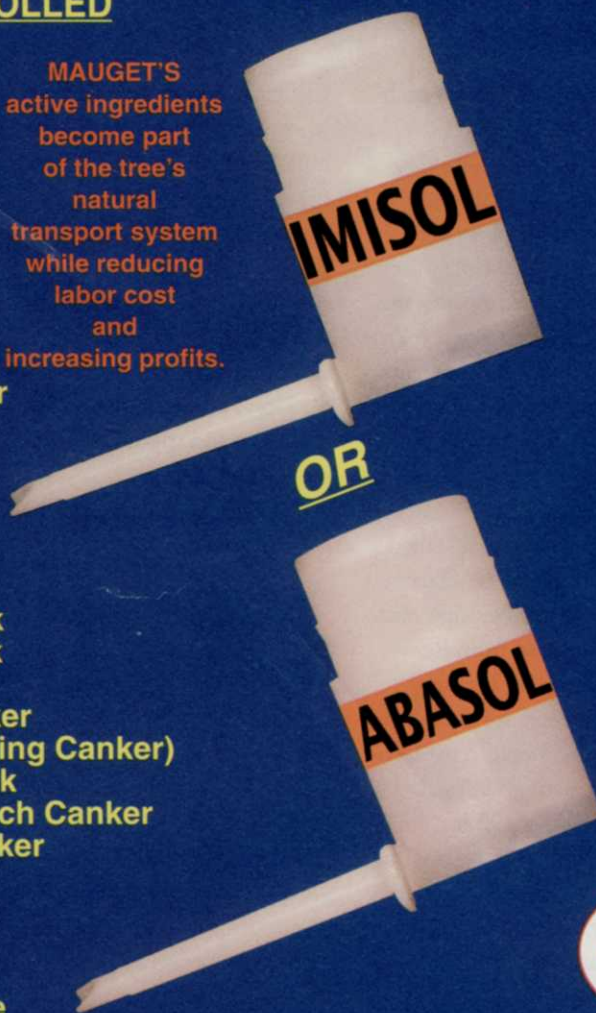
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1997 Midwest Turfgrass Field Day kicks off William H. Daniel Center

WEST LAFAYETTE, IN – Purdue University's Turf Program is on a roll.

Its new 25-acre William H. Daniel Turfgrass Research and Diagnostic Center (even without its 7200-sq.-ft. education building which is under construction) was a big hit with 750 turfgrass managers. The occasion was the Midwest Turf Field Day on July 28. This was the largest attendance ever at the field day, a 15 percent increase over 1997's attendance. This was the first-ever field day held at the new site.

Turfgrass managers from Indiana and surrounding states enjoyed perfect weather as they reviewed what turf experts at Purdue were working on. Besides the



Dr. Clark Throssel reported that so far results have been inconclusive on attempts to control *Poa trivialis* in creeping bentgrass by using pesticides.



Perfect summer weather attracted over 700 to Midwest Turfgrass Field Day at Purdue. The new 25-acre site provided more room for supplier displays.

technical discussions at each separate research plot, the visiting turf pros seemed to appreciate the extra space provided to suppliers. The new site is four times larger than the former research site.

The Turfgrass Science Program at Purdue received approval and finished plans for the teaching and research facility in the summer of 1996. That same summer drainage and irrigation were installed at the site, which is adjacent to Kampen Golf Course and just a mile or so from Ross-Ade Stadium. In October 1996 two acres were seeded there at the Daniel Turf Center, with eight additional acres seeded in 1997.

July 1997 saw the installation of specialized irrigation plots for biological control research, and by October 1997 a 1-acre USGA green was in place. It was seeded this past spring.

But, the biggest boost to the program will come with

the construction of the 7200-sq.-ft. turfgrass education building. Construction began this summer. It will house a teaching laboratory for 60 people, offices for grad students and faculty to use while working at the Daniel Turf Center, a field lab, an office for Don Fassnacht, the facility manager, and space for equipment storage.

"We plan to use the teach-

ing laboratory for undergraduate classes in turf management and also for seminars for professional turf managers," says Dr. Clark Throssel, turfgrass professor at Purdue.

"Our goal is to provide for as much hands-on education for students as we can. We want students to be able to learn by seeing turf and turf problems with their own eyes and getting their hands dirty." More than 70 students are majoring in Turfgrass Science at Purdue.

The new research/education site was named to honor the late William H. Daniel, a nationally respected turfgrass educator and researcher at Purdue, and the co-inventor of the PAT natural turf sports field construction system. □

TruGreen-ChemLawn buys Ruppert Company

ServiceMaster subsidiary, TruGreen/ChemLawn and Ruppert Landscape Company announced on August 26 that TG/CL has acquired the Ruppert company. Ruppert's team will lead the TG/CL landscaping division, which will be headquartered at Ruppert's current base in Ashton, MD. Ruppert will continue to operate under its current name and leadership structure for the foreseeable future. Craig Ruppert will stay on as President of Ruppert Landscape Company, and will take on added duties to manage the new division, which currently operates from 14 offices throughout the U.S. Additional expansion is planned for the division, reports Ruppert. The buy gives TG/CL's landscape division annualized revenues in excess of \$140 million. □

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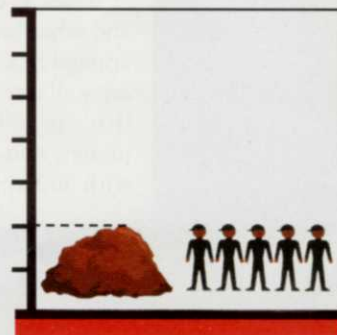
Spreading mulch and compost by hand is a costly and labor intensive process. It limits production and puts workers at risk for injuries. The Express Blower is cutting edge technology. It will turn an inefficient process into a profit center and blow your competition away!

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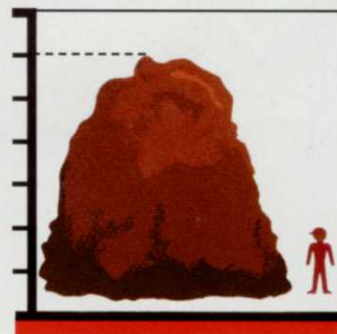
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izer or any number of other granular materials directly into the blow stream while blowing. Express Blower technology literally replaces the need for hydroseeding in many cases, and eliminates the cost of two separate applications. The Express Blower is powerful enough to blow topsoil blends designed for new lawn installation and apply the grass seed, all at once! Consider the ease and effectiveness of blending pre-emergent herbicide and landscape mulch together in just one application, or compost and native seed blown on sloped embankments for immediate and long-term erosion control. The possibilities are endless with the Express Blower.



Companies all over the country are expanding their business and realizing the profitability of an Express Blower. They have reached into several new markets spreading mulch, compost, topsoil blends, playground chips, and even animal bedding for the livestock and poultry industries. They have also expanded into new areas of business such as sports turf topdressing and erosion control for highway departments and municipalities. If you are looking for an edge on your competition or a new business venture that will bring a high rate of return, the Express Blower is the key to expanding your possibilities.

For more information about the Express Blower log on at expressblower.com or call toll free 800-285-7227



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The capabilities of the Express Blower are continuing to grow and in recent months they have been expanded upon with an all new "Supplemental Injection System" which actually injects seed, fertil-



Landcare USA, Brickman still buying

LandCare USA and The Brickman Group continue to acquire commercial landscape companies.

"We're on a path to become the leader in the commercial landscape and tree services business," Bill Murdy, chairman and CEO, told LANDSCAPE MANAGEMENT. "We intend substantial more growth."

In August the Houston-based company announced that it had acquired:

Clean Cut, Inc., Austin, TX, founded in 1985 by Dennis Dautel and Rex Gore;

Landscape West, Inc., Anaheim, CA, founded by Barry L. Konier in 1962;

Horticultural Industries, Inc., Sarasota, FL, founded by Donald and Bill Davoli in 1987;

Gator & Gator Landscape Co., Longwood, FL, founded by Scott Annan and Chuck Richardson in 1983;

Continental Landscape Management, Inc., Phoenix, AZ, founded by Aaron Eubank in 1985.

These additions, completed with a combination of stock (81 percent) and cash (19 percent), provide 83 percent maintenance and 17 percent installation services. Several other acquisitions will be announced in September.

"We have closed a couple of other companies, but we have not released those names," Murdy told LM. "They want to have a chance

to have their employees understand the whole thing."

Meanwhile, The Brickman Group Ltd., headquartered in Langhorne, PA, in July purchased **Allen Keesen Landscape, Inc.**, based in Denver.

"We're going to continue moving west," Scott Brickman, president and CEO, told LM. Brickman's goal is also to

be a national service provider.

Earlier this year Brickman acquired KT Enterprises, Chantilly, VA; Kopabianco Landscape, New Haven, CT; BMI, Indianapolis, and Cannon Landscape Services, in Maryland. Founded in 1939 as a landscape business for homeowners by Theodore W. Brickman, Sr., The Brickman

Group now has more than 60 locations, most of them east of the Mississippi.

"We're growing as we always have, primarily through internal growth," Scott Brickman said, adding that his organization is always looking for other companies to embrace "as long as they're good fits." □

Leaf mulch not bad for turf

WEST LAFAYETTE, IN - The easiest way to dispose of leaves is to mulch them into the turf. Though this practice has been recommended for many years, there is little data on the long-term effects of tree leaf mulching into turf. Work at Purdue University and Michigan State University could change that.

"After four years, everything has been positive regarding mulching leaves into the turf," said Zac Reicher at the Midwest Turf Field Day. Reicher, an extension turfgrass specialist, was referring to a long-term study at Purdue focusing on multiple years of annual leaf mulching on turf performance.

Every October since 1994, Purdue investigators have collected maple tree leaves to apply to the turf. These leaves are run through a graden shredder and applied to a perennial ryegrass—about 4000 lbs./A in a single application and immediately mowed with a mulching mower. (A woodlot will drop about 3000 lbs./A/yr of tree litter.)

Since the researchers felt that the high carbon-to-nitrogen ratio in the tree leaves would eventually limit nitrogen in the stand they used three annual nitrogen rates. Beginning spring 1995, N rates used were 0.2 and 4 lbs. N/1000 ft²/yr. However, by summer 1996, the ryegrass receiving no additional nitrogen declined dramatically and so the annual N rates were adjusted to 2, 4 and 6 lbs. N/1000/ft²/yr.

Data collected includes monthly clipping weights, visual quality and color ratings, and annual evaluations of thatch, soil pH and soil nutrient concentrations.

"There has been no negative effects of mulching these leaves into the turf," said Reicher. "There is no disease effects, no weed pressure effects, no nutrient effects, and no effect on soil pH.

"We're not saying that everybody can mulch the leaves into the turf. But what we do recommend is that any place that you can, consider mulching the leaves." □



Dr. Zachary Reicher, turfgrass extension specialist, says leaf mulch won't harm turfgrass.



The floating green at Coeur D'Alene GC

GOLF COURSES

Blackhawk CC Madison, WI

Blackhawk is an enviable golf course and **Monroe Miller** is a fine golf course superintendent. But, behind the scenes, Miller has been a leader in his profession for decades. As editor and publisher for *The Grass Roots*, the Wisconsin GCSA's award-winning publication, Miller is an unsung hero of professional education. He's also been a voice for the average superintendent nationally at times when few others were speaking out.

City of Albuquerque Albuquerque, NM

David Chavez, CGCS, runs one of the best-managed public golf de-

partments in any municipality in the United States. Despite tremendous play pressure, Chavez and his team deliver great conditions at five facilities that are among the only public access golf courses in the region. In his spare time, Chavez has been a leader in GCSAA and his local chapter.

Coeur D'Alene GC Coeur D'Alene, ID

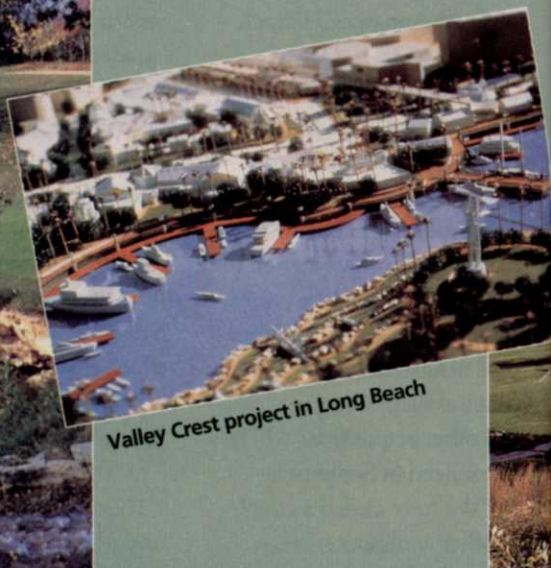
The famous floating island green gets most of the attention, but the rest of the course is an eye-popping treat maintained to the highest standards by John Anderson and crew. Green Industry professionals visiting Idaho for the turf seed field days would be well advised to schedule a side trip to this outstanding achievement in environmentally sound management.

LM100

THE TOP GREEN INDUSTRY LEADERS



Top of the Rock designed by Jack Nicklaus.



Valley Crest project in Long Beach

**CC of Rochester
Rochester, NY**

Wherever **Joe Hahn, CGCS**, pictured, goes, quality follow.



Hahn, who oversaw Oak Hill CC through two Opens and a Ryder Cup, has brought outstanding turf quality to this quietly excellent club.

Hahn is a class guy who commands the respect of his peers and earns the goodwill of those who play his courses. No one preps a course for a major better than Hahn.

**Crooked Stick GC
Carmel, IN**

How would you like to be the superintendent in Pete Dye's backyard? **Chris Hague, CGCS**, loves it. He's brought the same outstanding conditions to Crooked Stick that he brought to Hazeltine National during the 1990 Open. This may be the best course in Indiana and Hague is up to the challenge.

**Dakota Dunes CC
Dakota Dunes, SD**

Remember those pictures of golf courses completely submerged by floods in 1993? Dakota Dunes was one of them. Now, despite periodic flooding, this blending of river



delta, links and woodland features is home to a Nike Tour event and a favorite for executives at nearby Gateway 2000 headquarters.

Doug Hausman, CGCS, and his staff battle the elements to provide great golf in the northern plains.

**Emerald Dunes
West Palm Beach, FL**

This daily fee gem combines the highest maintenance standards with innovative and effective business practices. They were among the first to install cart-mounted comput-

erized range finders, a technology that not only speeds up play, but enhances player satisfaction and boosts revenues through advertising. Superintendent **Steve Bernard** and owner **Ray Finch** continue to make Emerald Dunes a truly marvelous experience for the more than 300 corporate outings the facility hosts each year.

**Fox Hollow at Lakewood
Lakewood, CO**

If other courses are models of environmentalism, Fox Hollow is a model for accessibility. **Don Tol-**

son, CGCS, has led the course's commitment to providing great golf for all, despite disabilities. Fox Hollow has hosted an annual tournament for the American Disabled Golfers Association and Tolson has been one of the leaders in educating superintendents about the Americans with Disabilities Act and its implications for golf.

**The General at Eagle Ridge
Galena, IL**

Bob Graunke, CGCS, and his staff at Eagle Ridge do things right



— and they do it affordably. The addition of The General in 1997 was a major enhancement to the Eagle Ridge facility. This scenic beauty was designed by Roger Packard and Andy North for daily play, but it's also a delight for first-timers as well.

**Hazeltine National GC
Chaska, MN**

Jim Nicol, CGCS, always tells it like it is, but he's modest about his team's accomplishments at Hazeltine. This 1991 Open course continues to deliver great golf under Nicol's leadership and is one of the true greats of the North. Superbly conditioned despite some of the toughest winters around.

**The Honors Course
Ooltewah, TN**



Merion GC in Ardmore, PA



Colorful grounds surround Illinois State University

LM100



David Stone, pictured, is a consummate professional. The Honors Course is a Pete Dye masterpiece and one of the first facilities

certified as an Audubon Cooperative Sanctuary. The Honors has emerged under Stone's leadership as a seamless blend of golf and nature. Look for big things in this Tennessee beauty's future.

Ivanhoe Club Mundelein, IL

Pete Leuzinger, CGCS, pictured, of Ivanhoe has done as much as any superintendent to advance the cause of environmental golf.

He has been an active spokesman for the industry's efforts to become "greener" and for the past four years, he's brought that same spirit of

education to Ivanhoe, a blending of prairie, marsh and forest in Chicagoland. The members have enthusiastically embraced Leuzinger's approach, and the club is a model for how golf can proactively create a better image for itself.

Merion GC Ardmore, PA

Merion is one of the granddaddies of American golf. This suburban Philadelphia classic has been under the excellent care of **Paul B. Latshaw**, son of Paul R. Latshaw, one of the deans of the profession. The younger Latshaw has helped to revitalize the relatively short Merion course and bring it back to its former glory.

The Metedeconk National Golf Club Jackson, NJ

This coastal New Jersey club is a spectacular blending of nature and golf designed by Roger Rulewich during his days working with Trent

Jones. The course winds its way through irreplaceable wetlands and is a favorite of celebrities, politicians and other notables from the nearby Big Apple. Superintendent **Dennis Parker** continues the quality standards set by Steve Cadenelli, CGCS, (Metedeconk's longtime super and former GCSAA president) as well as the club's strong commitment to education and research.

Ohio State University Golf Courses Columbus, OH

Pretty tough to maintain two great courses (Crimson and Gray), be a laboratory and classroom for one of the nation's finest collegiate turf programs, and live up to the legacy of Jack Nicklaus's school days, but Gary Razor and his squad do the job year after year. A trip to the Ohio State courses is a must for any turf pro visiting Columbus.

Ojai Valley Inn Ojai, CA

Sam Williamson, CGCS, and his team, have produced one of the best kept secrets in southern California at the Ojai Valley Inn & Spa. Nestled just north of Los Angeles, the course is a beautiful, highly playable centerpiece for a great resort and conference facility. The course is extremely challenging, but thanks to Williamson, very fair for the thousands of first-timers who visit the facility each year as part of corporate groups.

The Orchards Lawrence, KS

A nine-hole executive golf course in the LM100? It's true!



Anyone who has visited this miniaturized classic in northeast Kansas (just a stone's throw from GCSAA headquarters), knows why we think it's special.

Top-notch cohasey bentgrass putting surfaces and carpet-like zoysia fairways combine with a great layout that weekday visitors can play for \$10 during a lunch

hour. With maintenance overseen by **Dick Stuntz, CGCS**, and his crew at nearby Alvarado G&CC, it's one of the best executives in the country.

Papago GC Phoenix, AZ

This enduring and endearing little course in the shadow of the Superstition Mountains is one of the best public golf values in the Southwest. **Jerry Zidow, CGCS**, one of the true gentlemen in the golf course maintenance business, leads a team that keeps this course in top shape despite tremendous playing pressure from the snowbirds and numerous corporate outings.

Peachtree GC Roswell, GA

Asked privately how he'd rate Peachtree GC, one Georgia-based golf executive said flatly, "It's the best in the state." Better than that well-known course down the street in Augusta? "Yup, no question." High praise, but justified for the only course designed collaboratively by the Jones boys (Robert Tyre and Robert Trent). **Bill Shirley, CGCS**, and his staff keep the greens lighting fast for some of the south's finest amateur players. Flush with florals, Peachtree is a southern belle in all her glory.

Pinehurst Resort Pinehurst, NC

What can you say that hasn't been said? Pinehurst, with its eight courses overseen by **Brad Kocher, CGCS**, and **Bob Farren, CGCS**, and



a tremendously professional staff, is arguably the best golf complex in the world. The greens on Pinehurst #2 have been successfully converted to Crenshaw bent in preparation for

the 1999 U.S. Open, thus curing the only potential fault in this classic course's bid to be one of the greatest tournament sites of all time. Tom Fazio's new Centennial Course (#8), is only a few years old but looks and plays like a mature masterpiece.

Sandhills GC Minden, NE

If you build it, they will come. That was the thinking behind Sandhills, a genuine classic in the middle of western Nebraska's scenic dunes land. Ben Crenshaw designed it and a team led by **Corey Crandall** maintains it. Built in 1995, the course isn't just environmental — it's actually part of the environment. It's proof of the old Donald Ross adage, that architects don't build courses, God does — architects just find them. It's tough to get to this isolated tribute to the Scottish dunes classics, but the trip is worth it.

Sawgrass CC Ponte Vedra Beach, FL

While the masses enjoy the TPC at Sawgrass across the street, **Frank Sbarro** and crew provide tremendous golf for members and guests at Sawgrass CC. Build among the mangrove swamps, this course was environmental before environmentalism was cool. Great golf, plentiful wildlife and a quiet setting. Just heed Sbarro's warning not to worry about errant balls hit into the swamp — they belong to the snakes and gators.

Spencer T. Olin GC East Alton, IL

Just east of St. Louis lies one of Arnold Palmer's oldest and best designs, Spencer T. Olin GC (named for one of Palmer's earliest supporters and the founder of the Olin firearms and fittings companies). **Rob Dillinger, CGCS**, and staff have battled the Mississippi River periodically with mixed success (you needed scuba gear to play it in 1993). But, when the river cooperates, this is one of the finest and best maintained public facilities in the Midwest.

Top of the Rock Ridgedale, MO



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and minimizes fatigue, while hanging pedals add comfort and ease of operation.

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A Nicklaus-designed nine-hole course in the middle of southern Missouri? Yup, and it's an Audubon Signature course as well. This tasty little morsel in the midst of the Ozark Mountains is the brain-child of Bass Pro Shops founder Johnny Morris, with help from the Golden Bear and Audubon International's "Green Bear," Ron Dodson. Now lovingly cared for by natural resources manager Terry Frost, Top of the Rock combines the best of playability and environmental responsibility in a small package.

Turning Stone Casino Resort Upstate New York

Joe Baidy, CGCS, pictured, is simply one of the best guys in the industry. After many years at Aca-cia CC, a Cleveland-area Don Ross treasure he helped to restore, he has taken on a new challenge at Turning Stone. Baidy is a remarkable superintendent who has also devoted much of his professional life to serving his colleagues through GCSAA, local superintendents associations and the Penn State alumni group. Joe won't acknowledge that he's been one of the profession's greatest leaders, but he gets plenty of credit for the current status of GCSAA.



GROUNDS FACILITY MANAGERS

Germantown Parks and Recreation, TN

This community of nearly 40,000, with 522 acres, not including greenways, keeps **Harvey Faust**, Director of Parks and Recreation, busy. For the city to maintain a high level of service to the community requires a commitment at all levels. Faust says, "We contribute back to



the quality of life. We think of ourselves as not being a bat and ball organization but one that is vital to the health and welfare of our citizens."

Northbrook Park District, Northbrook, IL

Ed Harvey, Executive Director of Northbrook Park District, oversees 200 acres of parks and a 215 acre golf course. He sees planning as the most significant aspect of maintaining a high quality operation. The biggest challenge Harvey sees is the increasing demand on and for public space in a community bounded on all sides. Presently, Northbrook is doing an overall needs assessment for athletic fields as they receive heavy use not only by the community but also by affiliated groups and organizations. Northbrook needs to plan for the future, and identify the number of fields that they will need and to look into options for finding the room for the fields.

City of Plano Parks and Recreation, Plano, TX

Don Wendell, Director of Parks and Recreation, has been with the city for 17 years. The park system is 3400 acres and responsibilities include general parks, athletic fields, a



golf course, public buildings grounds and medians. In a city that is growing by about 12,000 people a year, the expectations are very high. For Wendell planning is an important part of meeting these expectations. "Parks and open spaces are a really and important part of the community and important part of each person."

Wheaton Park District, Wheaton, IL

The environment has been a focus for this community with a 120 acre marsh to maintain and develop and a golf course with Audubon designation. But that is only a part of the challenges for **Bob Dunsmuir**, Director of Parks and Recreation, with a park system of about 44 sites on 900 acres which range in size from a 0.25 acre to a golf course of 221 acres. Says Dunsmuir, "We have to work with a lot more of the storm water issues, the wetland issues than ever before." That includes renovating the golf course built in 1927 and creating more wetlands, managing a 70 acre park with a lagoon, and joint community responsibility for a 70+ acre wetland mitigation banking program which allows developers to replace wetlands lost to development.

South Suburban Park and Recreation District Littleton, CO

David Lorenz, Executive Director of Parks and Recreation is kept busy with nearly 2,881 acres of developed parks and open areas, including three golf courses. Lorenz believes that the community benefits both from being a parks and recreation district rather than a city, and by having a dedicated staff of professionals. The most recent challenge has been taking on the responsibility for Hudson Gardens, 30 acres complete with 16 demonstration gardens. Says Lorenz, "The whole theme of this was to promote Colorado landscaping and xeriscape concepts for education."

Ft. Worth Parks and Commu- nity Services Ft. Worth, TX

Richard Zavala, pictured, has been Director for the past five years. The extensive park area of 9,889 acres with 195 parks and public spaces includes five golf courses. According to Bob Riley, Manager of Park Planning and Resource Management, Zavala has brought to this department "quality of service ... we have clearly been providing the same level of service throughout



this commu-nity. We stan-dardized things very much so, and on the other hand prioritize things." Much of the work is contracted,

100% of the medians, and another 35-40% of grounds work is contracted out."

Skokie Park District Skokie, IL

Steve Hartman, Director of Parks and Recreation, for 43 sites over some 240 acres, says, "We spend as much time traveling as we do working." The biggest project has just been completed. "We rebuilt all 43 parks. We're a community that's 70 years old and many of the parks still had the original equipment in them. We have rebuilt all of our neighborhood parks, so our oldest park infrastructure is 5 years old now. Not only did we rebuild all our parks, we rebuilt all of our in-door facilities too. We spent about 40 million dollars." The new challenge will be to maintain the up-dated parks.

Waterfront Plaza, Honolulu HI

If you think that a small property would be an easy job, talk to **Mark Gwinner**, Director of Landscaping here. With only 3.5 acres and three full-time people and one half-time person, you might think his job is easy. But the high volume of use, morning, noon and night, not only increases the maintenance work due to the high amount of damage, vandalism and theft that occurs, but also adds scheduling challenges both for safety and for efficiency. For this small property, close to the water, IPM is important. Says Gwinner "We put a lot of emphasis on trying to do as much natural control as we can, hosing off the plants and cleaning up leaves and any of those kinds of things."

Broadmoor Hotel Resort Colorado Springs CO

Broadmoor is the longest stand-ing 5 star resort in the country, for



38 straight years. Maintaining that standard keeps **Tommy Anderson**, pictured, irector of Grounds and Landscaping, busy. With

36 people at the summer peak, the over 40 acres of maintained area requires a lot of hand work. The responsibilities cover water gardens, hardscapes, turf areas, flower beds, over 200 hanging baskets with drip irrigation, changing flowers three times a year, planting 12,000 bulbs, landscaping, lake maintenance and even moving large trees. Up-grading the landscape is on-going.

**Blue Cross/Blue Shield
Hartford, Ct.**

Gary Dickinson, grounds superintendent for this 1997 PGMS award winner has served the site for 26 years. "After a while, you know what to expect from certain plants at certain times of the year," says Dickinson, who also manages the interiorscapes at the site. He has three full time employees and four summer hires to help him maintain the grounds. Special feature for this year includes a sculptured English gothic style garden, borrowed from a design at a Disney theme park. "Anybody and everybody in this trade sees things at other locations and tweaks them to fit their areas," he says.

**Lake Forest Academy,
Lake Forest, Ill.**

C. Brent Mayberry, vice president/general manager, says Signature Landscaping, Lake Forest, has had the Lake Forest account for five years. "We convinced them that outsourcing would be the way to go; it takes the pressures off of their shoulders so their crew can concentrate on other in-house duties." Signature devotes seven people to the site for basic maintenance, with two more for



tree and lawn care duties. Around for 16 years, for the last seven years Brent has been vice president and general manager. Signature is a division of Sydney Services Corporation, Lake Bluff, IL.

**Westfield Companies
Westfield, Ohio**

Ken Kushmider, shown far right, is the superintendent in charge of grounds and the licensed landscape architect at this beautifully maintained insurance company complex. Kushmider and assistant superintendent **Russell Luyster**, left, and a crew of eight manage the home office grounds and coun-



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try club complex that contains 40 acres of turfgrass, 40 acres of asphalt (a snow removal challenge), six acres of shrubbery and one acre of annuals and perennial bed.

Kushmider credits assistant superintendent Luyster for being "a very important part of what we do here. I take care of designing and/or setting up the work plan. I give Russ the tools and he makes sure it gets done. It's a wonderful combination." Recent projects included a new clubhouse and landscaping at the company country club.

Illinois State University Normal, IL

Mike O'Grady, assistant grounds superintendent, has been at ISU 21 years. His crew of 18 maintains 350 acres of grounds, 125 of which is highly detailed work, including five athletic fields, president's residence, the university quadrangle around residence halls and institutional buildings around campus.

100 different varieties of trees grow at ISU, and the university is also an arboretum. All trees are categorized using a new bar code id system.

Mohonk Mountain Resort New Paltz, NY

John Van Etten has been the grounds manager for 13 years at this 129 year-old resort with a 101 year-old golf course. It's a national historic landmark. A greenhouse supplies all the nursery stock for the gardens: geraniums, mums, poinsettias. They store a couple thousand bulbs in winter. Tom Wright is the greenskeeper for the 9-hole golf course. The crew of 23 maintains 500 acres of grounds. A 110 year-old, 3-acre organic show garden is the focal point and changes with the seasons. The golf course, designed in the Scottish style, is Audubon certified.

The Channahon Park District Channahon, IL

The rapidly growing village of Channahon, in the southwest Chicago metropolitan area, maintains award-winning parks. These parks (381 total acres, 239 developed) include one of the highest-

rated public golf courses in the country, Heritage Bluffs, and the 44-acre Central Park with its Tomahawk Aquatic Center. Channahon, Park District Executive Director **Charles J. Szoke** and his staff are following a detailed master plan that was developed with strong community input.

The Breakers Hotel Palm Beach, Fla.

For 17 years **Chip Guile** has been the grounds supervisor at this legendary hotel. "We're continually trying to improve and add on to our theme gardens," says Guile. Special gardens (with more than



20,000 annual flowers) cover one-and-a-half acres, and include a children's garden, a color garden, a tropical garden and an herb garden. The total property covers more than 140 acres, including a 90-acre golf course. There are approximately 90 acres of shrubs and hedgework at The Breakers. Formal hedges alone cover five twisting, turning miles.

Gettysburg National Military Park Gettysburg, Pa.

Visit Gettysburg and you "step back in time" more intensely than at any other national historic site. Rustic monuments are everywhere, and the Civil War comes alive as you walk these historic grounds. Landscape Preservation Supervisor **Danny L. Reeve** has served his country here for 30 years. **Bruce Craig** is the new chief of resource management, who recently ran the National Park Trust. The summer-time crew of 18 works around droves of visitors, whose numbers total 1.5 million annually. A six-man crew mows and trims 6000 acres

weekly, and crews remove snow from 33 miles of paved roads.

Richard G. Hocevar Bldg. Laurel, Md.

Home of the Washington Suburban Sanitary Commission, this site contains six acres of turf, two acres of display beds and three acres of woody ornamentals. The crew also tends 18,000 sq. ft. of shrubbery. Drainage and insect control are a challenge in terraced areas; heat from the building's mirrored exterior combines with a strong soil base. The grounds are managed by **Ruppert Landscaping**. **James Sweep** is the manager.

Rockville City Hall Rockville, MD

The Rockville City Hall campus is a 4.1 acre site in Montgomery County, north of Washington, DC. Flowering trees add lots of color to the site, which also contains a white oak tree that is a descendent of the Wye Oak, the Maryland state tree. There are 55 rose bushes on the site, a gift from sister city, Pinnerberg, Germany. Bulbs, annuals and pansies appear in rotation throughout the year. **Ron Orndorff** is horticulturist since 1989. Crew size is 3 full-time and two temporary grounds keepers. The newest park is in Courthouse Square with fountains, hedges, concert area. The crew visits city hall one day each week as well. The biggest challenge there is the rose garden. They require weekly maintenance to keep them in their prime. "We want all our sites to appear as if they never need maintenance," says Orndorff.

Andrews University Berrien Spring, MI

Dave Nelson began here in 1976. He manages the arboretum and grounds around this 1600-acre campus. Two full-time staffers help out, and students, from an on-site grade school volunteer throughout the year. The youngest do weeding and watering. The campus is known for expansive lawns and attractive groves. The landscape has many annual and perennial beds and a large rock garden. Shrubs of many years duration outline the

buildings around the campus, an international flag mall displays dwarf flowering trees and shrubs, and changing display beds of annuals and bulbs in spring, summer and fall seasons.

Case Western Reserve University Cleveland, Ohio

John Michalko, pictured, gets added responsibilities at Case Western Reserve University, being recently named assistant director of campus operations. He started at the university in 1977 as superintendent of grounds, and continued in that capacity for over 20 years "We've had a lot of changes. We developed a



master plan, and our president has been very active in improving this campus," says Michalko.

Franklin Plaza Austin, TX

This 500,000 sq. ft. office complex in downtown Austin covers one square block with multi-level turf and ornamental beds. A courtyard on a lower level has a water feature surrounded by trees and turf. Large, 50-year-old oaks provide a little too much shade for the St. Augustinegrass turf, and there is urban stress from heat, automotive exhaust and foot traffic. Crepe myrtles and Asian Jasmine surround the 30-inch diameter oaks. Ryegrass is green and lovely as the myrtles bloom in spring. Annual change outs are performed each year, with a vast array of colors. The landscape is managed by **Rusty Brightman** and his crew from **Clean Cut, Inc.**

Arboretum Retail Austin, TX

This shopping center is located in a hilly, rocky area, and many native trees were left alone during construction. No topsoil was incorporated during construction, so constant monitoring is required by the crew from **Clean Cut, Inc.** Shoppers do lots of walking through

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REMBRANDT (LTP-4026 E+)	6.0
ARID 3 (J-98)	5.9
REBEL SENTRY (AA-A91)	5.8
KENTUCKY-31 W/ENDO	4.2
LSD VALUE	0.2

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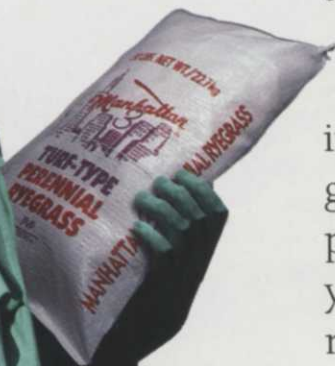
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this site, so parking lot islands are maintained to perfection. Turf areas are topdressed each year to keep the surface level for mowing crews. Various plants are pruned with different techniques. Indian Hawthornes, dwarf Yaupon Holly and Maiden Grass are used for a great display of color and foliage.

University of San Francisco San Francisco, CA

The university is bordered all around by sidewalks. The site covers 55 acres, and two off-site campuses are in a residential neighborhood. The Lone Mountain campus and main St. Ignatius Church campus are very hilly, and the climate poses other challenges. There are many tropical plantings, with dense annual and perennial beds. **Jay Stafford** is the grounds superintendent.

Arizona State University Tempe, AZ

This campus comprises more than 700 acres and is populated by more than 42,000 students. The campus contains 85 acres of turf, 40 of which are used for student athletics. Sun Devil Stadium is home to the Arizona Cardinals, and host stadium for the Fiesta Bowl. The campus has been designated an arboretum since 1990. A Horticultural Resource Center on Campus studies cancer research bulbs, drought-tolerant trees and annual flower test trials. **David Webb** and **Donald Dickerman** manage the grounds.

LANDSCAPE COMPANIES

Valley Crest Calabassas, CA

Environmental Industries, Inc., turns 50 in 1999. Burton S. Sperber and his father started it as a family nursery. Now the nation's largest landscape provider and maintainer. Richard Sperber is president of its Valley Crest Division which offers landscape/irrigation/site development and reported revenues of \$230 million in 1997. Valley Crest has 10 offices and about 1700 employees. Another operating division of EII is Environmental Care, Inc., which provided landscape maintenance

services of about \$93 million in '97. Bruce K. Wilson has been president since 1980.

LandCARE USA, Inc. Houston, TX

LandCARE USA, Inc., will generate about \$220 million in revenues in 1998, its first year in business. The company was formed early in 1998 when seven green industry firms joined to form what's approaching the first truly national landscape company. Since LandCARE USA went



public on June 4, it has acquired another five landscape firms with more additions planned. **William Murdy**, pictured, is chairman and CEO for the company. (See related article on page 15.)

The Brickman Group, Ltd. Langhorne, PA

The Brickman Group has traditionally relied on internal growth which has been running at about 20 percent a year. In 1997 The Brickman Group provided about \$105 million in landscape services, said **Scott Brickman**, pictured. That number should increase significantly in 1998 as the company announced three acquisitions this past spring and another this summer.



The Brickman Group has 60 branch offices with its presence strongest in the East and Midwest. The company's headquarters are in Langhorne, PA, adjacent to Philadelphia. (See related article on page 15)

TruGreen-ChemLawn Memphis, TN

The lawn application giant entered the maintenance market by starting a Landscape Division and acquiring four sizeable landscape companies early in 1998. TG-CL has

made several other purchases since in key markets. The announced acquisition of Ruppert Landscape Co., Ashton, MD, in late August will push the newly formed division's revenues to about \$140 million in 1998. (See article on page 12.)

The Bruce Co. of Wisconsin, Inc. Middleton, WI



The Bruce Co. of Wisconsin reported revenues of about \$27 million in 1997, and growth of 21 percent. It employs 490 people, says Vice President **Arnold O. Sieg**, pictured.

American Landscape Companies Canoga Park, CA

Mickey Strauss, the president of this firm, reported revenues of \$20 million for 1997, an 11 percent increase from '96. American Landscape Companies has six branch offices.

The Groundskeeper Tucson, AZ

This powerhouse in the American Southwest is built upon the knowledge and commitment of its front-line employees. From seven branch offices, The Groundskeeper completed about \$18 million in work in 1997, and anticipates about 10 percent growth this year, reports **Kent Miller**, pictured.



Teufel Nursery, Inc. Portland, OR

The landscape division of this well-known business headquartered in the Pacific Northwest reported revenues of \$17 million in 1997, a five percent increase from revenues reported in '96. Teufel has 290 employees operating out of two branch offices.

Landtrends, Inc. San Diego, CA

This diversified landscape company has shown impressive growth since its founding in 1981 by **Jon Ewing**, pictured. Active in the California and Nevada markets, Landtrends billed out \$15 million in 1997. It has two branch offices and about 410 employees. This year it added sports turf management as a service.



Vila and Son Landscape & Nursery Miami, FL

This South Florida business reported modest growth of 2.5 percent in 1997, and sales just under \$15 million. Vila and Son Landscape & Nursery employs 195 and has two branch offices.

Chapel Valley Landscape Company Woodbine, MD

Now celebrating its 30th year, this Washington D.C.-area landscape company now offers colorful installations in downtown metropolitan areas. The company saw 28 percent growth in 1997 to about \$14 million, but doesn't expect to grow as fast in '98. Chapel Valley employs 250 and has two branch offices. The company is operated by founder **J. Landon Reeves**.

Landscape Resources, Inc. Farmers Branch, TX

President **Steve Barley** reported respectable growth in 1997 and sales of about \$14 million. The company has four branch offices and 350 employees.

Schumacher Landscaping Boston, MA

Schumacher is building its athletic field construction business as it grows its other offerings. In 1997 this Boston-based company totaled revenues of \$13.3 million, a 34 percent increase from the year before. About 80 percent of the company's revenues come from installations,

says President **Peter P. DiDomenico**.

**Lieds Landscape Design & Development
Sussex, WI**

The third generation of the Lied family is involved with this respected business headquartered in south-eastern Wisconsin. In 1997 LLD&D generated revenues approaching \$12 million. The company has two branch offices and about 300 employees, reports **Judson Griggs**.

**R. Glass Landscape Company
Roselle, IL**

Richard Glass, president, reports that his company grew by a healthy 16.8 percent in 1997 to about \$11.1 million in sales. R. Glass Landscape has two branch offices and employs 350.

**The Morrell Group, Inc.
Atlanta, GA**



George Morrell, owner and CEO, says his company recently added arbor care to its services. In 1997 he reported sales of about \$10.6 million, a 28 percent jump from the year before. The company's

201 employees work out of a central location.

**Cedar Landscape, Inc.
Hillsboro, OR**

This Portland-area landscape company grew by 21 percent in 1997 to break the \$10-million-in-sales barrier. It expects similar growth this year. Cedar Landscape's 197 employees work out of one office location.

**Weeks Landscape Services
Norcross, GA**

This Atlanta-area company reported a nice increase in business in 1997 with revenues rising to just over \$10 million, reports **Mark Flowers**, senior vice president. With several branch office locations and 180 employees, Weeks Landscape Services is in a good position to build its newest customer service offering, hardscaping.

**Clarence Davids & Co.
Matteseon, IL**

This operation, headquartered just southeast of Chicago, generated \$10 million in revenues from three locations in 1997, a 3 percent increase over 1996. This "one-stop" landscape service was founded in 1951 and employs about 175 in peak season.

**LMI (Landscape Management Inc.)
Carrollton, TX**

This Texas firm should crack \$10 million in sales in '98, narrowly missing that figure in 1997 and still growing at a rapid rate. This is one of several heavyweights in the bustling Dallas market. LMI has two branches and about 180 employees.

**McFall & Berry Landscape Management
McLean, VA**

This company operates in northern Virginia, one of the landscape industry's most competitive markets. McFall & Berry grew modestly in 1997 to about \$9.2 million in sales. It employs about 185 during peak season, and maintains three branch offices. It's beefing up its hardscapes/construction business this year, says **Mark McFall**.

**L&L Landscape Services, Inc.
Campbell, CA**

President **Steven C. Glover** reports a strong 1997 for the California-based company. He pegged growth at 20 percent bringing revenues to \$8.7 million this past season. He and **Rob Zolezzi** own this 22-year-old company that has forged a strong relationship with its clients. L&L has three branch offices and a staff of 163.

**Stiles Landscape Service Co.
Pampano Beach, FL**

Landscape services are year-round this far south, and this company's 120 employees working out of one location keep pretty busy. Stiles Landscape grew by 16 percent in 1997 and reported revenues of \$8.3 million.

**The Greenery, Inc.
Hilton Head, SC**

B. W. Edwards, president, notes

that his company grew about 15 percent in 1997 to \$7.9 million. The Greenery has two branch offices and a staff of 168.

**Hillenmeyer Nurseries
Lexington, KY**

The company with the most longevity on our list, Hillenmeyer Nurseries is over 150 years old. The company reported a slight dip in revenues for '97 to \$7.7 million, but expects just over 10 percent growth this season. About 175 employees operate out of a single location for this quality, full-service company.

LAWN CARE OPERATORS

**Tru Green-ChemLawn
Memphis, TN**

TruGreen became the lawn care industry powerhouse early in the decade when it purchased ChemLawn. Several years ago TG-CL absorbed Barefoot Grass, then the nation's second largest lawn care provider. TG-CL has continued to

acquire local and regional lawn application companies. TG-CL is a part of ServiceMaster Consumer Services, and generates 80 percent of its

revenues in the residential market. **Dave Slott**, pictured, is president of TG-CL. The company reported \$770 million in sales for 1997, a 22 percent increase over 1996.

**Davey Tree Expert Company
Kent, Ohio**

Although this Ohio-based company is best known for its tree work, it's a nationwide provider of lawn care services too. Founded more than 110 years ago and now employee-owned, the Davey Tree Expert Company reported sales of \$295 million in 1997, up 10.5 percent from '96. The company does not break its sales into one category or another but reports total revenues for its four divisions: Residential, Commercial, Utility, and Consulting.

**Lawn Doctor, Inc.
Holmdel, NJ**

With more than 350 locations Lawn Doctor is the largest lawn care franchiser in the United States. This company was started by Tony Giordano and Robert Magda in the early 1960's, and became Lawn Doctor in 1967. While Lawn Doctor has always been strongest in the East, there are franchise operations in more than 30 states. Systemwide Lawn Doctor generated revenues of \$43 million in 1997. As a note: two company executives, **Russell Frith** and **John Buechner**, have served as presidents of PLCAA.

**Weed Man
Mississauga, Ontario**

The Weed Man, the company started several decades ago by entrepreneur **Des Rice**, continues to grow and now has a presence in the U.S., too. Weed Man Vice President Michael Kernaghan reports that systemwide it increased sales by 10 percent to about \$45 million in 1997. There are 135 Weed Man locations with approximately 2500 employees.

**Greenspace
Toronto, Ontario**

Greenspace is a part of the FirstService Corp. It is the company's non-franchised lawn operation and it generated \$34.5 million (CAD) in fiscal year 1997. FirstService also garnered revenue from its lawn operations as part of its sizeable property management operations, and royalties from lawn care franchise holders, in all, about \$60 million (CAD) from all lawn care revenue sources.

**Jensen Corporation
Cupertino, CA**

The California-based company with two branch operations and 100 employees reported a 20 percent sales increase in 1997 to \$9 million in revenues.

**Leisure Lawn Inc.
West Carrollton, Ohio**

With 10 locations, this Ohio-based company is one of the largest regional lawn care providers in the country. President **Douglas Baker**

says his company grew to \$20 million in 1997. Leisure Lawn has about 375 employees.

**Naturalawn of America
Frederick, MD**

Naturalawn of America marked its 10th birthday in 1997 with significant growth, about 28 percent reports **R.C. Loeb**, vice president. With 42 locations, the Maryland-based operation generated about \$11 million in sales last year. Naturalawn of America markets itself as an alternative to traditional, chemical lawn care and has grown every year since its founding.

**Massey Services
Maitland, FL**

In Florida it's not unusual for a company to offer both structural pest control services and lawn applications. Massey Services, headquartered just east of Orlando, is a leader in both. In 1997 Massey Services reported sales of about \$21.5 million from 35 locations. About \$7 million of that was in lawn care, reports a company spokesman.

**Pro-Grass Inc.
Willsonville, OR**

This 20-year-old company has evolved into a full-service lawn care company also offering tree care services. Headquartered in Oregon, it does business in locations throughout the Pacific Northwest, including northern California. Pro-Grass grew

by 14 percent in 1997 to \$7.7 million. It has five branch offices and about 150 employees

**Senske Lawn & Tree Care
Kennewick, WA**

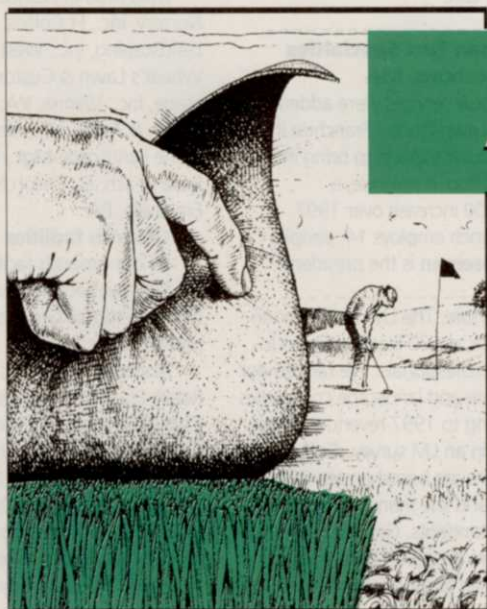
This company, headquartered near Spokane, WA, has been around for more than 50 years and it keeps growing and growing and growing. President **Chris Senske** reports it grew by 9 percent in 1997 to about \$8.3 million. A bit more than half of that is in lawn and tree care. The company now does Christmas lighting.

**The Lawn Co., Inc.
South. Dennis, MA**

One of the largest independent lawn care operations in New England. The primary market for this company is eastern Massachusetts and Cape Cod. **Ed McGuire** started the company in 1979 and has since grown it to about \$5 million in sales with three branch offices and 65 employees.

**Scotts Lawn Service,
Marysville, OH**

One of the most recognizable names in lawn care made a move into the professional lawn application market prior to the 1997 season and racked up revenues of \$4.5 million by year's end. Scotts Lawn Service reports 10 company-owned locations and 21 franchise outlets.



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Terre Co.	(201) 473-3393	Clifton, NJ
Tom Irwin Co.	(617) 273-0143	Burlington, MA
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The company expects to almost double its sales for the '98 season.

Prescription Turf Services, Inc.

Middleton, MA

Prescription Turf Services, Inc., has been a respected turf care provider in the Boston (and surrounding) market throughout the 1980's and 1990's. President **Paul Harder** reports that it grew by 11 percent in 1997 to record revenues of about \$2.5 million.

Agro-Lawn Systems, Inc.

Vienna, VA

Tom Speirs' northern Virginia operation racked up sales of about \$2.2 million in 1997. Recently it added commercial turf consulting to its services. It has 45 employees.

Lawn Masters, Inc.

Hawthorne, NY

As Lawn Masters approaches its 30th birthday, it continues to grow, providing services to lower New York State, Hudson Valley. Steady growth has characterized this company that operates out of three locations with 42 employees. President **William Carey** reports revenues of \$2.2 million for 1997.

Clippers, Inc.

Chantilly, VA

Cemetery maintenance is the newest service being offered by Clippers, Inc. Company President **John DeBell** reports his company totaled \$1.8 million in revenues in 1997. It has 55 employees.

Roberts, Inc. dba TruGreen-ChemLawn Billings, MT

Dennis M. Roberts reports a great year in 1997 with 24 percent growth. He pegged the '97 revenues at \$1.5 million with 30 employees working out of five branch offices.



ProLawn Plus

This northern Florida company offers customers

both lawn care and pest control services. In 1997 it recorded sales of \$1.5 million and expects respectable growth in 1998 too, says President **Nick Dennis**, pictured.

Personal Lawn Care

Avon, Ohio

President **Thomas H. Brunner's** company added low voltage lighting to Personal Lawn Care's services. Headquartered west of Cleveland, this company had 11 percent growth in 1997, and sales of \$1.5 million.

Pro-Lawn Plus, Inc.

Baltimore, MD

Mark I. Schlossberg, pictured, has been active with association and legislative matters on both the



regional and national levels, all the while building Pro-Lawn Plus into a strong regional company. His company had revenues of \$1.4 million in

1997, an 11 percent increase over 1996. They have 15 employees.

Prusa, Inc. dba Lawnmark

Stow, OH

John C. Prusa's operation in northeast Ohio employs 21 out of three locations. The impressive Lawnmark operation that was synonymous with lawn care from Ohio up through the Northeast in the 1980's is pretty much gone except for this quality operation that increased sales by 19 percent in 1997 to \$1.2 million.

Munie Lawn Specialists, Inc.

Caseville, IL

This operation, located in a quiet, rural area just across the Mississippi River, kicks up quite a bit of business in the metropolitan St. Louis market. Owner **Joseph A.**



Munie decided to get into the lawn application business after attending a conference in the late 1970's. Since then he's built this operation into full service. He reports lawn care revenues of \$1.17 million in 1997, a 21 percent increase over the previous year. The company operates out of two locations

Nutri-Turf Lawn & Tree Svc. Warren, MI

This company reports 1997 revenue of \$1.25 million, and forecasts upwards of \$1.3 for this year. The company has one office that employees 45 peak-season workers. **Bruce Kopitz** reports new services offerings were mycorrhizal fungi and nutrient fixing bacterial injection for tree care

Foreman Turf Specialties

Shrewsbury, MA

No new services were added by this Lawn Doctor Franchise in 1998, but it expects to bring in \$1.4 million in revenue, a \$300,000 increase over 1997. This branch employs 14 people. **Jack Foreman** is the president.

Ed. note: The LM 100 is our annual look at 100 leading Green Industry professionals. We ranked our lawn care and landscape companies according to 1997 revenues, as reported in an LM survey. Golf course selections are based on reputation, design and the management skill of superintendents. Grounds care facilities were based on past recognition by leading grounds associations and personal observation. Those not contacted and feeling they should be considered for the 1999 LM 100 please contact the editors.

Those companies not listed, but responding to our survey who are also leaders in the Green Industry include the following:

Lawn Care Operators

Turfgrass Company, Inc., Dayton, OH; Green Lawns Plus, Marlborough, MA; Arbor-Nomics Turf, Inc., Norcross, GA; Heritage Lawns, Inc., Plainville, CT; Gro-Green, Plano, TX; Lawn Cure, Inc., Jefferson, IN; Mike's Lawn Service, Storm Lake, IA; Turf Pride, Inc., Kennesaw, GA.

Landscape Contractors

Dennis' Seven Dees Landscaping, Inc., Portland, OR; Rood Landscape Co., Jupiter, FL; Swingle Tree Company, Denver, CO; CoCal Landscape, Denver, CO; Glen Gate Co., Wilton, CT.

Industrial Landscape Services, San Jose, CA; Byrd's Lawn & Landscaping, Charlotte, NC; Laflamme Services, Inc., Bridgeport, CT; SKB Industries, Inc., Lilburn, GA; Foxfire Landscape Co., Macomb, MI; James Martin Associates, Vernon Hills, IL.

Evergreen Services Corp., Bellevue, WA; LTI, Alpharetta, GA; Bozuto Landscaping Co., Upper Marlboro, MD; Gardeners' Guild, Inc., San Rafael, CA; Kruegers Associated Landscape, North Plains, OR; Del Conte's Landscaping, Inc., Fremont, CA.

Mills Brothers Landscape & Nursery, Inc., Ft Collins, CO; Scian's Landscaping, Inc., West Berlin, NJ; Wheat's Lawn & Custom Landscape, Inc., Vienna, VA; Madelyn Simon & Assoc. Inc., New York, NY; Byrne Landscape Mgt., Inc., Santa Rosa Beach, FL; Shiloh Nurseries, Emissville, PA.

Grounds facilities

Of our grounds facilities, the following have received awards from the Professional Grounds Management Society:

Andrews University; Arboretum Retail; Franklin Plaza; Blue Cross/Blue Shield of Hartford; Westfield Companies; Waterfront Plaza; Illinois State University; Mohonk Mountain Resort; The Breakers; Richard C. Hocevar Bldg.; Broadmoor Hotel Resort; Lake Forest Academy; Rockville City Hall; University of San Francisco;

Grounds facilities awarded by the National Recreation and Park Association: Ft. Worth Parks & Community Services; City of Plano; So. Suburban Parks & Rec, Littleton, CO; Skokie Park District; Wheaton Park District; Germantown Parks & Recreation; Northbrook Park District; The Channahon Park District.

Lawn care/landscape/grounds profiles by Ron Hall, Terry McIver, Nancy Stairs. Golf profiles by Pat Jones. Special thanks to the Professional Grounds Management Society, Hunt Valley, Md.

CALL TO ACTION: The *Lawn* Quality Protection Act

by TOM DELANEY
PLCAA

Does the loss of any of the following pesticide classes—

Organophosphates or Carbamates—get your attention? How about the following products—Orthene, Dursban, Diazinon, Di-syston, Oftanol, Counter, Sevin—just to name a few? If EPA is allowed to have its way and continues to follow along its current course, these product uses on turf may be limited or lost.

The FQPA of 1996 added several new requirements for testing and risk assessment to the regulatory process for pesticides. EPA must now address aggregate exposure from drinking water, non-dietary residential sources (turf), and residues in food, as well as cumulative exposure from chemicals with a common mechanism of toxicity. These new data requirements call for exposure assessment information not previously considered.

FQPA contains “data call-in” provisions that provide the mechanism for obtaining the data necessary to conduct these new risk assessment evaluations. However, early indica-

tions are that the Agency is not planning to use the “data call-in” provisions of the law, and instead will use the very conservative “default” assumptions about exposure and usage information, which may actually be inaccurate and unreliable, and will likely result in the unnecessary loss of pest control products, especially in the non-food markets like turf.

Companies may be forced to sacrifice non-food products to protect food uses. Once these products are lost, it is unlikely that they will be brought back to the non-food (turf) market, even if new data indicates all uses are safe and available under the new requirements. We are still waiting for EPA to reverse the 2,4-D safety clothing requirements that they mandated be put on the label before the complete testing was done. They have had all the tests for two years now.

The conservative “default assumption” approach will have a very negative impact on the non-food pesticide industry. It is imperative that implementation of FQPA be based on the best information available through current science and accurate data so that valuable and safe pest management products remain available.

Action Needed

Recently, PLCAA and several other association sent a let-

ter to Dr. Lynn Goldman, EPA assistant administrator, to call attention to this problem. But the key to our success is YOU.

Dr. Goldman has said EPA will not use the data call-in provisions of the law to obtain the data needed for the new aggregate exposure and cumulative risk assessment in the same law. We’re asking you to call or write your member of Congress. Tell them to urge EPA to:

► preserve as many valu-

able pest management protection tools as possible;

► obtain the necessary information through “data call-ins” to establish the safety of pesticide products;

► base decisions on actual pesticide use; and

► establish and communicate uniform policies for consistent FQPA implementation.

Delaney is Executive vice president of the Professional Lawn Care Association of America, Marietta, GA.

[DATE]

Honorable [NAME]
U.S. House of Representative/U.S. Senate
Washington, D.C. 20515/20510

Dear Representative/Senator [NAME]:

I am in the lawn care business in [TOWN] and am writing you regarding EPA’s implementation of the new Food quality Protection Act (FQPA). EPA is now in the process of deciding which pesticides will be kept on the market and which pesticides uses will be canceled, as required by law. I understand that EPA is making decisions without considering actual pesticide use practices. Also, I hear that EPA is not waiting for sufficient data to meet the law’s new requirements. This makes no sense to me.

I have been in the pest management business for [X] years and consider myself a good steward. I use pesticides when necessary to control insects and disease, and practice integrated pest management using all available tools. I know that the pesticide manufacturers can supply EPA with all the data needed to support the continued availability of these products, if the Agency properly implements the law. Please urge EPA to implement the law fairly, by using “data call-ins” and science-based decisions.

Sincerely,

[NAME]
[ADDRESS]

Explaining FQPA

Here's a description of the Food Quality Protection Act and how it relates to you.

By LISA SHAHEEN

For months now, you may have been hearing about the Food Quality Protection Act (FQPA), risk cup and other terms that sound ominous, but you're not sure exactly what they're all about. Especially if you don't happen to be a legislative buff, you may pass by an editorial about regulations or tune out a speech about pertinent regulatory issues.

Now is the time to pay attention.

The FQPA is a 1996 law

that amended the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Act (FFDCA). It calls for very substantial revisions of the pesticide law, and paves a new way in which pesticides are regulated.

The problem is that every active ingredient has hundreds of applications, and this is where it gets complicated. For example, one active ingredient may be effective against roaches, but is also used for some lawn pests and agricultural uses. This isn't a problem when considering one application at a time, but the FQPA considers the sum total of risk associated with a given chemical, and combines all its potential uses. Risk is assessed in two ways: aggregate or cumulative.

1. Aggregate risk assessment—All the potential uses for a particular chemical are added together.



Without solid data the EPA may make inaccurate assessments of the safety of the products that we use to manage our clients' properties.

2. Cumulative risk assessment—Any risks associated with a given chemical, plus any chemical with a similar mode of action to the first chemical, must be added together to assess how risky it may be. For example, when assessing chlorpyrifos, the risk from other chemicals that aren't chlorpyrifos, but act the same way as chlorpyrifos have to be factored in to measure cumulative risk. For chlorpyrifos, this would include all other organophosphates, such as malathion and diazinon.

According to the FQPA, once the type of risk is defined, how much of that risk is allowable must be decided, and this is where the "risk cup" enters the picture. For each chemical or class of chemical, the United States Environmental Protection Agency (EPA) creates what's called a risk cup, which equals the total amount of al-

lowable risk exposure.

If all the potential risk for a given chemical, and the chemical similar to the first one are poured into a cup, and it "overflows," then it's at its breaking point. To lessen the risk and keep the cup from overflowing, the EPA deems action necessary.

There are three ways to reduce risk in the cup.

1. Eliminate Uses—A manufacturer may decide to get rid of all its indoor (structural) uses in order to continue the agricultural uses of the same active ingredient.

2. Risk Mitigation—To reduce risk associated with the use of a product, manufacturers might mandate unreasonable precautions, such as wearing head-to-toe protective equipment each time a product is handled. Of course, this is one way to reduce risk, but it's not very practical.

FQPA review

► **Risk Cup**—A measure of allowable risk for a given chemical.

► **Aggregate Risk Assessment**—All the potential uses for a particular chemical added together.

► **Cumulative Risk Assessment**—Any risks associated with a given chemical, plus any chemical with a similar mode of action to the first chemical, added together.

Three Ways to Reduce Risk:

1. Eliminate uses—Discontinue some uses for a given active ingredient.

2. Risk Mitigation—Enforce unreasonable safety precautions.

3. No new uses—Refrain from adding any additional uses.

3. No New Uses—Refraining from adding any additional risk keeps the risk cup from increasing.

Many active ingredients used for lawn care, agriculture or other uses are also used in other formulations for structural pest control. Ultimately, manufacturers have to decide whether they want to support a particular chemical or not. The question becomes, Is it cost-effective for them to support the use of an active ingredient in a small market like pest control, or continue its use in a bigger market like agriculture?

One of the main problems for lawn care operators (LCOs) and golf course superintendents is the execution of the FQPA,

and how the EPA is going about doing it. The agency may feel pressured to make fast decisions to meet various deadlines. The fear is that it will move forward without using any hard data on which to base its decisions. Instead, the EPA would use worst-case scenarios as a starting point to doing risk assessments.

In order to make sound decisions regarding the FQPA, the EPA needs to do risk assessments. To do risk assessments, it needs good data. If there isn't any good data, and instead it has to use worst-case scenarios, then it will get an unrealistic picture of what the risks truly are.

The Green Industry must demand that hard data and

Legislative time line

- 1938 Federal Food, Drug and Cosmetic Act (FFDCA)
- 1947 Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- 1958 Delaney Clause Amendment to FFDCA
- 1996 Food Quality Protection Act (FQPA)
- 1998 Gore Memo, April 8, 1998
EPA Response Memo, April 10, 1998
- 1999 First Deadline, Organophosphates, Carbamates, B₂ Carcinogens (August)
- 2002 Second Deadline, Pyrethroids
- 2006 Final Deadlines= Remaining Less Toxic Pesticides

sound science are obtained by the EPA as part of its assessment process. As a result of previous lobbying efforts by various industries affected by the FQPA including agriculture and pest control, Vice President Al Gore issued a memo to

the EPA ordering the agency to revamp its review policy.

Lisa Shaheen is senior managing editor of Pest Control magazine.

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Pesticides and our image

Turfgrass managers now have more options to enhance the environmental friendliness of the Green Industry.

R.L. BRANDENBURG
North Carolina State
University



Much has been written in recent years

about the public's concern over pesticide use especially in urban environments.

This concern has focused not only on public health concerns, but also on potential disruptive environmental effects including fish and birds. One could go on for pages writing about this on-going debate that has been a part of lawn and landscape management.

Unfortunately it has, at times, become part of a rather ugly and unproductive argument over pesticide use based on fact, fiction, and emotion. No one really benefits from such an adversarial approach. Fortunately, the landscape industry's ability to speak responsibly on this issue has improved. Many groups such as the PLCAA and the GCSAA have taken steps to increase the education of turfgrass managers on this issue and to address the questions presented by a concerned portion of the public.

End to confrontation

One of the biggest gains we have made in recent years is that we have dropped the confrontational approach. For many years, the most common approach to public education was simply to compare pesticides to all the other risks in one's life and thus attempt to



The landscape management industry should use FQPA as another image-enhancing change.

minimize concern over these chemicals. After all, if the public could be convinced that numerous other risks would probably kill them long before pesticides would, then they would focus their attention elsewhere. Those of us who are not experts in such communication (and I include myself in that group) learned that you cannot diminish the concern over one topic by increas-

ing anxiety on another one. We slowly and painfully learned that no one wins with this approach.

Educational approach better

Our more recent efforts on educating the public about pesticide use in the landscape have focused on a clearer, more straightforward approach concerning pesticide use, IPM, and product safety. Fortunately, we have abandoned the

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"silent" approach which gave the appearance we had something to hide, the bash the environmentalist approach which severely crippled our own credibility, and the previously mentioned "scare tactics" approach that told the public the world was filled with substances more deadly than pesticides.

I hope this industry continues to pursue this aggressive course of actions that presents the facts and provides the public with a realistic picture of the direction our industry is headed.

Research brings better products

We are not using the same pesticides that we used 20 years ago and we are using more compatible ones in a more efficient way. And even more impressive, is that we've probably only begun to reap the benefits of university and industry research that will further enhance our ability to manage turfgrass in a cost-effective manner that is in harmony with everyone's desire to minimize any negative environmental consequences. The future looks very bright for an ever increasing array of options and programs for turfgrass management. Research into landscape pest management has never been as active as it is at this time. Just as we have seen significant benefits over the past decade, we will reap additional benefits over the next few years as this research provides new products and information. I foresee continued development of pesticides with reduced toxicities to man-

and animals. We will undoubtedly see more biological products developed and our improved understanding of pest biology help us use these more effectively.

Just as the products Merit and Mach 2 were well received by the turf industry because of their "reduced risk" fit, other new products will also find their niche. Even though we have seen some biological materials enter the marketplace and disappear due to poor performance or lack of fit in the turfgrass industry, we now have a better understanding of how to make similar products work.

I also see continued success in better forecasting ability for a variety of pest problems.

Our image is dependent upon the public being aware of the fact that we remain on the cutting edge of science (and there is a lot of science underway in landscape management) and new research is often focusing on addressing consumer concerns. New equipment to improve pesticide application efficiency and reduce drift has been available for several years. Several major manufacturers are getting involved in the development and marketing of such equipment so the future for such equipment appears bright. The biological products may receive the greatest benefit from the use of injection equipment.

FQPA questions, industry answers

A final area that will have an impact, not only on how we conduct our business, but also

Let's tell the public about our advances and help guide and accept new regulations for greater public confidence.

on our image is the implementation of the Food Quality Protection Act (FQPA) of 1996. One might ask how a law that we have no control over could impact our image and it is a reasonable question. We can have an impact on the implementation and secondly, its final deployment will affect what products we can and cannot use in the landscape. Hopefully this will give the public more confidence. However, while one would assume that any new law regulating pesticides would instill greater public confidence, we must remember two things.

The FQPA will have some teeth to it and will have an impact on what products are available to use. The EPA has begun the formidable task of reviewing one third of all pesticides including the organophosphates and carbamates by August 1999 and all pesticides within 10 years. Many did not realize that under the FQPA all pesticides of similar modes of action (like the organophosphate insecticides) would be grouped together to determine residue exposures and risks. All uses, not just food residues, but turf, landscape, and household uses would also be lumped together to determine exposure and risk. Furthermore, children's exposure is given a 10x safety factor. Each group of pesticides then

has a risk cup, or an amount of allowable exposure. Under the new system it appeared that many pesticides far exceeded this allowable risk cup and many uses would be lost. This could be especially true for compounds that had many registered use sites including agriculture, turf, ornamental, household (eg. chlorpyrifos).

Once the FQPA is fully implemented, the landscape maintenance industry should use it as another image enhancing change. It will change how we do business and undoubtedly some products will be lost to the landscape industry. However, this should be another step in upgrading public confidence in our use of pesticides in the urban environment. Let's tell the public about our advances, adopt new technologies, and help guide and accept new regulations developed to create even greater public confidence in pesticide use laws.

We all stand to benefit.
R. L. Brandenburg is a professor of entomology at North Carolina State University.

Green Industry can bring balanced view

RISE is striving to keep the EPA fully informed. Green Industry professionals can help by telling representatives why pesticides are necessary for the public's protection.

By LISA SHAHEEN

As questions fly around the Environmental Protection

Agency (EPA) about weighing the risks associated with pesticide use, Responsible Industry for a Sound Environment (RISE) is working diligently to keep the answers in balanced perspective. The message from RISE: pesticides are not the problem—pests are.

Elizabeth Lawder, program manager for Washington, D.C.-based RISE, has closely followed the Food Quality Protection Act (FQPA) since the law has become an issue for the Green Industry. The FQPA has

the potential to eliminate pesticides, beginning with the organophosphates and carbamates, as soon as August 1999. Lawder is responsible for all communication activities for the organization, and her primary focus is on specialty pesticides. She suggests that lawn care operators (LCOs) shift the focus from the idea that pesticides are the problem, and put more emphasis on pests as the problem.

When the FQPA was first passed, RISE representatives were very supportive of its intentions. The industry has been trying to reform the Delaney Clause for years, and the FQPA eliminated that problem. The Delaney Clause was an amendment to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) that called for zero tolerance of any cancer-causing food additive. When the clause was adopted it was reasonable, but as technology improved, detection methods became so tightly honed that it became impossible to adhere to the provisions of the Delaney Clause.

"When we first heard that this bill was going to move, we were pleased, because it does



reform the Delaney Clause," Lawder reports.

The problems began as the EPA began planning implementation of the FQPA.

"We support the goals of the FQPA, but what we're seeing now is that the EPA is using default assumptions in implementation, based on unrealistic assumptions," she says.

RISE wants to cooperate as much as possible with the EPA and assist the agency in obtaining information necessary for proper implementation of the FQPA. However, RISE has faced some resistance.

"We're trying to tell the EPA that the industry is willing to provide the data that you need, but give us guidance on what you're looking for so that we can provide it," she indicates.

It sounds cut and dry, but so

far, it hasn't been that easy. The EPA hasn't requested any data.

"Some high-ranking officials at the EPA say that they have all the data that they need in order to make the decisions that they need to make," she admonishes. "Our argument is that they are using theoretical models and not real-world data."

Lawder wants the EPA to have a balanced viewpoint as it reviews pesticide risks, and points out the important, although often overlooked, fact that pests endanger public health, damage structures and cause disease. Pesticides, on the other hand, are one of the tools and part of the solution to pest problems.

Lawder's main message to PCOs is that these relevant tools could be lost.

"We don't want to wait until it's too late to draw attention to the importance of specialty pesticides," Lawder asserts.

RISE wants to educate the EPA and the public on not only the value, the safety and how important pesticides are to lawn care businesses, but also how important they are to managing damaging pests.

Of course, everybody wants a safe food supply, legislators included, and public health is something that consumers can really latch onto. These are the areas that the EPA needs to be reminded about.

"What we're trying to do is let people know that pesticides are a really important part of managing public health pests,"

she stresses.

LCO role

From experience, LCOs understand why pesticides are a necessity when it comes to lawn care. However, it's not always as clear to legislators and the public. Lawder says it's vital that LCOs know the importance of their individual comments to their representatives.

"The more letters a Congressperson gets from a constituent, the better. It's very important that members of Congress hear from the people back home because they do listen," she states.

Lawder says that every Congressional office tracks letters received, so they know what is coming in and where it

is coming from. This brings attention to a specific problem and encourages the representative to make it a priority.

"The more people who write, the higher up on the priority list the issue goes," she adds.

Lawder offers recommendations when communicating with legislators. She says LCOs should be specific and get personal. Lawn care operators should tell their representatives about their business, noting items such as number of employees and years in business. An LCO can establish an air of professionalism by describing what kind of professional training they have and stating that their technicians are trained.

"Explain exactly what you

do. For example, an LCO might say, 'I control harmful turf insects, and I service 3,000 homeowners in your district,'" Lawder suggests.

Since organophosphates are at the top of the EPA's list, identify the specific organophosphate products that are used in lawn care or on golf courses. Tell the representative how important it is to have a particular product as a tool, not only to conduct business, but also to control pests.

Finally, drive home the fact that pest control protects the public.

Lisa Shaheen is senior managing editor of Pest Control magazine.

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PLCAA Day on Hill a success



The Professional Lawn Care Association of America's Legislative Day on the Hill was held on July 20-21 in Washington, D.C., with more than 70 lawn and landscape management professionals lending a hand to beautify the grounds of Arlington National Cemetery.

Browner thanks LCOs

Carol Browner, Environmental Protection Agency administrator, commended PLCAA for working closely with EPA on projects such as environmental stewardship, and spoke of a time of continued cooperation between government and private industry.

"The work you are performing today, and the work groundskeepers perform every day here at Arlington National Cemetery, is an honor to this national shrine; to these American men and women who gave their lives

for our country," Browner said.

Arlington Superintendent Jack Metzler; PLCAA President Bob Ottley, One Step Tree & Lawncare, N. Chili, NY; and event coordinator Phil Fogarty, Scotts Lawn Service, Euclid, Ohio, made remarks during the dedication ceremony complete with a presentation of the Joint Color Guard.



Carol Browner: PLCAA members do important work.

"I think PLCAA improved the image of the turf industry by helping a national shrine look better to the average citizen," said Brad Williams of Williams Landscape Services, Inc., Chapel Hill, NC.

"Being a veteran myself, it is a great honor to participate at Arlington," said Gene Pool of Emerald Green/Bolton & Pool Lawn Care, Van Wert, Ohio.

"I feel Arlington is the most sacred ground I'll ever stand on, second to Calvary."



▲ PLCAA members and their families gather at the foot of the Unknown Soldier memorial for a photo before work begins.

◀ Members of Pena Landscaping, Scotts Lawn Care and All Green Corporation at Arlington.

On the day following the Arlington project, lawn care operators met with legislators or legislative aides to discuss crucial issues affecting business operations, most importantly the FQPA.

"Not only have we made progress on issues, but more importantly, we have built a relationship with our representatives; they now address me on a first name basis," said Pool.

Other issues discussed on the Hill were compensatory time vs. overtime pay; contin-

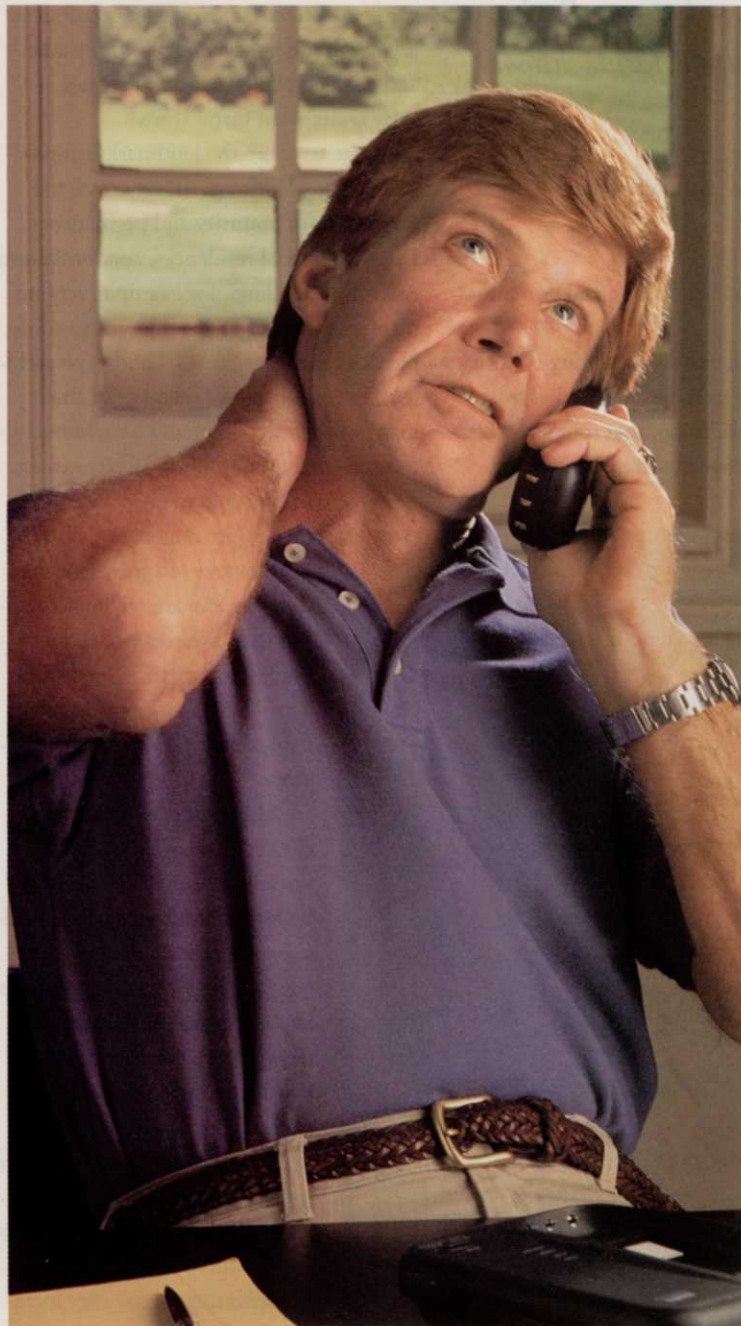
ued funding for the National Turfgrass Evaluation Program; and comprehensive OSHA reform.



Pool: discussed the issues with Ohio lawmakers.

The following companies made financial or in-kind contributions to the Arlington Cemetery project: American Cyanamid; The Andersons; Bayer; Chantilly Turf Farms; Dow AgroSciences; FMC; Georgia Marble, Co.; Jacklin Seed; Lesco; Medalist America; Novartis; PBI Gordon; Riverdale; The Scotts Company; Zeneca Professional Products. **LM**

"Today, I need to be an agronomist, a negotiator, a mechanic and an accountant."



"I flat out don't have time to waste on someone who just wants to sell me a product and then walk away. I expect a lot more than that from the people I do business with. What I expect - and need - is someone who will work with me to figure out what needs to be done and the best way to do it. Someone with the energy, know-how and backing to help me get the most out of the products I buy. That's Terra. They've got the products I need, when I need them. Pesticides. Fertilizers. Seed. Adjuvants. All of the major brands, including their own line of Terra Professional Products. And they back every one of them with the kind of product information, agronomic advice and technical support that I can really use. They even offer soil and tissue testing services. One call and I know I'll have the product I want and the answer I need. In the long run, I know that working with Terra saves me time and makes my life easier. And that's exactly what I expect."



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Large tree transplanting

What any landscape contractor should know before offering this lucrative service to clients wanting 'instant' landscapes.

by TERRY A. TATTAR, Ph.D., Shade Tree Laboratory
University of Massachusetts

Technological developments in tree transplanting now make it possible, with the necessary equipment and expertise, to transplant trees of virtually any size. It is common to read about historic trees being moved to allow road and building construction to be performed on their growing sites.

Indeed, large tree moving specialists using the latest in tree moving technology, including spades, cranes and digging equipment report high degrees of success in routinely moving these very large trees.

The interest of most landscapers in large trees, however, is to provide their clients with the option of utilizing unique nursery stock to create distinctive landscape designs. This article, therefore, will focus on strategies for the selection and successful establishment of large nursery-grown trees in the landscape.

Large tree transplanting is both an opportunity and a serious challenge for the landscaper. Recently, I wrote an article entitled "Increase the Odds of Tree Survival" that was published in the May 1998 issue of *LANDSCAPE MANAGEMENT*. In addition to reviewing recommended tree planting techniques, the risks of transplanting large trees were also presented. Readers not fa-

miliar with that article may find it of interest.

Research on tree transplanting of both large and small trees has revealed at least one general conclusion, that root growth is the key to success after transplanting, re-

gardless of tree size. However, small trees are much more forgiving of our mistakes and neglect, while large trees are not.

Why transplant large trees?

Large trees are the landmark components of any landscape. They create the impression of maturity and permanence. Large individual residences, condominiums and office buildings, for example, require plant materials of substantial size to complement these structures. Landscape architects have realized for many years that many of their designs could be achieved almost instantly with the use of large trees.

In addition, many property owners are no longer willing to wait for trees to grow into mature size and are willing to commit the resources necessary to establish a "mature" landscape. The result is an increasing demand for large trees in the landscape.

Although the cost to the client of transplanting large nursery trees is high there is a high profit potential to the landscape contractor. A landscape contract that involves numerous large trees will be substantially larger than a contract with only small root stock. Despite the extra labor required, the much higher cost of large nursery trees usually makes it worthwhile financially. If performed correctly with positive results, large tree transplanting can be very lucrative for the landscaper.

Recent advances in root growth technology have increased survival rates and shortened establishment times of transplanted trees. For example, the use of root growth stimu-



A hand-dug copper beech being wrapped and strung for shipping

lants and mycorrhizal preparations designed specifically for trees, have aided root growth after transplanting. It is now possible, therefore, to provide the necessary amendments to an otherwise large, healthy nursery tree, together with regular irrigation, to achieve a very high degree of success in transplanting.

The pitfalls

Before going off into the sunset to transplant large trees and reap great rewards, you should recall Murphy's Law "if something can go wrong, it will". There is a lot that can go wrong with large trees, and remember what was stated earlier, that large trees don't forgive us. My general rule is no detail in tree planting is too small and everything you do, or forget to do, counts.

Numerous studies on transplanting large trees have reported that it takes several years, and many as 10 years, for a



Make sure you have enough labor and the necessary equipment when digging, moving and transplanting large trees.

tree's root system to recover completely from transplanting. It can be expected,

therefore, that most large trees will not look as good in the landscape, following

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Bartlett Tree Research Laboratories

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Sugar maple trees, unloaded and ready for fall planting in Sharon, Connecticut

transplanting, as they appeared in the nursery. In my experience most trees appear reasonably healthy during the first growing season as a transplant, but often appear less vigorous the second growing season. One reason for this is that energy reserves present within the tree prior to transplanting allow it to produce a crop of normal foliage the first growing season, but subsequent root loss prevents the transplanted tree from storing sufficient energy reserves for the second growing season. Survival, of course, depends on the generation of new roots, the faster the better.

Most properly transplanted trees will eventually establish. However, there are two problems that can often plague the landscaper, 1) anxiety of clients over a "less than perfect" tree and 2) the one-year guarantee time limit of the nursery. First, the physiological events that follow transplanting of large trees described above need to be carefully explained to your clients. They have to understand that a large tree needs time to establish *before* you accept the job. Second, work out a flexible agreement with the nursery to allow the extension of the guarantee time for their trees.

Once planted, if, in your opinion, a tree is in poor condition and likely to be a source of embarrassment for your company, don't hesitate to have it replaced. However, if the tree is growing slowly but still retains its original form and has solid potential to establish, try to get the guarantee extended. I have found that this can be a win-win arrangement that works out for the client, the landscaper and the nursery.

Another important consideration is that moving large trees is a labor-intensive activity. If numerous trees are to be planted a large crew is needed since trees must be planted as soon as possible after they are received on the job site. The landscaper will likely have to commit much of their personnel and equipment, and perhaps need to hire additional workers.

Since the cost of large trees to the client is high, the expectations of the clients are also high. The landscaper must be prepared to make numerous follow-up visits to the clients to inspect the trees and to allay fears of the client. The whole process from tree selection to final acceptance of the trees by the clients could take several years. Patience and persistence are both required traits for those who transplant large

trees. However, in my opinion, once you commit yourself to transplanting large trees correctly, it is well worth the effort.

How to move large nursery trees

Despite all the technological improvements and all the scientific advances in growing nursery stock, most large trees are still moved in the same manner as they have always been moved, by hand digging. Why is hand digging still so popular? We have always known that careful preparation of the root ball has been most critical for transplant success. Now the experimental evidence exists to support any attempts to preserve as much of the root system as possible. To minimize any injury to roots and changes in the soil texture around them, digging around the roots, root pruning, as well as shaping, wrapping and tying of the root ball, all have to be done mostly by hand. Heavy equipment to move and lift the root ball is brought in primarily after the hand work is complete.

Tree spades must match tree

The development of tree spades has allowed transplanting of many large trees but their use in transplanting nursery trees is limited. A tree spade can dig and transplant a tree into a pre-dug hole very quickly. Many valuable shade trees which were in the way of building and road projects have been saved because they could be transplanted locally using a tree spade at low cost. However, it is very difficult to use a tree spade for long distance shipping. There is also concern about the compressive forces on soil at the edge of the root ball that is dug by a tree spade. But, the most serious concern about tree spades is their use on trees that are larger than the spade was designed for. When a tree spade exceeds its size capacity, much of the root system remains in the soil. The result is a large tree with a very small root system, which will very likely perform poorly in the landscape.

Steps to success

It should be clear by now that success in tree transplanting begins at the nursery. Your first job must be to locate sources of quality nursery stock for the client. They

should then visit the nursery with you and agree on the tree selections you recommend. If they cannot go to the nursery you should take color photographs of each candidate tree for their selection. Once selections are made each tree should be tagged to avoid any future confusion during digging and shipping of your clients' trees.

Your clients need to understand the details of large tree transplanting and how the tree will need time to establish in its new site. Your skill as an educator are critical here. Warn them that health problems sometimes happen and despite all our efforts transplanted trees sometimes die or will not establish in satisfactory condition. Assure them that you have secured replacement guarantees for them if this event should happen. And be clear as to the post-planting care and efforts required by the client.

Discuss extension of the standard one-year guarantee with the nursery before set-

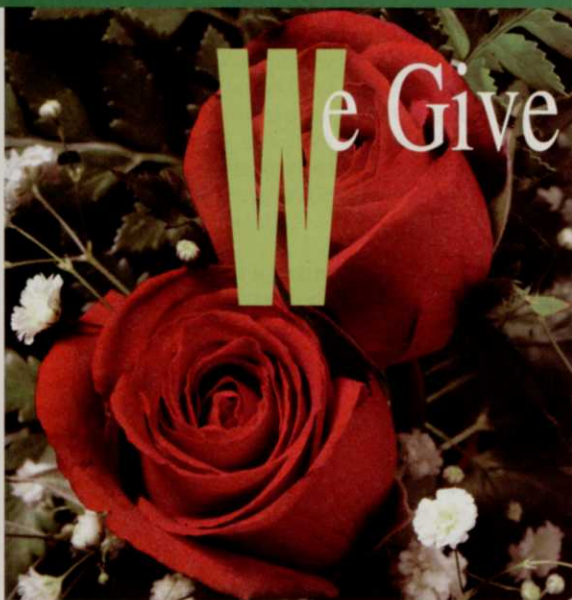
The whole process from tree selection to final acceptance of the trees by the clients could take several years. You need patience and persistence.

ting on a contract for tree sale. In my experience the difficult issue is most likely to be a living tree in unsatisfactory condition at the end of the guarantee period rather than the replacement of a dead tree. As discussed earlier, a flexible guarantee allows the tree more time to establish, protects the client and can often save both the nursery and the landscaper replacement costs. In addition, the nursery often will require assurances that all the trees sold will be irrigated as needed during the guarantee period to protect their investment.

Follow-up care is the final key to success in large tree transplanting. Irrigation obviously will be the most important tree care activity for newly planted trees for several years. Mulch applied over the roots at planting time must be renewed when appropriate to supplant irrigation, suppress weed competition, and most importantly, to keep lawn mowers and trimmers from getting anywhere near the trunk. Check, loosen and eventually remove any ties or supports on the tree several times during the growing season. In addition, monitor and control any insect attacks as well as any tree pathogens that threaten the health of the transplanted tree. Vigilance in follow-up care is essential and will pay off in fewer tree losses and better establishment of transplanted trees.

The author is a professor at the University of Massachusetts Shade Tree Laboratory, Amherst.

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IRRIGATION COMPONENTS

By **CURT HARLER**/ Contributing Editor

Given today's high-management turfgrasses and the need to be frugal with water resources, irrigation has moved from being an art to a science. It involves choosing proper flow rates, maintaining accurate spray patterns, figuring sprinkler placement, and a host of other variables.

The starting point is to consider how much water will be applied at what rate to a particular area. This will vary with soil type, variety of grass being irrigated, and climate. Irrigation rates generally fall into three categories: low, or less than a half-inch per hour; medium, one-half to one inch per hour; and high, over an inch per hour.

Be sure that all components of the system — pump, pipe, sprinkler heads — are sized to deliver the volume of water needed. Note that systems using heads providing half-circle or quarter-circle coverage will have more complex calculations than simple full-circle coverage. For example, a full-circle head must have twice the flow of a half-circle head. If you are not comfortable with numbers and formulas, be sure to have a local dealer or engineer calculate the effect of any changes you make to an existing system before turning it up.

Below are several of the latest and best products available from leading irrigation firms for use in a variety of turfgrass applications.



Valve & Filter Co. offers Hydro-Flo flowmeter & automatic filters.

T. CHRISTY ENTERPRISES
800-258-4583
www.bluglue.com

Fix irrigation pipe quickly and economically with Slick-Wrap from Christy, Orange, CA. Slick-Wrap is a specially formulated water-activated fiberglass tape, and presents a permanent solution to leaks or joints. It can repair all types of pipe, including plastic, metal, copper and poly. The material can be used where traditional solutions have failed and comes in two sizes.

Circle No. 264

AMERICAN GRANBY
315-451-1100
www.americangranby.com

A series of pump start relays for irrigation systems, from American Granby, Liverpool, NY, are available in 2 hp and 5 hp models. They feature a UL and CSA rated contactor with an expected mechanical life up to 30 million operations. Pressure screw terminals accept 24 to 10 AWG wire. The relay is designed to be finger safe to prohibit touching of energized parts.

Circle No. 266

EFCO, INC.
818-362-0292
email: efcoinc@aol.com

Clean water is better for the pump, the pipe, the sprinkler heads and the turf. Efco, North Hollywood, CA produces a full line of basic filtration equipment ranging from the ODIS 1000 through the 4000.

Basic irrigation filter products are available through the company catalog, but all other systems are custom-made to meet the user's irrigation needs. Units can be ordered in thread, flange or victaulic models and are rated to standard 120 psi pressure with a maximum of 150 psi.

Circle No. 265

HUNTER INDUSTRIES
800-733-2823
www.hunterindustries.com

Among the newest irrigation products detailed in the latest catalog from Hunter, San Marcos, CA, is the ICC controller. It provides a powerful water-management tool for larger landscape projects. It can be housed in a metal or plastic cabinet depending on the application.

Circle No. 267

K-RAIN MANUFACTURING
561-844-1002
www.k-rain.com

K-Rain's new Pro-Plus sprinkler offers adjustable and true-continuous 360° coverage. This new sprinkler can be adjusted from 35° to 360°. Both adjustable and continuous circle heads are in one rotor. The Pro-Plus can be set before installation or while the system is op-



Kifco, Inc.'s B140 can irrigate a football field (about one acre) in a single pass.



K-Rain's sprinkler is adjustable.

erating. This product also offers a 5" riser that pops up through even the tallest turf. It can be retrofitted to any other sprinkler, says K-Rain. Circle 268

KIFCO, INC.
309-543-4425
www.kifco.com

Water-Reel irrigation equipment from Kifco, Havana, IL is designed to work efficiently, even under a variety of pressures. Units are portable, easy to install and work unattended. The B130 and B160 feature automatic shutdown for the water motor, a pressure gauge to read machine inlet pressure, a filter to insure clean water for the motor and a 3-wheeled chassis with steerable front wheel and tow bar. The B140 with Booster Pump and SRT100T Big Gun can irrigate a football field (about an acre) in a single pass. Free video on machine setup and operation available from Kifco. Circle No. 269

KING SAFETY PRODUCTS
800-633-0232
www.kingsafety.com

A new line of smaller, faster safety sealed irrigation connectors is available from King Safety Products, St. Charles, MO. Each of three connectors — small, medium or large — handles a wider range of wire combinations. They seal from the inside out and they provide a water-

tight/corrosion proof seal with just a twist. Also available, a complete electrical waterproof, 158-piece connector kit.

Circle No. 270

NIBCO, INC.
209-485-7171
www.turfbubbler.com

The Turf Bubbler Wick Irrigation system from Nibco, Fresno, CA saves up to 70 percent of water consumption as compared to traditional spray systems. It applies water by using a series of outlets in the turf, just under the mower-cut height. Watering times average 35-40 minutes, three times a week. Units have tested effective for tall fescue through Bermuda turf types. System is easy to install at about the same cost and time requirement as traditional systems.

Circle No. 271

RAIN BIRD
626-812-3600
www.rainbird.com

Rain Bird's Golf Division says it's enhanced the wiring to speed up installation of MSC+ and PAR+ satellite irrigation controllers. The controllers are available in two-wire, wireless and stand-alone designs and feature quicker connections between the Relay Output Modules (ROM-8) and the terminal strips on plastic pedestal models. The terminal strips are preinstalled on the rear section of the plastic pedestal and are points of connection for valve wires.

Circle No. 272

RAINDRIP, INC.
800-544-3747
www.raindrip.com

The Aqua-Pop pop-up irrigation assemblies rise up with only six pounds of water pressure to a height five or nine inches above ground cover. The sprinklers provide even coverage and retract back into the ground when not in use. They come barbed or threaded for connection to quarter- or half-inch PVC. All come with Micro Spray Jets in three different spray patterns: full, half, or quarter circle. Also available are pressure-compensating drippers that maintain rated flow rate for 10-60 psi inlet pressure.



Raindrip Aqua-Pop sprinkler

Circle No. 273

SYNCRIFLO, INC.
800-886-4443
www.syncroflo.com

Specifically designed to compensate immediately for low pressure or no-pressure conditions, the SyncroFlow Gator Pumping System is a programmable booster that constantly monitors water pressure within a system. The Norcross, GA firm's systems are available with capacities from 25 to 250 GPM. The Gator is housed in a low-profile, weather-resistant steel enclosure. Digital flow display, remote start sequencing and stainless steel enclosure are among options.

Circle No. 274

TANAKA
253-395-3900
www.tanakapowerequipment.com

The Tanaka TCP-210 centrifugal pump features the Sound Reduction System which significantly reduces engine noise. Standard features from the Kent, WA firm include spark arrester muffler, ceramic seals, ball bearings supporting the impeller shaft, as well as metal impellers and chambers. The TCP-210's 21cc engine pumps up to 31 GPM through 1-inch suction/discharge ports. Two 1 inch hose couplings, one garden

hose coupling, and 10 feet of reinforced intake hose are included. It is covered by a 1/2/5 warranty, providing one-year coverage for commercial use, two for homeowner use, and five on the ignition module.

Circle No. 275

TRANSITIONAL SYSTEMS MFG.
530-751-2610

If your operation calls for linking two or more irrigation controllers on the same pump circuit at the same time, consider the Isolator from Transitional Systems, Yuba City, CA. It offers double protection by locking out all controllers except one. Priced at about the cost of a pump relay, it deals with feedback, polarity and phasing problems. Rated at 24 volts AC, with 5 Amp output, its life expectancy is 100 million operations.

Circle No. 276

VALVE & FILTER CO.
800-759-6554
email:pleasantp@msn.com

The VAF2000 line of automatic water filters in sizes from 10 gpm to unlimited flow with particle removal down to 15 microns. Ideal for landscape irrigation, three types of stainless steel screens are available. Firm also offers a low-cost, highly accurate flowmeter called the Hydro-Flow.



Gator unit is programmable.

It is especially suited for irrigation and monitoring flow to center pivot systems. Made by Valve & Filter, Arvada, CO, it reads accurately down to flows of one-third foot per minute.

Circle No. 277

Think spring now!

Order and begin gathering bulbs and plant material now for spectacular color in your clients' landscapes next spring.

By STEVEN W. GUSTAFSON, Ph.D.

It's September and high time to think about spring color. In fact, it's a great time to complete planning next year's spring flowering bulb and tuber gardens. Start acquiring your bulbs--don't put it off any longer--for this year's fall plantings. These flowers will provide spectacular color, blooming as early as early February in the Desert Southwest, March in the Southeast, April as you head north, and even May as you approach the Canadian border. Of course, it depends on your location, elevation and on any given year's weather.

El Niño dealt a real wild card this year. While crocuses were observed blooming in Oregon's Willamette Valley before the end of January this year, there were reports of snow in May near Redding, CA.

Besides beautiful, early color, there's another good reason to start planning your purchases of blooming bulbs now. They're like spring insurance. They can provide a good transition in ornamental beds when it's too wet, or otherwise inclement, to plant your spring and summer annuals. They can

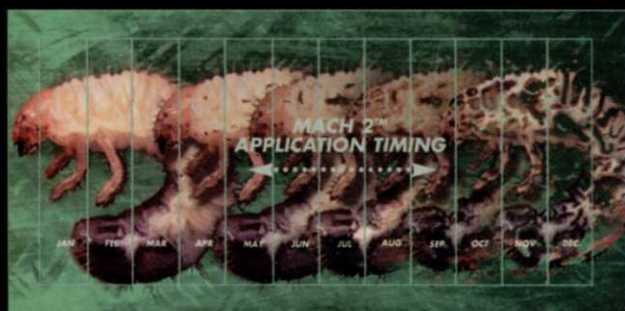
save you from trying to explain to your clients why, during an April with more than six inches of rain, you don't have your annual color yet.

It's likely that if your company is known for providing color, you're already sold on the benefits of spring bulbs, so let's talk choices. Growing up in Oregon, I always awaited the first blooming snowdrops (*Galanthus nivalis*) in February as a sign that I might once again see some blue in the sky. Snowdrops were quickly followed by crocuses, tulips, daffodils, narcissi, hyacinths and other early bloomers. But, not all of these flowers are



Who wouldn't welcome this colorful spring display featuring a Kale Feather Mix, Tulip Goldader, and Pansy Crystal Bowl Mix? (Photos courtesy Post Landscape Operations, a division of Post Properties, Atlanta)

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A well-thought-out planting of spring pastels, including Viola Lemon Chiffon, Tulip Attila, and Kale Winterbor.

early spring bloomers. Late-blooming varieties of most, including tulips, are also available in the trade. And pleasing to clients.

In between, there are nearly endless varieties of Asiatic, Day and Tiger lilies to give summer-long blooms from bulbs. For each genus of flowering bulb there are many different cultivars providing choices of color, height and textures. It's up to the discerning designer to make the best choices for their appli-

cation. Your local nurseryman can be a good source of information for the varieties and bloom dates for your region. Of course, studying flower supply catalogues is a great way to learn your plant material as you wind down during the evening.

Flowers from bulbs are an often overlooked source of color in commercial and institutional landscaping. One reason for this is that we, as commercial landscapers, are often entrenched in our usual paradigms (or stuck in a rut). We think of bulbs only in terms of large, mass plantings and are frightened by the potential cost of thousands of bulbs.

There are two fallacies we should rethink. First, what is the true cost of 'color' over a three-year period? If we compare the cost of one or two crops of annuals per season relative to the cost of bulbs, which supply several years of color, the cost difference over time is probably negligible.

Second, are mass plantings the only legitimate use of flowering bulbs? Of course not. We can use bulbs in smaller concentrations to provide interest in a mixed planting. Bulbs are especially effective when used in this manner along a portion of a free-form border. They are also effective in clumps along a foundation as a backdrop to shorter annuals.

Early spring color can also be provided by trees, shrubs and even over-wintered annuals. A sure sign of spring are the magnificent white blooms of ornamental pears. In Arizona, evergreen pear (*Pyrus kawakamii*), is popular, while in the Southeast it is the Bradford pear (*P. Calleryana*). Here in west Tennessee, flowering dogwood (*Cornus florida*) and redbuds (*Cercis canadensis*) in bloom are two of the tell-tale signs that spring has arrived. Both are prevalent in both natural and man-made landscapes. Serviceberries, crabapples and cherries follow soon after.

While I lived in Tucson, we eagerly anticipated the brilliant yellow blooms of *Cassia artemesoides* in late January as a sign that 'winter' was on the wane. I liked to plant yellow cassias in front of purple

Bulbs are effective when planted in clumps along a foundation as a backdrop to shorter annuals.



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Video brings bulbs to the screen

For help in choosing your bulbs for next season, you might want to contact the Netherlands Flower Bulb Information Center, Brooklyn, NY, for your copy of the "Passion" video.

"Passion" is a fast-paced, entertaining look at the Dutch industry famous for its 400-year love affair with bulbs.

The 18-minute video is shot in the style of an MTV video, and captures the spirit and style of the Dutch bulb business, ranging from the history of bulbs during Holland's 17th century "Tulipmania" to modern techniques of tissue culture.

The video is the result of two year's shooting all over the Netherlands, and features sweeping aerial views of Holland's famous tulip fields, time lapse photography of bulb flower growth, and other colorful images and interesting information.

Copies of the video are available from US or Canadian bulb suppliers or from the International Flower Bulb Center in Holland (fax: 011-31-2525-226-92). For North American viewing, request tapes in NTSC American format. Cost is \$13 per tape, plus shipping/handling.



This grouping of spring flowers provide curb appeal color, and add interest to this corner.

Dalea versicolor which was usually in bloom since the previous November. This made a very nice combination.

Another early blooming desert favorite of mine is Texas mountain laurel (*Sophora secundiflora*). Analogous to cassia in the Southwest, yellow blooming forsythia in the North and Southeast is a sure sign that spring is near. Other temperate early blooming shrubs include bigleaf rhododendron, *Pieris japonica*, *Lonicera fragrantissima* and azaleas.

In Tucson, with the onset of warmer weather, fall planted pansies, snapdragons and petunias would also quickly revive. These were soon joined by many native desert plants and perennials, including desert marigolds and zinnias, brittlebush and many desert grasses. The Southeast can also enjoy an early revival of fall planted pansies and snapdragons. These often can accompany the early flowering bulbs in bloom following a mild winter. These all can serve as beautiful ground-level color.

The take home lesson is: it's the right time to plan for next spring's blooms. Trees, shrubs, perennials, bulbs and annuals can all contribute to a knockout early bloom. Plan now, plant this fall, and next year you and your clients can enjoy the bloom of your labor. **LM**

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

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September 1998

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 - 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) _____

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 <input type="radio"/> A Mowing | 45 <input type="radio"/> F Turf Fertilization | 50 <input type="radio"/> K Paving, Deck & Patio Installation |
| 41 <input type="radio"/> B Turf Insect Control | 46 <input type="radio"/> G Turf Disease Control | 51 <input type="radio"/> L Pond/Lake Care |
| 42 <input type="radio"/> C Tree Care | 47 <input type="radio"/> H Ornamental Care | 52 <input type="radio"/> M Landscape Installation |
| 43 <input type="radio"/> D Turf Aeration | 48 <input type="radio"/> I Landscape/Golf Design | 53 <input type="radio"/> N Snow Removal |
| 44 <input type="radio"/> E Irrigation Services | 49 <input type="radio"/> J Turf Weed Control | 54 <input type="radio"/> 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 <input type="radio"/> 1 Aerators | 62 <input type="radio"/> 8 Herbicides | 69 <input type="radio"/> 15 Sweepers |
| 56 <input type="radio"/> 2 Blowers | 63 <input type="radio"/> 9 Insecticides | 70 <input type="radio"/> 16 Tractors |
| 57 <input type="radio"/> 3 Chain Saws | 64 <input type="radio"/> 10 Line Trimmers | 71 <input type="radio"/> 17 Truck Trailers/Attachments |
| 58 <input type="radio"/> 4 Chipper-Shredders | 65 <input type="radio"/> 11 Mowers (reel/rotary) | 72 <input type="radio"/> 18 Trucks |
| 59 <input type="radio"/> 5 De-icers | 66 <input type="radio"/> 12 Snow Removal Equipment | 73 <input type="radio"/> 19 Turfseed |
| 60 <input type="radio"/> 6 Fertilizers | 67 <input type="radio"/> 13 Sprayers | 74 <input type="radio"/> 20 Utility Vehicles |
| 61 <input type="radio"/> 7 Fungicides | 68 <input type="radio"/> 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
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- 02 255 Landscape Contractors (installation and maintenance)
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- 06 275 Landscape Architects
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- 17 330 Cemeteries/Memorial Gardens
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- 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) _____

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?

- 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 Aerators 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

Thunderstorms marched across Lake Erie the morning of August 25 booming and cracking and raking Cleveland with curtains of rain.

The crew at Pine Hills, probably like crews at other nearby courses, spent the morning on mop-up duty. Four or five inches of rain in a couple of hours is a lot of water. There would be no golf at Pine Hills this particular morning. That's one reason we at LM could spend a few minutes chatting with its superintendent, Brian Vickers. The LANDSCAPE MANAGEMENT staff had taken a day off in July and played Pine Hills, and met briefly with Brian afterwards. That's why we called him: we wanted to know more about him and the course.

Pine Hills GC is located about 10 miles south of us near Hinckley, Ohio, a growing but still-quiet community that takes some delight in celebrating the return of the turkey buzzards each spring. The course has seen lots of thunderstorms since its opening in 1957.

So has Vickers, now in his 28th year there.

For a public golf course, Pine Hills is a gem. It's one of the best public courses in north-central Ohio. At 6400 yards it's not particularly long, and if you strike the ball straight and play intelligently, you can score. Its rolling tree-lined layout offers few surprises and no tricks. It provides what every fine public course should—18 fine holes of golf at an affordable price.

Brian Vickers' story is undoubtedly like many other superintendents who started working on a public golf course while they were in high school, and found a career.

"I started at the very bottom just like everybody else—hand-mowing around trees, raking bunkers, cutting cups. I had to work my way up," he says.

Unlike many of his col-

GOLF

PAGE 4 G ▶

Valhalla readies for another PGA

PAGE 8 G ▶

A plan for lake purity

PAGE 16 G ▶

Myopia Hunt Club restored

PAGE 20 G

IPM at Collier's Reserve

PAGE 24 G ▶

Birkdale team a hit at British Open

The grass is greener here

leagues, however, he stayed put. To Brian the grass never looked any greener on any other course in any other part of the country.

"I've been fortunate because I've had some excellent mentors and I could follow in their footsteps," he says. "I've also have a good crew (his assistant is Trent Wash), including the young people here each season. They are either in high school or college, and we get some turf students from Wooster (Ohio) too."

Vickers (like most supers) doesn't seek publicity in spite of the fine job he does. He focuses on keeping Pine Hills' turfgrass first rate, and particularly its predominately *Poa annua* greens. His longevity at the course suggests that he does just that. **LM**



Vickers: good mentors help along the way.

[SUPERS ON COURSE]

Ohio supers on the move

Andrew Knappenberger is director of golf maintenance at Quail Hollow. He was last at the Homestead in Hot Springs, Va.

Peter Bursan is new superintendent at Valley View Golf Club in Akron.

Craig Kachline is assistant superintendent at Canterbury Golf Club. He was last at Raleigh CC.

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Recapturing PGA magic

How superintendent Mark Wilson and his staff plan to make Valhalla Country Club a site worthy of its second PGA Championship in five years.

By RON HALL/Managing Editor

Valhalla Golf Club bustles with activity for its second ever PGA Championship—and the tournament is still two full years away! The 13-year-old Club, located on a quiet country road just east of Louisville, KY, hosted the event in August 1996, and it will again in August 2000.

"I told my crew that I'm excited because I feel

pare—both its golf course and its facilities—for the huge galleries and the incredible media scrutiny of a Major.

Wilson and his crew—indeed, the entire club staff—want to leave as little to chance as possible in making their second PGA Championship every bit as successful as their first.

A big success

That 1996 event, played in near perfect conditions, showcased an immaculately groomed Valhalla that brought out the best of the world's best golfers. In that tournament, Mark Brooks broke the hearts of many Kentuckians in the gallery when he sank a 4-foot putt on the first playoff hole and finished off Kenny Perry, from nearby Franklin, KY. The Kentuckian had driven into the rough on the first playoff hole giving Brooks the opening he needed.

About 30,000 spectators stood shoulder-to-shoulder along the mounded, 540-yard 18th to witness the finish, and more are expected in 2000.

"The thing that strikes you is when you stand outside the club house and see the television towers and the helicopters flying over, and everybody being interviewed," says Valhalla General Manager Mike Montague. "You realize at that point that it's a little bit too late to fix anything. If you know where you want to be in August of 2000, you have to start doing it now."

Valhalla, and particularly the golf course maintenance crew, scored a virtual touchdown hosting its first PGA Championship. But, then again, Mother Nature smiled on Louisville all the 1996 season, concedes Wilson, a vigorous, friendly man who's seemingly always on the move within the



The maintenance staff at Valhalla will concentrate on improving the roughs for the 2000 PGA.

440-acre golf club.

like our preparations for the tournament really begin this fall," says Mark Wilson, CGCS, now in his 11th year at Valhalla.

The PGA Championship is one of the so-called "Majors" along with The Masters, The U.S. Open, and the British Open. These are golf's premiere annual tournaments. A host club needs months to pre-

"The golf course was so good that I sat here and wondered, how in the world did we do that?" he says almost wistfully. "It was one of those years where everything that we did worked."

As an example, less than two months before the tournament he seeded a large spectator parking area

with bermudagrass. Mother Nature obliged even then. "We got some rain and the bermuda took off," he recalls.

Conditions can change

The Eastern Kentucky University graduate is not counting on such wonderful cooperation from the fates in the year 2000. In fact, this season keeps reminding him that conditions can change, and fast.

"This year's been difficult," he says. "We had a very mild winter. It started raining in the winter and it seemed like it wouldn't stop and we had lots of weed and disease pressure. We couldn't get the pre-emergent down just right; the roughs aren't nearly as good as we'd like them."

While the presence of weeds in his fescue roughs is disconcerting, and the Club's wildflower areas didn't pop with as much color as he would have liked (he's considering sterilizing some of these areas with Basamid and replanting wild flowers, perhaps even annually), the course itself is in good shape.

Even so, there's plenty to do.

Late this summer he and his crew began attacking bentgrass encroachment in the intermediate roughs lining the Pennway fairways. He estimates that he and his crew will take out and resod a total of about three acres of contaminated bluegrass.

"The guys were kind of worried about that much resodding, but we'll probably only do about 500 yards a week on the front nine and 250 yards a week on the back nine," says Wilson. "When you put it in that context, that's not a lot of sod."

Greens being improved

Thinking even more long-term, Wilson last season began improving Valhalla's Penncross greens; but gradually. He planted and carefully evaluated several of the newest bentgrass varieties in his 10,000 sq. ft. turf nursery. For comparison's sake, he established them beside the strongest bentgrass plants he gathered from the course's segregated Penncross greens.

Wilson realizes that he can't completely rebuild or strip Valhalla's greens; the Club is open to its 230 members year-round. Instead, he's been inter-seeding the greens with Penn G-2.

Several factors will determine the success of this changeover, he believes: failure to be aggressive enough in the process, timing of the seeding (about



Mark Wilson takes a well-deserved breather with his friend "Chase," one of the regulars at the Valhalla Golf Club maintenance building.

the third week of September for Louisville), and competition from existing turf. Proper preparation is crucial, he says.

The first step is to purposely thin Valhalla GC's Penncross greens. His crew will do this by lowering the height of cut and frequency. (Typically the greens are mowed at less than .125 inch.) They will also be rolling the greens. Then, about three days prior to seeding, Primo is applied to the greens, 2/10th ounce per 1000 sq. ft.

The actual renovation process involves verticutting the green two ways, then aerifying twice with half-inch tines. He then mixes the Penn G-2 seed with Milorganite in a cement mixer, and makes one application of the mixed seed/fertilizer. After top-dressing, brushing and spiking the greens, he seeds a second time. Then the green is gone over with vibratory roller, followed by the third and final application of fertilizer/seed, a total of 1 lb. of bentgrass seed per 1,000 sq. ft. The process takes about two days, he says.

After the seeding, the greens are kept moist, and aren't mowed for about a week. The bentgrass seedlings grow rapidly after being fertilized once a



Mark Wilson says that Valhalla GC is not heavily bunkered, but the 41 sand traps—including one new one—are strategically placed to capture the errant shot.

PGA highlights

Privately developed, the Valhalla Golf Club is now partly owned by the PGA of America, headquartered in Palm Beach Gardens, FL. Superintendent Mark Wilson says one of his crews most important tasks in hosting the PGA Championship will be establishing areas for the hospitality and media tents, for parking, and providing other logistical support in anticipation of the huge galleries.

Besides its Championship and Senior Championship, the PGA is responsible for the Ryder Cup, golf's premiere international tournament, and PGA member tournaments. Here are some PGA highlights:

1916, PGA of America formed.

1916, First PGA Championship at Siwanoy Country Club in Bronxville, NY, and won by British-born professional Jim Barnes.

1920s-30s, Walter Hagen wins 5 PGA Championships.

1940, Byron Nelson defeats Sam Snead PGA crown.

1942, Snead holes 60-foot chip shot for birdie on 35th hole and PGA crown.

1980 Jack Nicklaus wins fifth PGA crown, ties Walter Hagen.

1999 PGA Championship at Medinah Country Club, Medinah, IL.

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So far, so good

"I'm not sure how successful I've been so far," admits Wilson. "Our greens have been fine so far this year. Even if it isn't as successful as we'd like, it'll still be a good renovation program. You've got to tear up the bentgrass once in while because bentgrass has a tendency to get thatchy and puffy."

Next summer, Wilson and his crew (14 fulltime, 6 part-timers, and 6 or 7 interns) will begin fine-tuning the course's 41 bunkers, and making whatever other major final preparations the course will need.

Wilson sees himself as being both a leader and a mentor or coach. He seems to be confident enough of his abilities to delegate day-to-day responsibilities to three assistant superintendents.

"My job as a superintendent also means I'm a personnel manager, purchasing agent, and public relation expert," says Wilson. "I'm the orchestrator, and try to bring it all together. But sometimes I'm a substitute too, and I have to fill in with the daily chores."

Wilson says preparing for a major tournament like a PGA Championship is stressful, but it's a great motivator too.

"If I could package the excitement that flows through our crew just before and during the tournament I would be a millionaire," adds Wilson. "For me and my crew it's like being in the that state Little League Championship we never got a chance to play in.

"Actually, I guess hosting a PGA Championship is like being in a World Series Championship." □



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A plan for lake purity

Ponds and lakes are often mismanaged, lose their aesthetic value and eventually become worthless. Here is the latest on the dynamics which affect water quality to help you put together your program for lake and pond purity.

By HEATHER L. SCHWABE

Organic nutrients containing phosphorous and nitrogen are essential to plant life in lakes and ponds, but you must keep the nutrient level in an ideal balance to avoid severe weed and plant growth.

Aerobic bacteria will metabolize organic nutrients in the water making them unavailable for vegetation. When a pond is in balance, it has sufficient levels of oxygen in the water to allow the bacteria to breathe and digest these nutrients. If the nutrient levels rise, the bacteria cannot consume the nutrient burden and nutrient levels will swell. The result is dramatically increased plant growth, algae blooms and organic sludge build up.

Nutrients come from several sources: bottom sludge, dead organic material and fertilizers. The greatest source of nutrient in a lake is often found in the bottom sediment and dead organic matter. Algae typically has a two-week life cycle; when the algae die it sinks to the lake bottom forming an "aquatic compost pile." Over time, the amount of available nutrient in the water feature grows at increasing rates. Sediment build up also has significant impact on a lake's capability to store water. Research shows that sediment build up will occur at rates of 1 to 5 inches per year in temperate climates and these rates can be almost double in subtropical regions. Using that equation, a lake will lose 80,000

gallons per surface acre of storage capacity per year, and so begins the gradual consumption of the pond by organic sludge.

Fertilizer leaching into your pond or lake also contributes to nutrient loading. Two to four percent of the fertilizer applied near a lake can leach into the water. Fertilizer, which contains phosphorus, has

Temperature layering (thermal stratification) occurs when the sun warms the surface water of the pond, causing it to become less dense. This density and the varying water temperatures in the pond cause the water to become separated, or stratified into layers. The colder water settles on the pond bottom and the water gets warmer in layers as you near the surface. Certain solids will get suspended in these layers creating poor clarity. Because the surface layer will remain warm, algae growth thrives while the cooler water temperatures below help inhibit aquatic weed and algae growth.

Sunlight also plays a part in the aquatic ecosystem. In more shallow bodies of



The water in a lake should be turned over four to seven times a day.

been identified as the greatest single contributor to aquatic weeds and algae growth. Orthophosphorus, or dissolved organic phosphorus, has been identified as the number one limiting factor in aquatic vegetative growth. Levels greater than .05 mg per liter are considered high. When phosphorus levels exceed .1 mg per liter, nuisance populations of algae and aquatic weeds will abound.

water, the sunlight penetrates to the water bottom. These shallow areas are typically warmer which can accelerate plant growth. Green plants will only photosynthesize (grow) in the presence of sunlight. Aquatic weeds, algae, sludge build up, odors, and poor clarity are the most common problems and often, these problems are interrelated. There is good news however. If you address one problem, most likely the other

problems will systematically follow suit.

When considering lake management practices, it is important to keep in mind proactive and reactive or preventive and fixative strategies. Preventive strategies address the causes of problems while fixative strategies deal with the symptoms. Since many of the visible symptoms of poor water quality take a long time to develop, developing a proactive water management program is advisable. Most of the proactive approaches are biological tools which have a positive impact on the environment. Let's look at the proactive, preventive solutions first.

We must address nutrients in two ways:

- ▶ limiting nutrient run off into the water feature
- ▶ supporting aerobic digestion which limits the available nutrients in the water itself.

You can implement methods which will help divert the flow of nutrients into a lake. The goal is to keep the nutrients from reaching the water and if it does, keeping it from the open water zone.

One control method is the **introduction of wetlands** at the areas where water or runoff flows into the pond. The wetland area will slow the progress of water into the pond, reducing erosion and flooding problems and the intensive plant growth in a wetland area will act as a nutrient sink for the high nutrient water flowing into the pond. The plants in the wetland will actually absorb nutrients before they can reach the open water zone. This can result in a higher water quality due to lower organic nutrient levels. By creating a "no-fertilizer" zone from 5 to 10 meters (15 to 30 ft.) around the lake's perimeter, you will again help limit nutrient runoff into the water.

Depth and temperature are two key factors which we have reviewed. This makes the shoreline zone the most difficult area in the water feature to control or manage. When sunlight penetrates to the bot-



If the nutrient levels rise, the bacteria cannot consume the nutrient burden. The result is dramatically increased plant growth, algae blooms and organic sludge build up.

tom, the water can become very warm, and nutrient levels are usually very high. Typically this is where you will see aquatic weed and algae problems.

Lining the pond's bottom can be an effective tool in many situations; to help eliminate bottom rooted weeds, to improve clarity when the soil is easily mixed into suspension, and in sandy soils when the earth will not hold water. There are many different types and grades of liners depending upon the use. The most common is a PVC liner. Use of a UV resistant liner is suggested when water levels may drop or when sunlight may be able to penetrate the bottom.

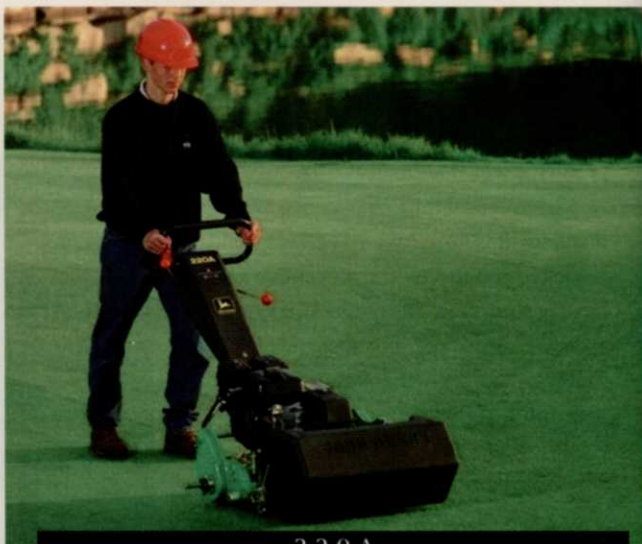
Aeration, fountains, and waterfalls are all common tools for lake management. All add oxygen and mixing in varying degrees. By adding oxygen the process of aerobic digestion is supported, lowering the nutrients available for algae and weed growth while helping to retard the growth of or even reduce the sludge bed. The water in a lake should be turned over 4 to

7 times a day. While waterfalls and certain types of fountains are helpful, they do not have sufficient mixing and aeration capabilities to be used as stand alone tools. Supplemental aeration and/or chemicals must be used.

Aeration is the most effective, long term pond and lake management tool. There are three types of aeration systems; surface spray, horizontal aspirators, and bottom diffusers. Each has a set of strengths and weaknesses which need to be considered. Surface spray aerators are the best choice when the pond is less than 12 ft. in depth and irregularly shaped. The better units add over 2 lbs. of oxygen per HP per hour to the water and add 2 mg/l of oxygen at depths over 10 ft. The circulation rate produced by aeration breaks through the thermal stratification and distributes oxygen to all parts of your pond. By pulling cooler water to the surface of the pond, algae growth is slowed and the water's pH level is lowered. This process helps reduce odors. Remember to check



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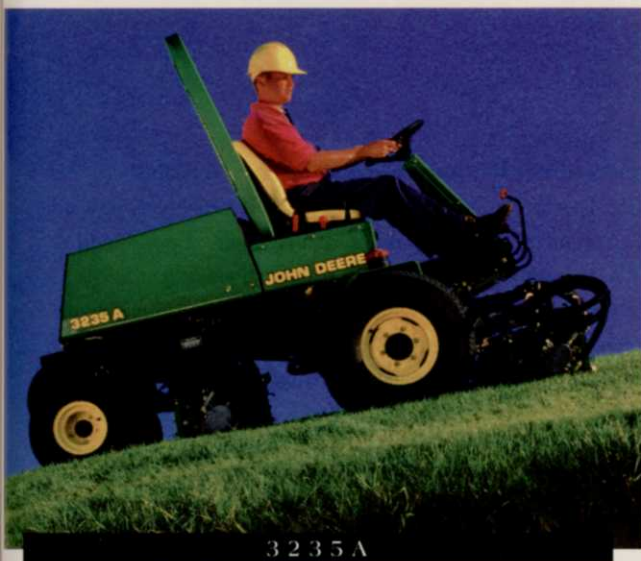
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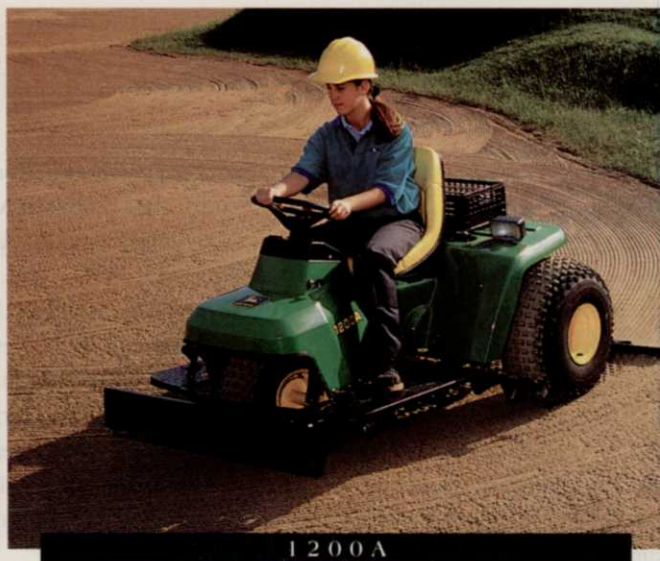
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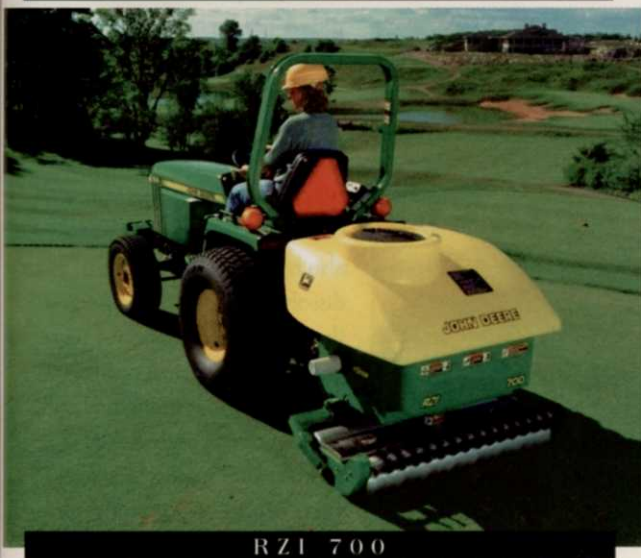




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Bottom diffused aeration is extremely effective in water 12 ft. deep or deeper. As the bubbles rise to the surface they transfer into the water column and circulate. Since the bubbles rise at roughly 1 ft. per second, pond depth is critical. These types of systems require 12 ft. in depth to operate at peak efficiencies. Studies indicate that for every three foot decrease in depth, the systems relative efficiencies drop 50 percent. Contrary to popular belief they are relatively ineffective in less than 8 ft. in depth and should not be used in less than 5 ft.

Aeration is economical, supports the natural ecosystem and, most important, attacks the source of the problem - *continuously*.

Ozone is a relatively new approach to lake water quality management. They are especially good when clarity and foul odors are an issue. Corona discharge systems have 10 times the output of UV systems and have much lower operational costs. Regardless of the type of ozone system you choose, insure that the system is supplied with an oxygen generator, a certificate of output (in either grams per hour or pounds per day) and effective mixing system such as a diffuser system. Please note that aeration tubing will be ineffective in more than 6 feet of depth.

Another option available to you are lake dyes. Available in powder or liquid form, lake dyes prevent the sun's ultraviolet light from penetrating the water. Aquatic plants can't photosynthesize without ultraviolet light. Dyes are a good tool

to use when you have bottom rooted weed or benthic algae problems. Most dyes last six to eight weeks and should not stain signage, turfgrass or waterfowl. It's important to use products which have EPA or government approval. Lake dyes can only be used in lakes that have no discharge.

Chemical control is a common method of pond and lake management. Herbicides are applied to the pond to kill the algae and plants. This method is quick and ef-



Aeration supports the natural ecosystem and, more importantly, attacks the source of the problem continuously.

fective but may require the assistance of an aeration system to support its efficiency. A correct pond and lake management solution counters each problem in an effort to maintain the natural ecosystem of the pond. Because some plant life is essential to a naturally balanced ecosystem it is not advised to take a 'chemical only' approach. As we mentioned previously, many pond and lake management approaches will incorporate a few different methods of management. Many people believe that because it is not a natural treatment it should be avoided. However, chemicals are essential in some circumstances. Because chemical application requires permits to apply, you should discuss this option with an aeration systems or pond and lake manage-

ment specialist before you begin.

Bioaugmentation is a relatively new advance in the management of ponds and lakes. Aerobic bacteria are added to the lake which compete with the algae for nutrients. The bacteria make the nutrients unavailable for algae by locking them up in their own cell mass. In addition, they reduce suspended solids and improve water clarity.

Bioaugmentation should only be considered in ponds with a neutral pH. A pH higher than 9 will kill the bacteria. Temperature is also an important factor. In cooler waters, the metabolic rate of the bacteria slows, making it an ineffective alternative. The pond or lake must also have adequate levels of dissolved oxygen to support the increased demand for oxygen the bacteria will create.

Each pond is individual and will require its own special mix of water quality management efforts. What works for one pond might not be suitable for another. A proactive ap-

proach to water quality management is ideal, before a problem occurs. Once your pond or lake experiences water quality issues, it can quickly become a foul smelling, algae ridden eyesore. By remembering the factors which impact water quality you can make use of the proper management techniques to manage lakes and ponds, making them beautiful and functional for many years to come. □

The author is a marketing assistant for Otterbine Barebo, Inc., Emmaus, Pa.



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IRRIGATION™

Sweetbriar GC grows

New holes, a new clubhouse, a housing development and plans for better turf management give Bill Prest plenty to do at this Ohio course that's looking for an upscale image.

by TERRY MCIVER
Editor-in-Chief

Bill Prest was very relaxed as he moved back and forth in his swivel chair in early May.

By his calm demeanor, you wouldn't know he was a) new at Sweetbriar Country Club; b) was soon to begin a major construction project and c) was about to begin work on renovating tees and greens.

That must be what 32 years experience does for a superintendent. He may be faced with a daunting new project, but the time put in before that gives him an edge in the confidence department.

Prest began at Sweetbriar CC, Avon Lake, Ohio this year after 32 years at Springvale CC in nearby North Olmsted. He was a do-it-all superintendent at Springvale, to the point where he was even running the banquet facility. His total

management experience will come to the fore at Sweetbriar, but his priority will be the course reconstruction and grounds management.

The plan: golf and housing

Prest and owner/builder Barry Koff have 300 existing golf course acres in use for Sweetbriar's present 27 golf holes. Another 200 acres surround the golf course. This fall, construction will begin on the surrounding acreage to build six new, upscale holes, which will be incorporated into the original 18.

"The first redesigned six holes will be up this fall. Next fall, we will reroute the original 18 and incorporate the new six into it, with a net loss of nine holes."

"Then we start construction on a housing development in conjunction with what will by then be a new, 18 hole golf course," says Prest.



Tee renovation begins with core aerification, followed by heavy sand topdressing.

The entire project is expected to last at least three years, and the course will be open during construction. The plan is to make it one of the area's better public facilities, with a new, upscale look, with wall-to-wall irrigation; bent-grass greens, tees and fairways; three or four heights of cut.

"A true country club style of design," says Prest, the kind of look he was successful at bringing, here and there, to Springvale.

But the new Sweetbriar will be very playable and, affordable, though Prest does expect to lose some players with a hike in greens fees.

A 600-seat banquet facility will also be built, to be catered by a major Cleveland restaurant chain.

A local contractor is handling the earth-moving, Prest's crew will do shaping.

"I've never been involved in a total construction project, so I'm looking forward to it."

Prest is trying to get Audubon Cooperative Sanctuary certification during construction.

"We're going to look at environmental aspects right off the bat. In the new construction, some of the existing holes will stay, however, they will be reconstructed; we do have some very large pin oaks and white oaks we are going to try to save.

"I have some background there in developing some sensitive areas in construction zones which will be kept free of large equipment. I think trees are one of the most highly neglected resources on any golf course. I think it's changing at high-end courses, but a low-end facilities not much thought has been given to tree management."

Prest says a new tree care program by The Davey Tree Expert Company will be



Prest: being outdoors is where it's at.

a beneficial addition to the course's tree care plan.

New approach

Prest says his transition at Sweetbriar has been fairly easy which is fortunate since he came on with different ways of doing things and saving time, and since relatives of the ex-superintendent continue to work there.

Prest is a hands-on manager, who is getting his people used to his style and showing them just what he

wants done and how.

"Some of the new programs I've developed have been well accepted," he says.

"I changed the mowing philosophy. They did a lot of the mowing with high school and college kids. This meant that in spring and fall the remaining staff put in a ton of hours. We're trying to convert the mowing to retired people. That includes greens, tees, fairways and approaches and roughs."

The time they spend is minimal: greens require 21 hours/week; fairways require 18 hours/week; roughs require two on 40 hour weeks.

Prest seems to have a handle on employee retention. He's a 'nice guy' who knows how to talk to people, and knows the importance of mutual respect.

"There are a lot of kids out there that love to do this type of work, it's just a matter of finding them. You go through quite a few high school kids to get a crew."

The summer Sweetbriar

crew totals 22, and 10 are full time. Prest plans to go to a 30-person payroll by the end of 1999.

Prest's full plate is easier for him to handle since he now has a clean-cut job description: "golf and grounds, period."

"There's lots to do here, and I no longer have to deal day to day with the public aspect of other management duties."

To speed up the greens, Prest began a four-time/year aerification program. Also, he's been topdressing greens lightly each month, and he rolled the greens in spring. The standard aerification program combats compaction; same thing for tees.

"We're trying to develop a more aggressive stand of bentgrass."

Before this season began, Prest wanted



Trees that are to come down are marked with stripes.

to make "good first and last impressions" on golfers playing each of the Sweetbriar nines. Tees were thus overseeded with perennial ryegrass and Penncross at 2 lbs./1000 sq. ft. The fairways on the first and last holes of all three nines were aerified first, and seeded with ryegrass at 5

lbs./1000 sq. ft. The ryegrass mix is a 39/39/18 mix of Legacy II, Linedrive and Assurance, purchased from Lesco. Penncross bentgrass is Prest's choice for the greens and tees.

He knew what he wanted

Prest's golf course career began when he was in high school, working part time at Springvale. After that, he tried an indoor job that lasted 20 minutes.

"I signed up to go to a community college, and applied for a position as a night porter at Fisher Foods. The first night I got in there, they start showing me what to do; I was there 20 minutes and left.

"I went back to Springvale and told course owner George Biddulph I didn't have money to go to college. George ended up sending me to University of Massachusetts."

Prest has participated recently in the RISE/PLCAA/GCSAA "Ambassadors" program, which means to educate the public about the benefits of turfgrass and pesticides, and bring favorable attention to the expertise of Green Industry professionals.

"It's fun, it really is," says Prest of the Ambassadors program. "I've probably given 15 to 20 talks, and my experiences have been very, very positive."

Prest is one of a growing, but still small group of Green Industry "ambassadors". These golf superintendents and lawn care professionals speak in front of civic and school groups within their communities. They explain their professions, and talk about products and equipment they use.

Prest says audiences seem to be gen-



Tree damage from mowers helps explain why it's better to have one person at the wheel regularly.

uinely interested in his message. Even so, he acknowledges that some of the people he's spoken to "have some real concerns" over the use of pesticides.

"These concerns are usually unfounded, but they're there," he says. "You have to be prepared for this. Most people don't realize the education a superintendent has," says Prest.

"We're not all just 'grass cutters'".

Prest is managing the Sweetbriar course to improve it, not just to keep it in a holding pattern until new construction is completed. After being a general manager, he says it's good to get back on the course. □

Green, tee program

Bill Prest plans aerify and lightly topdress the Sweetbriar greens four times annually. Greens will be topdressed apart from aerifying another five times per season to keep them "tabletop smooth."

He wants to aerify and topdress tees at least twice during the playing season. Topdressing is done with straight masonry sand.

Par 3 tees are aerified a little more often because of heavy iron club use off the tee.

"On tees, I'm concerned about layering. So we core aerify the tees, leave the plugs, topdress, verticut, chop the plugs and mix in the sand." says Prest.

When aerifying and topdressing, Prest takes the opportunity to overseed tees with bentgrass and ryegrass to convert to bentgrass in three years

The pushup tees are heavy clay, so they must be careful not to end up with a layering and drainage problem

Bill uses Penncross because he believes it is one of the most easily established and one of the most aggressive varieties available.

Prest says the LESCO ryegrasses are three of the most drought and disease tolerant ryegrasses available

"With 60,000 rounds per year you need something that will fill the divots"

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A worthy past, a bright future

Superintendent Dave Heroian used today's knowledge and products to revive the charm of the historic golf course at the 103-year-old Myopia Hunt Club.

Dave Heroian has conflicting priorities as golf course superintendent of Myopia Hunt Club in South Hamilton, MA: bring the technology he uses on his 103-year-old course into the 21st century while taking the character of the course back to the 19th century.

"When I arrived at this course 11 years ago the roughs were mowed down to 1 ½ inches and highly maintained," says Hero-

ian, who graduated from the University of Massachusetts Turf School and holds a four-year degree in recreation management. "But a true links-style course doesn't have maintained roughs. The course also had added quite a few trees, which were not in keeping with the old-style look. The keys to a links-style course are wide open spaces with a lot of mounding, bunkering and tall roughs."

So Heroian set to work removing trees



A former farmhouse, the club house for the Myopia Hunt Club is 225 years old. The Club itself is 103 years old, with a links-style golf course, five polo fields, and fox hunting grounds. (Photo credit: Arthur Cicconi)

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Addition of calcium to the soil by traditional means is not usually efficient or effective in treating the calcium deficiency of turfgrass. Once applied, the common forms of liming materials can rapidly change to compounds that are insoluble in water and not readily available to the plant. Continuous applications over long time periods are necessary to effect even modest improvements in calcium uptake.

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and replacing them with mounds and bunkers. At the same time he stopped mowing roughs and let the fescues grow naturally. He and his crew also restored 25 bunkers to their original sizes and depths. They dug through the different layers of sand until they hit soil, which defined the shape and size of the initial bunker. In addition, they looked at old pictures and talked to the older members before making changes to the bunkers.

Taft's Bunker

"President William Taft was a member here in the late teens and early 20s, and one of the bunkers is named after him," says Heroian. "The story goes that every time he played the course, the crew made this particular bunker deeper. Well, Taft weighed more than 300 pounds and eventually they had to tie a rope around him to pull him out. We redid the bunker in 1992, taking it down to six feet deep. It's right in front of the green

and when you're in the bunker, all you can see is the pin and flag. We now have stairs leading golfers from the bunker to the green."

With 104 bunkers, most of them very steep, the Myopia course requires intensive hand labor. Bunkers are hand-raked and hand-mowed, and tee banks are all hand mowed. Heroian installed a new automatic irrigation system in 1989, but his crew still hand waters areas of the fairways and greens to minimize moisture in summer months. By cutting back on water, Heroian helps his bentgrass "beat out" the *Poa annua*.

"When I came here, fairways were mostly ryegrass and annual bluegrass—or

Poa annua," recalls Heroian, who was superintendent at New York's Rockland Country Club before coming to Myopia. "We overseeded with ryegrass for the first few years but then went to strictly bentgrass. Ever since we had the new irrigation system installed seven years ago we've been on an intense overseeding program to increase bentgrass populations.

"We started at 20-30 percent bentgrass, and at this point we have between 60-80 percent bentgrass."

For the past four years Heroian has



View from the second tee at the Myopia Hunt Club. The course's 104 bunkers are all hand raked and hand mowed.

used Progress herbicide as part of his bentgrass overseeding program. Each year he and his 14-member crew aerate and seed fairways in August, then come in with two fall applications of the herbicide. They apply the product at the rate of one-half gallon per acre in mid October and again in mid November.

Reducing Poa

"Each year we have less and less *Poa* and more and more bentgrass," says Heroian. "We cut back on water in late spring and early summer, too, letting fairways wilt a little bit. *Poa* doesn't like to be droughted out like that, so we get a jump on it before the season starts. We started picking up

clippings about the same time we began using Progress. All of these practices work together to reduce *Poa annua* populations."

Neither has Heroian experienced much of a problem with other weeds. While he previously made a preemergence herbicide application each spring for crabgrass control, he now uses just a postemergence herbicide on certain fairways. Other fairways receive no weed control treatment at all.

On fairways with areas of crabgrass infestations, he makes one application of Aclclaim herbicide in early June, returning with a second treatment two weeks later.

In addition to the golf course, Heroian oversees a separate four-person crew which maintains the Myopia Hunt Club's five polo fields. Basically, the fields require only mowing and divoting. But the crew takes extra care grooming them for the East Coast Open, an interna-

tional polo tournament the club hosts each summer. This crew also helps with the riding stables and dog kennels, where hounds are housed all year for the fall fox hunts.

"People often feel like they've been dropped off in another country when they visit here," says Heroian. "We're definitely an old-style club and the membership wants to keep it that way. With the changes we've made in the course, bunkers now come into play like they did in the old days. At the same time, we've added some tees and increased the length of the course by 150 yards. Members seem to be happy with the mix of the old-style and the newer trends in golf." □



IPM IN ACTION

Golf course owners, designers and superintendents know that true Integrated Pest Management means you work within natural parameters.

AT COLLIER'S

Why plant tropical ornamentals in arid climates? Why spend thousands of dollars on integrated pest management systems that solve some problems but create new ones?

It's a gradual conclusion in a sport that has been judged as much by the rolling, green "perfection" of the terrain as by the challenges of the course. Now, native plants, pest-resistant turfgrasses and customized cultural or pest control practices are more accepted by management and some golfers.

These practices have been known to increase the environmental compatibility of a golf course as well as save money.

The IPM team at Collier's Reserve knows the ins and outs of the practice that has as many definitions as it does supporters.

The country club/residential community in southwest Florida has earned a special place in IPM history as golf's first Audubon International Signature Cooperative Sanctuary. As such, Collier's design, construction, management and overall phi-

losophy was developed in close relation to the Audubon Society's Principles of Sustainable Resource Management.

Model sanctuary course

Collier's Reserve is owned and developed by Collier Enterprises. Arthur Hills designed it, and popular and progressive superintendent Tim Hiers, CGCS, is the superintendent of the five-year old, 6,800-yard course, which is a beautiful blend of native vegetation and lower-maintenance turf strains.

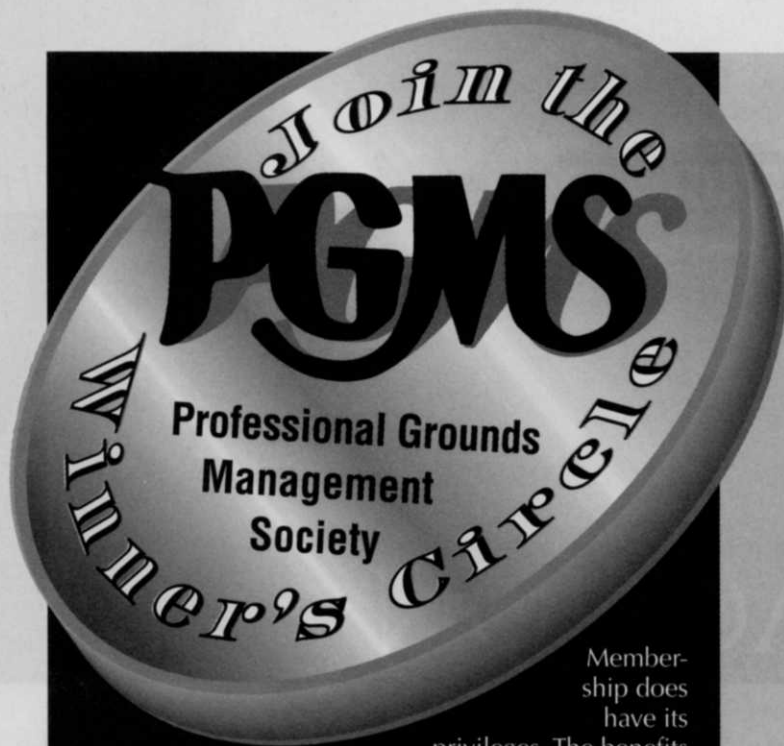
Rather than fight with the elements of nature, the Collier's crew uses the science of IPM and the conservation of natural resources.

Much of the reserve is set aside as a wildlife sanctuary for foxes, bobcats, otters, bald eagles, woodpeckers and many other animals. Every crew, building and management practice focuses on the environmental integrity of the land and the conservation of natural resources. This comprehensive, ground-up approach distinguishes Collier's from other maintenance procedures that were popular 20 to 30 years ago.

All irrigation heads, for example, are "site specific," which means water is used only where it is essential to sustaining turfgrass. Following this practice saves water and electricity, and reduces the ger-

'Two for one' tree planting

The Collier's IPM program is well documented, and very thorough. Cultural practices include aerifying fairways to maintain the right amount of thatch for turf health and pesticide effectiveness. While many programs stop with turf or pest management, this one also includes provisions for efficient power usage, water conservation, equipment choice and maintenance, employee training and recycling. Even a policy to plant two trees for every one removed.



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mination of unwanted weed seeds in native areas.

The difference is in the planning

"What makes us distinctive as a golf course is that we planned on leaving a lot of native area," says Bill Davidson, assistant golf course superintendent at Collier's. Irrigated turfgrass take up less than 76 acres around the course. Native vegetation is limited to the periphery. It complements the course, and adds beauty and challenge to the game. It also saves time, money and resources by requiring less maintenance.

A preventive control program maximizes turf health and minimizes the need for fertilizer and disease control.

"We do a lot of monitoring," says Davidson. "Our philosophy is to avoid broad insecticide applications and treat only what we need to treat."

For example, careful vigilance for mole cricket nymphs enables early treatment



Davidson: saves time and money on maintenance.

and reduces overall pesticide applications.

"I can't tell you how many tanks of soapy water I have mixed up to check the mole cricket population," says Davidson. The water disturbs mole crickets and causes them to flee to the surface.

When pests exceed their IPM tolerance levels, crews use the least amount of chemicals to get the job done. Sometimes, this means

using biological controls—such as parasitic nematodes—to attack mole crickets.

"To keep mole crickets within the treated areas, I'm looking to buy a mole cricket mating call box," says Davidson. "It plays a CD that's supposed to attract 95 percent of the mole crickets to within seven feet of the box."

New product trial

In the summer of 1996, Collier's participated in a trial run of a new kind of pest control, from the *spinosyn* class. Now

known as Conserve SC Turf and Ornamental insect control, the product combines the efficacy of synthetics with many of the benefits of biological control.

The product is reported to control cutworms, sod webworms, armyworms and many other pests, for up to two weeks of control.

At the same time, it offers a "Caution" signal word, and was registered under the Environmental Protection Agency's Reduced-Risk pesticide program. The process means the product has less impact on the rest of the environment than most other products, according to DowAgrosciences.

"It has effective control for the small amount of material you need to use," says Davidson.

The challenges facing the golf course superintendent in this environmentally-conscious time will continue, despite the Green Industry's record or compliance and concern for the great outdoors.

Integrated Pest Management, in one form or another, will continue to expand the superintendents' tools for practical turfgrass management. □



Turf sod use increasing for golf courses

The percentage of all turfgrass sod purchases related to golf course development and renovation has nearly doubled in the last decade, according to a survey by Turfgrass Producers International (TPI), the international trade association of turfgrass sod farmers. In 1988, golf facilities accounted for 4.7 percent of all sod purchases. The percentage has grown to 8.1 by 1997.

"Turfgrass is being used in many more new course developments," says Doug Fender, executive director of TPI. "No longer just a remedy for poor construction or grow-in problems, sod has distinct environmental and aesthetic advantages over seed. But it is economics that truly drives the shift to all-sod use."

Installing sod creates an immediate maturity for a course and decreases grow-in and management costs as well as eliminating the need to rework washed out areas that traditionally amount to 20 to 30 percent of a seeded course.

In addition to speeding up construction, sod offers an aesthetic that can be a valuable marketing factor in promoting a golf course or home sales in a planned community.

"Sod's a perfect complement to the highly contoured golf course designs of today," says Fender. "Even fairways are getting solid sod because of sod's ability to control erosion."

In addition, Fender points out that industry innovations such as over-sized turfgrass rolls, washed sod and soilless sod are also driving turfgrass sod's appeal for use on every type of golf course.

New courses a source of inspiration

The introduction of a new golf course into a market does more than simply provide additional holes for play, claims Gordon Witteveen, a golf course superintendent at Toronto's Board of Trade Golf Club.

"There is no doubt that a new course with interesting design features forces all the courses already in that market to 'pull up their socks,'" Witteveen told over 60 members of the ASGCA at their annual meeting in Toronto, Ontario.

Witteveen pointed to Devil's Paintbrush in Caledon, Ontario, opened in 1993, where the use of sod bunkers triggered innovative thinking in many other Toronto area courses, including his own Board of Trade Golf Club. Working with ASGCA Past President Arthur Hills, the Board of Trade GC developed a master plan for renovation.

Alice Dye, president of the ASGCA, recommends that golf course owners and developers should give careful thought to their plans for both existing and future facilities.

"One of the best ways to stay competitive is to develop and implement a comprehensive master plan," she advises.

BIGGA members a hit at Birkdale

Members of the maintenance team at Royal Birkdale were in fine form during the playing of the 1998 British Open, as reported in the latest issue of *Greenkeeper International*.

"That there was not a blade of grass out of place was testimony to the course preparation," writes the publication, based in York, UK.

A 10-man team led by Chris Whittle and a group of volunteer superintendents were hard at work during the Open, and had very little time to rest.

The British and International Golf Greenkeepers Association held a competition for the fourth consecutive year to estimate how many bunkers the BIGGA Support Team would rake during the four-day tournament.

Overall, bunkers were raked a total of 1,140 times.

The BIGGA Greenkeeping Support Team has provided support to the resident greenkeeping team at every Open Championship since St. Andrews in 1984, reports *Greenkeeper*.

The 1998 team was comprised of greenkeepers from seven courses from far and wide across the continent.

ASGCA website helps developers and others with design issues

The ASGCA has designed its website, www.golfdesign.org, to assist those involved in golf course development. A comprehensive resource, developers, members of greens committees, permitting boards, governmental bodies and golfers, will find the site to be of value.

Visitors will find advice on everything from getting started developing a new golf course to redesigning an existing layout. One popular feature is 'Architect's Corner' which spotlights different holes and offers insight into what comprises an outstanding golf hole.

Somebody has to offer the lowest-priced lawn/landscape services in every market. Although lowest-priced doesn't necessarily translate into bad service or, in fact, an unprofitable business, it's a very, very tough niche to fill.

The operation with the lowest price for any service—and let's include any type of commercial lawn care or landscaping—has to: a) operate more efficiently (at a lower cost) than its competitors, b) sell and complete more work to generate as much revenues as the competitors do.

Either one is a tall order particularly in the lawn/landscape business where a guy can buy a mower and a small trailer, and start rounding up properties convinced that he can mow just a little bit cheaper than the other guy. The truth is he can—until he wises up or runs out of money.

Laying claim to being the lowest-priced commercial mower, applicator or builder (or even near the bottom of the price ladder) will probably get even riskier as the lawn/landscape contractor market continues to consolidate.

LandCare USA, The Brickman Group and TruGreen-ChemLawn are expanding rapidly in commercial maintenance. (See stories on pages 12 & 15 of this issue.) They're establishing themselves in as many major markets as they can as fast as they can.

So, what's this have to do with prices?

Plenty. Look to the lawn application business which is dominated nationwide by TruGreen-ChemLawn. Most competing independent application companies wouldn't want to go head to head with TG-CL on price alone. Generally, the smaller operation can't buy product less expensively than TG-CL. Nor does it have the same

[LANDSCAPE/GROUNDS]

PAGE 2 L ▶

Scapes excited about growth

PAGE 6 L ▶

Thrill rides and landscaping

PAGE 10 L ▶

Why you shouldn't fear complaints

PAGE 12 L ▶

Build great ponds in a day

Offering lowest price is no advantage today



Ron Hall

RON HALL
Managing Editor

name recognition or marketing clout of a national company.

To survive and prosper the local or regional lawn/landscape business owner has to offer a level of service and customer satisfaction that exceeds the larger company. This requires continuing investments in equipment, employee training, customer education/communication, and marketing.

This is impossible if the local operator doesn't charge fairly for his services. **LM**

[PEOPLE & PROJECTS]

Blalock gets Argentina work

Blalock Design Associates, based in Birmingham, AL, will consult for the Argentine Soccer Association on the development of a new training facility for the country's World Cup and Olympic soccer teams. The project will consist of three new soccer fields and the renovation of four other fields. All seven fields will be ready for play in 1999.

NY students work rails

Landscape architectural technology students at Delhi College, Delhi, NY, are helping the Delaware and Ulster Rail Ride in Arkville, NY, to get a facelift. Students created designs that included stone pathways, gardens, picnic areas, and handicap access for the popular tourist attraction.



Industry growth evident at Scapes

*When you know how
to make money, it's
lots more fun. The
Scapes company is
having a blast.*

By TERRY McIVER /
Editor-in-chief

For this Scapes project,
the plan was to make the
design disappear within
the natural surroundings.

Eleven years ago Barry Schneider was an independent landscaper in Florida struggling to make ends meet. His desire was to move up in the landscaping world.

Opportunity knocked when a Scapes company manager hired Schneider to manage a landscape crew.

Schneider was hired to finish a landscaping project for a Trammel Crow office site. More work followed.

"I was excited about the kind of work Scapes was doing in Atlanta, like craning trees onto rooftop gardens, and doing landscaping for larger buildings, both of which I wasn't familiar with in Florida.

"I ran a couple jobs in Atlanta for a year and a half, and then a landscape architect we were working with in Atlanta told us he had some office work in Washington and would like to work with us there."

Schneider saw the Washington project through, and was inspired by the potential for more landscape contracting work in the bustling commonwealth.

"Things were booming; I saw an opportunity here. I sold some jobs and worked out of the basement of the house I had rented."

Steve Coffey, the founder of Scapes, also saw the area's growth potential, and was sold on the idea of a permanent branch office. In 1987, Scapes Virginia office was born. Sixty employees now work out of the Ashburn Branch.

Today, Schneider is a partner with industry stalwart Coffey, who founded Scapes 22 years ago in Atlanta. The company reports a combined annual revenue of \$8 million from commercial maintenance, residential design/build and snow removal (for commercial maintenance accounts). The company recently added waterscaping to its service offerings.

Profit can be fun

Schneider doesn't mind talking about the mistakes he made, because it's all in the past. And just maybe some other wide-eyed "landscape artist" will learn from his experience.

"When I owned my own business in Florida, I did not know my costs," says Schneider. "I joined Scapes and found that Steve Coffey was a master at knowing exactly what the overhead was, exactly how much each plant costs.

"It was something new to me. It's mind boggling that I did what I did for so long

getting into. Many people think their gross profit is their total profit. There's an entire other list of charges after that, and taxes.

"For a small guy working out of his home with a pickup truck, there's a chance that the gross profit is indeed what you're paying yourself, but you can't do the big jobs that way."

"Some people just have fun doing the work. I did. When I didn't know my costs, I was planting beautiful trees, doing beautiful landscaping, and I was very proud of my work. It felt good. But I had a problem with the checkbook. It was an ego thing to do a nice job on a restaurant landscape. People will take on certain kinds of projects for low profit just so they can do it."

Will profitability ever become a standard within the landscape industry? Likely not, says Schneider, but the industry will grow in spite of the profitability problem.

"I think the few that know how to be profitable will always do it right and the few that don't, won't," says Schneider plainly.

Schneider believes education is a prerequisite if you really want to succeed in this business,

yet association membership is small when you consider the total number of companies in the country. When asked why he thinks that is so, Schneider thinks it again goes back to available cash.

"Those who don't know their costs don't have a lot of money," and therefore, can't afford memberships in Green Industry associations.

Serious about morale

The tenure of the Scapes field labor force is notable.

"Some of my foremen and laborers have been with me for six or seven years. It's the managers I find to be more of a challenge to keep for a longer time. I think



A Scapes equipment van displays the company's recent move into waterscaping.

without knowing any of that. I like plants, it was easy to do, I was successful at it and I did it. But I never had any money.

"At Scapes, the budget is king," says Schneider.

We track everything according to the individual job budget, including the hidden costs. It's hard to do. It takes a lot of time and it takes a lot of money to track it."

Faithful tracking of each and every hour devoted to a landscaping project is also a key part of the Scapes budget-conscious operation.

Schneider thinks young companies just starting out often fall into costing traps because they, "just don't know what they're

a manager gets to a certain point in his career and wants to go out on his own or wants a piece of the action. which is what Steve has done for me."

More career-minded people may be getting into the landscape business, but to keep them interested is something else all together.

To keep worker interest in the business strong, Schneider and Coffey want to do what they can to bring key employees in, "as partners in the success of the business."

"We've got the headquarters for America OnLine down the street, and I think there are more people interested in that environment [being indoors, working with computers]. "What we do is tough. It's long hours, it's hot, it's cold, it's wet, it's dry. The amount of time and effort it takes to be successful in this business is very demanding. Families suffer. It's something we all need to work on.

"To make it a 9- to 5-job would be extreme," says Schneider of the industry's tendency towards long days, "but we need to get to a 10-hour day."

Scapes employee incentive programs include a good profit sharing program, in which key employees, foremen and higher level workers share in a percentage of the company's profits.

But money is not the only motivator. The company knows how to relax, too.

"We try very hard to have fun," says Schneider. Leisure activities include Friday afternoon barbecues; company picnics; soccer games, and attendance at the recent Washington Capitals NHL playoff games.

"We try not to be too intense about what we're doing," explains Schneider.

Growth like never before

"The economy is incredible, and construction is booming," says Schneider as he describes the current business climate in the Virginia/D.C. area.

"I see office buildings going up everywhere. Those office buildings are going to

"For a small guy working out of his home and a pickup truck, there's a chance that gross profit is indeed what you pay yourself, but you can't do the big jobs that way."

become maintenance jobs. I see people buying huge residential homes with lots of landscaping and lots of turfgrass; the owners of those homes are going to want professional landscape management.

"Baby boomers are at the age when they're starting to have some money, and are spending it on landscaping and on interesting backyard environments."

The company's maintenance work includes mowing; edging; trimming; weeding; chemical and fertilizer applications, mulching and small tree pruning. Large tree pruning is subbed out.

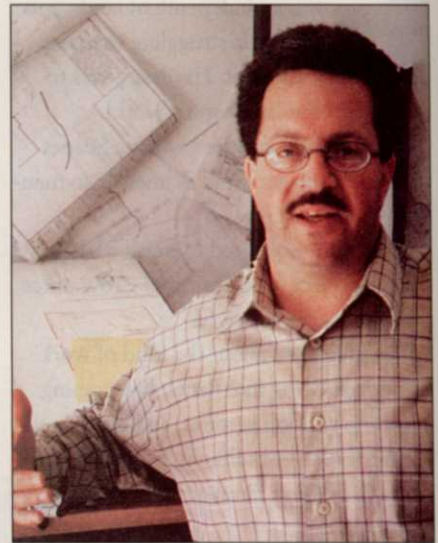
It was three years ago that Scapes added waterscaping to capitalize on the trend, and to fill a niche.

"There's good profit in waterscaping," says Schneider. "There's a lot of fun to it, and it's not competitive, because a lot of people can't do it. It's something people might be afraid to try."

Schneider and Scapes never rest on their laurels. While successful, they nevertheless continue to take stock of how they're doing against the competition.

"I see other landscapers making money, doing something successfully, and it makes me think about what I'm doing, how I need to make more money, or need to have a nicer facility, have cleaner trucks, or put the guys in uniforms.

"If you were to look back 10 years ago,



Schneider: Don't take on landscaping work just for work's sake.

there were two or three companies that dressed their crews in uniforms. Now, 50 percent of the companies have uniformed crews. That's sort of an indication that there are smarter people in the business who are watching what's going on and who want to do what the successful businesses are doing."

It can happen to you

Barry Schneider's story is one of hard work and dedication, which ultimately led to success.

His industry growth from a crew foreman to a business partner has taken 11 years. And after helping to grow a successful business, Schneider wants to help other career-minded people he employs become successful, too.

Is the American dream still alive?

"Yes," says Schneider. "I do believe so." □

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Thrill rides and landscaping

An amusement park's scenery is a key part of its appeal, as LM discovers at Ohio's Geauga Lake

By JAMIE PETERS

Now 110 years old, northeastern Ohio's Geauga Lake amusement park shows little signs of its age. Two acres of new landscaping enliven the park grounds with a lush, youthful vibrance.

Registered landscape architect Andrew Sparks of Garfield Heights, Ohio, and Tony Monaco, co-owner of Land Design by Monaco Landscaping, Aurora, Ohio, worked together to create an Old West atmosphere in the Coyote Creek area of the park. The centerpiece is the park's newest ride, the \$10 million suspended roller coaster, "Serial Thriller". To compliment the ride's seven loops and twists, the landscape was designed in subtle spirals, which are most visible from the 120-foot peak of the coaster.

Beneath the ride, a seven-foot waterfall spills into a creek, which twists through the terrain, mimicking the coaster's sinuous form. Wisconsin Holey Boulders line the creek, enhancing the area's western-prairie aura. A 6,500 lb. Holey Boulder, with the ride's logo embedded in the stone, is an imposing sight at the ride's entrance.

For Sparks and Monaco, the amusement park was an opportunity to deviate from conventional residential and commercial landscape designs.



Andrew Sparks, left, and Tony Monaco saw the Geauga Lake project as a chance to move beyond conventional landscape design.

"We tried to keep things looking unusual and different," says Monaco.

South Carolina pine needles which blanket the slopes of the area serve an atmospheric purpose and prevent erosion. Weeping elms, mulberry and crab trees lean out on the slopes.

"We tried to get a certain number of plants that were sort of blown over and leaning, like in some of the western parts," says Sparks. "And then the creek running through gave us an opportunity to try a few other things. There are some water lilies, that will eventually spread and get bigger."

Fifteen varieties of grasses — some of which will reach 10-12 feet high — sprout in a tumbling, rolling motion; and won't need mowing, says Sparks.

"When you have an area this big, and you have a maintenance staff like they

have here, I think you can get away with some things that you can't get away with in other types of venues," he says. "I think the value of the drama and the excitement that those kinds of plants add to this type of landscape make it worthwhile. I don't use mulberry ever, but we had an opportunity to let a couple of plants just get huge and hang all over the place. Who cares how they're taken care of? There's an odd catalpa right up at the front entrance, and there's another mulberry down at the creek that I would never use anywhere else, but they will be perfectly fine here."

Near the roller coaster is a butterfly garden where many of the 1,800 grasses, plants and trees were planted. Sparks hopes they will thrive and fill out the 4,000-5,000 square foot garden. Among the unique plant choices, Sparks points out

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the weigela shrubs, whose distinctive purple and yellow foliage varieties are appropriate for the park's atmosphere.

"That's what they [amusement parks] cater to--the unique and the unusual," says Sparks. "If it doesn't startle or surprise people, what good is the ride? And with this landscape, I think we had the opportunity to do the same sort of thing."

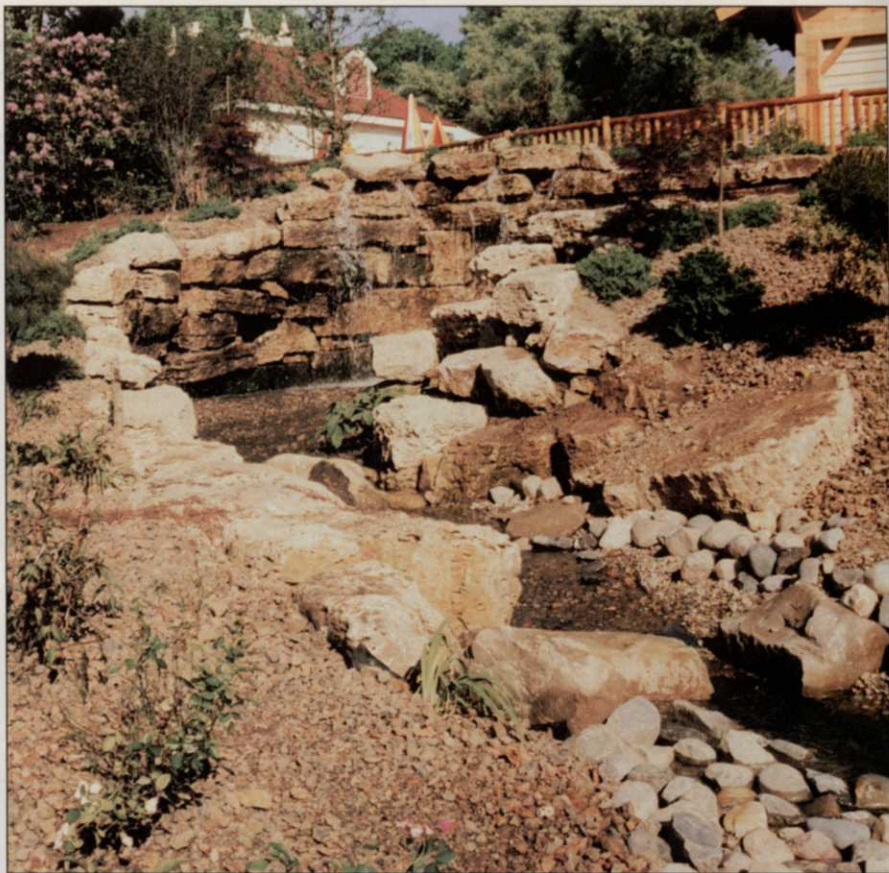
When choosing plants for the area, Sparks had to take the park's seasonal operation into account.

The parks cater to the unique and the unusual. It should startle or surprise the visitors.

"April and May, I don't care how dead it is, there's nobody here," he says. "Starting around the tenth of May, things will be starting to bloom, and then all the way into October and November there will be color here the entire time because their last

big hurrah is Halloween. So they have to go right through October 31 with color and things that are interesting."

Work on the project continued after the park opened in May, says Sparks. "That



'We tried to keep things looking unusual and different,' says Monaco. The creek running through this area was an opportunity to try water lillies and other plants.

was a little bit of a zoo because you're really distracted by the people, the behavior, the screaming and watching the people on

the ride," he says.

Monaco employs 10 full-time crew members, but at one point, he had 22 landscapers working three shifts around the clock to finish the job. It's a challenge that Monaco, who has worked on other areas of Geauga Lake, embraces.

"You have to be a certain type of person to work here because of the commotion," he says, emphatically waving his arms to convey the fast-paced atmosphere. "I'm the type of person that likes commotion, more or less. I thrive on the challenge."

Monaco lets his arms rest at his sides as he contentedly walks away from the Coyote Creek landscape.

"There are all sorts of people that come to parks," he says. "And a lot of them enjoy the landscaping and like to sit down, relax or even take pictures. The setting is always what people look at. It makes them want to come back." □



'The setting is always what people look at. It makes them want to come back.'

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GET THE BEST FOR LESS

Don't fear complaints

By NANCY STAIRS/
Technical Editor

Addressing customer demands takes a lot of time and effort. Regardless of whether problems are real or perceived, customer concerns and problems must be dealt with. But, complaints can be turned to a company's advantage too.

"Complaints will help you grow your business. If you look at complaints as gifts to your business, you will improve your business," said Dr. Richard Gerson, president of Gerson Goodson, Inc., a marketing management and training consulting firm in Clearwater, FL, at a free seminar at the Outdoor Power Equipment Expo in Louisville, KY, this past July.

In fact, Gerson recommended asking for customer feedback. "Get the complaints from the customers. It's the cheapest, the best source of information. If you don't want to call it 'complaints' call it 'feedback'. Say to them, 'what do I have to do to improve service to you?'"

"Even if it's just when you go out to do the job for that week, you ask them, 'how am I doing?'"

Effectively addressing complaints and problems is essential. "If you have employees, do they have the power to do what's right for the customer when it's also right for the company?" Gerson asks. "Or do they have to stop whatever they're doing to call you up and ask you for permission?"

"Think about how the customer feels when they have to wait for your employee

to call you and get an answer from you. Customers do not like to wait. When they want something, they want it now. Yesterday."

Gerson also emphasized that if you own the company, you are responsible for service and for the outcomes to clients. you cannot blame employees, "even if the employee has promised something; the customer doesn't care."

While Gerson does not believe that the customer is always right, he does say that customer satisfaction is whatever the customer says it is. Customer criteria usually include speed, accuracy, timeliness, friendliness and responsiveness.

"The needs, wants and expectations of the customer must be met and exceeded for customer satisfaction," he said.

"The key to your success is not getting new customers, it's keeping your old customers and doing more business with them. That is going to make you successful.

"Every satisfied customer you've got is worth four or five referrals to you, if you do

it right."

The value of retaining customers is something every small business owner should know, recommended Gerson. "How many of you know what it costs you to get a new customer? You need to start figuring that out, especially if you're a small business owner. It cuts into your profit margin, drastically.

"If you know the lifetime value of your customer and you can keep your customers because you provide great service, you can actually spend more to get them the first time."

The challenge, claims Gerson, is to re-

tain those satisfied customers, "...because a customer is satisfied, it doesn't mean that they're going to stay with you. It doesn't guarantee retention."

For this reason Gerson believes that customer satisfaction, a popular measurement, is not what a small business owner

Reasons for soliciting complaints

- ▶ complaints provide instant feedback for performance improvement
- ▶ complaints give you a chance to show customers what you really can do
- ▶ complaint resolution creates a deeper relationship with your customer
- ▶ customers whose complaints are resolved spend more with your business

needs to know for customer retention.

"Repurchase loyalty" may be a better measurement as it leads to the lowest costs and the highest profits.

"If you can keep just 5 percent more of your customers with you over time, your profits, not your revenue, can increase 25 to 75 percent," he said.

In order to move those customers from satisfaction to loyalty:

- ▶ give great customer service
- ▶ measure service outcomes
- ▶ measure customer satisfaction
- ▶ measure repurchase activity
- ▶ develop advocates and recommenders (people thrilled with you)
- ▶ reward loyalty and commitment (ask them what they want and give it to them)

Loyalty is what you want from your customers and addressing customer complaints is one step towards that goal. The thing about loyalty, Gerson states, "is that loyalty means zero defection, not zero defects." □



Gerson: be sure to keep the old customers.

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building a patio, retaining a wall or even planting a tree. There's a step-by-step process you need to follow to be successful. If you fail to level your base in your retaining wall, your entire wall will be unlevelled. The same principles apply when constructing a water feature. If you fail to follow a sequential step-by-step process, your foreman and crew end up working inefficiently and not as a team.

Ponds under 200 square feet can be built in one day (40-50 man hours) with a trained construction crew of four or five workers. It is very important that you follow the step-by-step sequence to avoid making more work for yourself.

The following assembly process has been used by Aquascape Designs, the country's largest water-garden builder, to successfully build over 500 ponds and waterfalls.



Left: once the pond site size is determined, remove the sod and dig out the pond.

Top: Contour and remove wrinkles from the underlayment and liner



7:30 A.M.: Mark out the pond design with a garden hose and then spray paint where the garden hose is laying.

After you make the determination on the pond site size, it's time to remove the sod and dig out the pond.

Place the skimmer and biological filter where they will be permanently stationed (tip: set filter about 6-10 feet from the pond's edge to create a stream).

Lay the plumbing (two-inch Flex PVC is recommended) from the back of the skimmer to the back of the filter on the outside of the pond. There is no need to bury the pipe, as it will be covered with the excavated dirt from the pond.

7:45 A.M.: Hook up the filter by leveling the ground and threading the bulk-head fitting and using the flexible PVC glue to connect the fitting (no glue is needed if you are using Poly Pipe).

While the foreman hooks up the filter, the crew can begin excavation starting at the center and moving out. All excavated soil goes on top of the plumbing and forms the base of the berm and waterfall.

During the excavation process, position the filter system and skimmer (following the detailed instructions given in the filter installation manual). This helps shape the pond edges. Furthermore, the filter must

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Left: wash off the rocks by using a garden hose while washing the dirt into the sump pump at the bottom of the pond.
Bottom: Two or three tons of cobblestones are used around the berm for support. (Photos courtesy Aquascape Designs)



be positioned early so the excavated dirt can be used to bury and stabilize the filter.

After positioning the filter on stable, leveled ground, the filter should be set into a final position so it tilts slightly forward. This encourages the water to exit over the waterfall stone, and reduces the possibility of leakage from plants, interfering with the flow of water over the waterfalls.

10:45 A.M.: Lay the underlayment and liner contouring it to the pond edges by walking on it, and pull out any wrinkles.

11:00 A.M.: Rock in the pond by forming a chain gang. Use 6 to 12 inch cobblestones to build retaining walls up the vertical edges of the pond, and gravel to cover up horizontal areas.

11:30 A.M.: Position underwater lights facing away from the viewing area. Lock them in place between cobblestones.

11:45 A.M.: Wash off the rocks by using a garden hose while washing the dirt into the sump pump at the bottom of the pond.

12:00 P.M.: Begin filling the pond and break for lunch! Notice everyone is working as a team to accomplish the common goal of having the pond excavated, lined, rocked and filled by lunch time.

12:30 P.M.: Back to work! The foreman begins building the waterfall and stream

while the crew brings back topsoil to cover the excavated dirt.

2:00 P.M.: The foreman continues building the waterfall and stream while the crew begins to build the retaining wall. Typically two to three tons of 12 to 18 inch cobblestones are used around the berm, for support.

3:00 P.M.: Carefully cut away excess liner around the waterfall and pond.

3:45 P.M.: Spread mulch over the new berm.

4:00 P.M.: Clean up and load the truck.

4:30 P.M.: Review the owners manual with the customer, give them the bacteria and receive your payment for a completed project.

You do not need ideal conditions, but you do need standard conditions to construct a water feature in one day. An Aquascape construction crew of four to five workers will build a 100 ponds a season with 90 percent of them taking only one day. The average size pond we build is 11x16 that sells for around \$5,000 (very similar to the price of a hot tub).

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The benefits of certification can include: recognition of expertise for professionals in the landscape contracting industry; increased personal commitment to the profession; enhanced self-esteem and professional credibility; increased marketing advantages for individuals and firms; and increased respect and recognition of the landscape industry.

The following individuals recently passed the Certified Landscape Professional-Exterior exam: Richard Hase, Hase Landscape, Inc., Waukesha, WI; Heather Shuster, Terra-Firma Landscape, Inc., Muskego, WI; Mike Sutherland, Haversham Gardens, Atlanta, GA; and Robert Solomon, Redwood Landscaping, Santa Rosa, CA. □

Educating future Green Industry leaders

The National Future Farmers of America (FFA) Organization, the National Council for Agricultural Education, the Professional Lawn Care association of America (PLCAA), the Golf Course Superintendents Association of America (GSCAA), the National FFA Foundation, horticultural teachers (secondary and post-secondary), and industry leaders from across the Green Industry met in July to discuss opportunities for an organized curriculum project in agricultural education. The project would focus on career development opportunities in areas of turf, mowing and edging; landscaping; tree and shrub maintenance; lawn care; odd-season activities; and other areas related to the industry.

The outcome of the meeting provided the framework for development of a proposal for educational materials by the National Council for Agricultural Education. The proposal will be developed and funding requests will be made to assist in development of the materials and provide train-

ing for teacher implementation. These materials will be made available to the 12,000 agriculture teachers across the country. They will include activities and resources to assist teachers in exposing students to the broad career opportunities in the Green Industry, and will provide the necessary skills and information for pursuing those careers.

A steering committee to assist in the development of the proposal consists of Tom Delaney (PLCAA), Barry Trautman (Environmental Care Industries), Dick Jones (The Davey Tree Expert Company, ISA, NAA), Enid-Mai Frost (GSCAA) and Rosco Vaughn (National Council for Agricultural Education).

Midwest Regional Turf Field Day

The Midwest Regional Turf Field Day was held in West Lafayette, IN the end of July. The event, held at the 22 acre Wm. H. Daniel Turfgrass Research and Diagnostic Center, was attended by over 750 turf professionals. Attendees were able to view the latest in turfgrass research and to evaluate many types of turf equipment and products from over 40 exhibiting companies. In addition, attendees were able to interact with a number of Purdue specialists from many disciplines of the green industry. The field day for 1999 is planned for 27 July. □

CLCA presents awards for projects

The 40th Annual Beautification Awards were held by the California Landscape Contractors Association (CLCA), where a panel of judges assessed over 80 sites in Orange County and Long Beach, for the very best in landscaping design, maintenance and lighting.

The highest honor, the 'Meridian Award', for lifetime contribution to beautification of the environment was presented to C. Wade Roberts of Sherman Gardens.

The 'Sweepstakes Award', for best overall entry, was awarded to Richard Taylor & Associates, Costa Mesa.

Chamley Landscape, Inc., Laguna Niguel received the 'Bill Vandergeest Excelsior Award' for the best entry by a new CLCA member.

The 'President's Award', for the best entry in any landscape installation, was given to Visionscape, Laguna Beach.

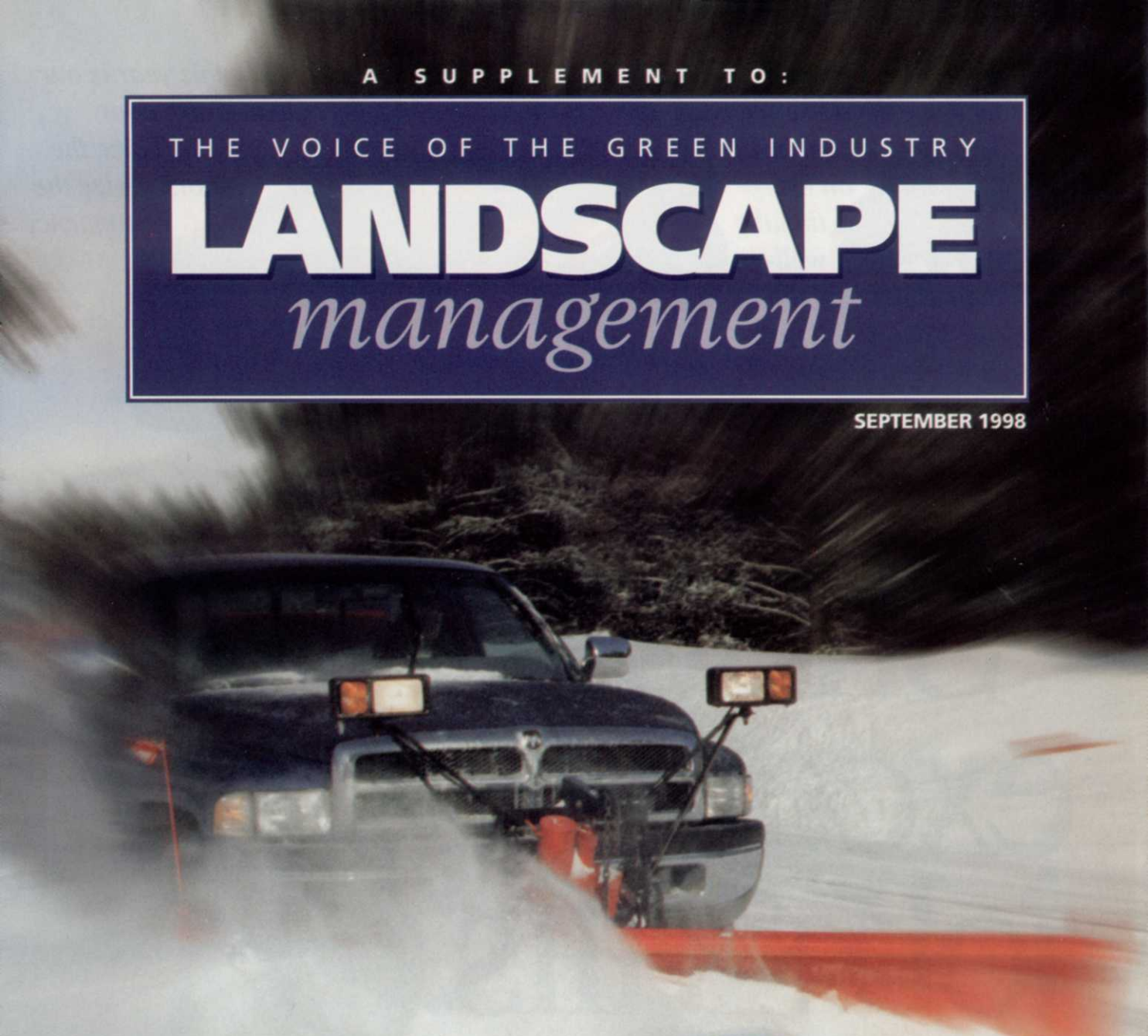
The 'Judge's Award' for maintenance was awarded to Earthscaping, Laguna Beach. □

A SUPPLEMENT TO:

THE VOICE OF THE GREEN INDUSTRY

LANDSCAPE *management*

SEPTEMBER 1998



GUIDE TO PROFITABLE **Snow & Ice** REMOVAL

- *Equipment checklist*
- *Tips for better technique*
- *Subcontractor guidelines*
- *Truck/plow combinations*
- *Using de-icers correctly*
- *Zero-radius versatility*



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¹Club and Quad Cabs, and 5.2L V-8 not available on chassis cab models. ²J.D. Power and Associates 1995-1997 Automotive Performance, Execution, and Layout StudiesSM 1997 study based on 29,187 consumer responses. ³Based on percentage of 7/88-7/97 new pickup registrations still registered on 7/1/97. Data Source: The Polk Company. ⁴N/A on Ram Quad Cab 1500. Service contract option not available in AL, FL, MS, OK or UT. No refund if canceled. Some vehicles ineligible. There is a \$100 deductible for each covered repair visit. Tire coverage covers only complete or pro-rated replacement for original four tires, excluding spare. See plan copy and full details at dealer.



How to use liquid anti-icers

Know anything about eutectic temperature? Read on to be a smarter product buyer and snow removal specialist.

By DALE KEEP

All ice control products work the same. Their function is to lower the freeze point temperature of water. This ability is dependent upon the percentage of chemical in solution that is expressed as the "eutectic temperature" of the solution.

The eutectic temperature is the freeze point temperature of a solution based on the percentage of material in solution, not volume.

While this may seem complex, the freeze chart on an anti-freeze container is an example.

For example, let's say you have a 12-quart capacity radiator system. You fill it with six quarts of anti-freeze and the remainder with water. This is a 50 percent solution that provides protection down to -34° F. However, if you fill the system with three quarts of anti-freeze and the remainder water, the volume of material is the same, but the 25 percent concentration protects only down to +10° F.

The same holds true for all ice control products. These products melt snow, which creates water and dilutes the concentration. As the concentration changes, so does melting temperature of the material. I call this concept DOS, or "Dilution of Solution."

Some products actually become more effective (melts at a lower temperature)

as they dilute to the optimum eutectic temperature.

Dilution of solution

Understanding DOS provides the key for understanding how ice control products work. Specifically, an ice control product will work until the eutectic temperature of the solution meets the pavement surface temperature. At this point, the material will stop melting and you may experience refreeze. Refreeze occurs when an ice-control product dilutes to the point that it can no longer melt ice at the given surface temperature.

DOS also provides the foundation for determining how long a product application will last.

Let's say, for example, that your own experience indicates that it will take 0.2 inches (0.5 cm) of water to dilute your application to the point of refreezing. Let's also say that each inch (2.5 cm) of snow contains 0.1 inches (0.25 cm) of water. How long will the application last before it refreezes?

The answer: As long as it takes to accumulate 2-inches (5 cm) of snow. Two inches of snow provides 0.2 inches of water to dilute the application to the point of refreeze. If it takes 12 hours to accumulate two inches of snow, then the application lasted 12 hours. If it takes one hour to accumulate two inches of snow, then the application lasted one hour.

DOS also explains why one application rate will not fit all storm events. The temperature and moisture of each storm event varies, therefore, the application amount needed to control each storm varies.

Remember: the effectiveness of any deicing chemical is dependent on four factors:

- 1) Surface temperature
- 2) Application rate
- 3) Moisture
- 4) Beginning concentration

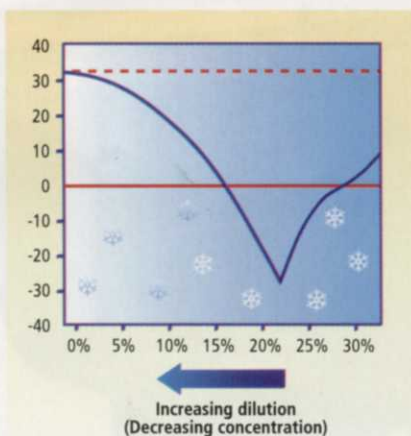


Figure 1: A sample freeze point curve



Equipment issues for chemical roadway clearing

First, list your equipment usage requirements, then select the equipment to fit that need.

Remember: equipment selection is based on user requirements

1. Product to be used.

Consider corrosiveness: Set up for corrosive material.

Recirculation: Set up to allow for recirculation mixing.

Tank material: plastic vs. stainless steel.

Deicer weight: Set up tanks to allow for at least 12 lbs./gal (142 kg/lit.)

2. Pumps

Material: what are they made of, especially the impellers?

Tolerance: how much tolerance is there between the case and the impellers of the pump?

VPM maximum: what is maximum volume per minute output?

VPM minimum: what is minimum volume per minute output?

3. Application rate

Maximum volume per area desired per application

Minimum volume per area desired per application

4. Application pattern

Anti-icing: spray pattern

Deicing: concentrated stream

Lanes to shoot: number of lanes to cover per application

5. Speed

How fast do you want to travel while applying?

How slow can you safely travel while applying?

6. Controls

Speed vs. volume per area of application

Ground speed controls

Easy to use

7. Tank capacity

Area: how much area must you cover per tank full?

What is the minimum acceptable application rate per mass with the machine?

8. Is retro-fitting an option?

Pesticide trucks

Flusher trucks

Oil distributors

Water tanks

Dale Keep

Quality control

A good quality control program is essential to any reliable anti-deice program. The potential for inconsistencies in delivered products will result in inconsistent performance. Without a good quality control program, performance results can differ even though applications and circumstances are the same.

Knowing the specific gravity of a liquid chemical deicer and the associated information, as presented on the previous chart, is the heart of a good quality control program.

Specific gravity is defined as the mass of a substance, given as a multiple of the mass of the same volume of a standard substance (usually distilled water) under prescribed conditions of temperature and pressure.

The specific gravity of aluminum is 2.70; therefore, a cubic foot of aluminum weighs 2.70 times as much as a cubic foot of water.

For measuring the specific gravity of liquids, a hydrometer is commonly used. For more accurate measurements, the

weight of a known volume of liquid is determined under controlled temperature conditions. Hydrometers must be calibrated according to the type of liquid to be tested, and at a standard temperature, usually 4° C (39.2° F) or 20° C (68° F).

Various types of hydrometers measure density or purity in storage batteries, ship boilers, soil and milk.

Know what you're getting

The deicer contract clearly states that the magnesium chloride-based product must be delivered at 28 percent. A variance of plus or minus one percent is acceptable. Water weighs 8.34 lbs. per gallon. The product that exactly meets specifications has a specific gravity of 1.262. Multiply the weight of water times the specific gravity to determine the weight of the liquid deicer. The weight of a gallon of product is outlined:

$$27\% = 1.251 \text{ specific gravity} \times 8.34 \text{ lbs./gal.} = 10.43 \text{ lbs./gal.}$$

$$28\% = 1.262 \text{ specific gravity} \times 8.34 \text{ lbs./gal.} = 10.53 \text{ lbs./gal.}$$

$$29\% = 1.273 \text{ specific gravity} \times 8.34 \text{ lbs./gal.} = 10.62 \text{ lbs./gal.}$$

Effective temperature is the lowest temperature in which the cost of the application is justified by the results obtained. Effective temperature is based on an economic decision.



EXAMPLE FREEZING POINT OF MAGNESIUM CHLORIDE BRINE

% by weight	Specific gravity*	Freezing point Celsius	Freezing point Fahrenheit
5	1.013	-2.11	26.4
6	1.051	-3.09	25.0
7	1.060	-4.72	23.5
8	1.069	-5.67	21.8
9	1.070	-6.67	20.0
10	1.086	-7.83	17.9
11	1.096	-9.05	15.7
12	1.105	-10.5	13.1
13	1.114	-12.1	10.3
14	1.123	-13.7	7.3
15	1.132	-15.9	4.0
16	1.142	-17.6	0.4
17	1.151	-19.7	-3.5
18	1.161	-22.1	-7.7
19	1.170	-25.6	-12.2
20	1.180	-27.4	-17.2
21	1.190	-30.5	-23.0
22	1.200	-32.8	-27.0
23	1.210	-28.9	-20.0
24	1.220	-25.6	-14.0
25	1.230	-23.3	-10.0
26	1.241	-21.1	-6.0
27	1.251	-19.4	-3.0
28	1.262	-18.3	-1.0
29	1.273	-17.2	1.0
30	1.283	-16.7	3.0

*Specific gravity at 15.6 degrees C or 60.0 degrees F.

Therefore, any product delivered with a specific gravity reading between 1.251 and 1.273 and corresponding weights between 10.43 and 10.62 lbs. would be within the terms of the contract.

To tie this all together, when a load comes in, get a sample and check the specific gravity of it with a hydrometer. Reference the hydrometer reading to the correlating information on the chart.

When possible, get certified weight slips on delivered loads. With the weight slip and knowledge of the quantity delivered, you can quickly determine the quality of the product delivered.

Assume you have ordered 5000 gallons of product as described here, and the weight of the load as verified by a certified weight slip is 51,000 pounds. Quick math tells us that the product delivered weighs 10.20 lbs. per gallon. (51,000 lbs. ÷ 5000 gal. = 10.20) and does not meet specifications.

More quick math (10.20 ÷ 8.34) tells us that the specific gravity of this product is 1.223. Checking the chart, we find that this product is only 24 percent and clearly does not meet specifications.

Dry equivalents

Remember that with liquid deicers, water is only a carrier, and that water does not melt ice. So the question is, How much chemical is actually put out during an application?

Determining the dry equivalent will provide this answer.

To determine dry chemical equivalents, again specific gravity and the weight of water comes into play. In the previous example, the 28 percent product weighed 10.53 pounds per gallon. □

The author is maintenance methods specialist for the Washington State Department of Transportation.

Dale Keep

Use plows in concert with anti-icers

- ▶ Extra snow and loose ice on the road surface can cause excessive dilution of product applications.
- ▶ Product dilution will decrease its effectiveness.
- ▶ Plow to remove snow and loose ice before anti-icing applications.
- ▶ If snow accumulates before or after applications, plowing directly before your next application will minimize product dilution.
- ▶ Anti-icing trucks should be equipped with front-end plows.



Snow removal DOs and DON'Ts

Here's a list of all the things you need to have covered with your crews or subcontractors prior to the start of snow season.

DO:

1. Tell your subcontractors to call you, the contractor, before snowplowing, to get a go-ahead and receive any special instructions. Make the foreman the contact.
2. Subcontractors must provide current, working phone numbers.
3. All work order instructions must be read completely. They contain special notes.
4. Push snow piles back as far as possible by plowing up the curb and then raising your plow and pushing the pile over the curb.
5. Run plow along the curb so the lot is clean from "curb to curb." Watch for protruding curbs and be careful.
6. Square off corners unless they are naturally rounded.
7. If you break down, let the company know *immediately* so the route can be completed.
8. Inspect the job site after plowing.
9. Call in to the office after work is completed. Use the following chain of command:
 - a. Check with your supervisor/foreman to let him know your route is done, and to see if he needs help on other jobs.
 - b. Contact dispatch or have your supervisor contact dispatch to let them know work is done.
10. If you get additional or special instructions from a customer, get a name and phone number, and an okay from the company. Extra work should be done *after* the regular route is cleared.
11. If you should do any damage while plowing, include it on your time card and report it to the company.
12. Stay on your route until all assigned jobs are completed. If you are sent off your regular route, make sure the company knows your assigned route is not done after each extra job you do.
13. Carry a snow shovel in the event that some hand labor need to be done.
14. When working near gas meters, stay at least three feet away.

Plowing don'ts

DON'T:

1. Pile snow in front of or on: doorways; fire hydrants; sidewalks; steps; garage entrances; garbage dumpsters; shrubbery, especially evergreens; buildings loading docks; cars
2. Push snow across streets or onto medians.
3. Leave trails or snow clumps.
4. Leave areas undone unless instructed by the contractor company or the customer and ok'd by contractor.
5. Use tire chains.
6. Pile snow in the middle of a parking lot. All snow must go to the edges of the parking lot unless you are otherwise instructed.
7. Load snow over or push up against fences (especially state fences).
8. Use skid pads on plows.

Hand labor DOs and DON'Ts

DO:

1. Wait for snow to stop before doing hand labor, unless snow depth exceeds six inches.
2. Blow the snow away from the driveway as much as possible, unless the lot has not been plowed.
3. If you must blow the snow onto the plowed lot, run the curblines with the blower to insure there's no build up along the curb.

DON'T:

1. Exceed two workers per crew.
2. Blow snow onto evergreens or against windows.
3. Disconnect two-way radio or mobile phone before jumping or charging the truck battery (the power surge will burn them out).

Definitions:

Clean-ups: A partial job was done for one reason or another. You are to plow the job 100 percent complete, or as much as able, depending on number of cars in the lot.

Drift patrol: Push back all drifts that are closing in the lot. This includes, but is not limited to, all drives, entrances, parking areas, and loading docks.

Open-up: Usually the only time an open-up is done is when there is a continuous snowfall, a snowfall that starts during the day or a parking lot is opened up so cars can get out, such as at an apartment building. Open-ups are done for snow depths greater than four inches unless specifically instructed by the contracting company. Do not be concerned about plowing any stalls. The entrances are to be plowed curb to curb. For aiseways, only one pass is made each way because you do not want too much snow wind-rows behind the cars. The most common types of jobs that need open-ups are apartments and restaurants.

Two-inch start: Do not start plowing until there are two inches of snow on the ground, unless the work order states otherwise. At least a dozen measurements have to be made to get an accurate reading.

If there is a lot of drifting, as many as 24 readings have to be made.

Recommendations:

1. Take the tailgate off for better visibility.
2. Carry a watch that works.
3. Extra equipment to carry: ice scraper; extra pin for plow carriage; long handled, #2 dirt shovel; spare plow hoses, and hydraulic fluid; tow chain, fire extinguisher; jumper cables; flashlight; extra bolt and nut for chain lift on plow; spare hydraulic cylinder
4. Have two, 12-volt batteries if you have an electric over-hydraulic system.
5. Any lights not factory installed should be fused.
6. If you get stuck more than once, put snow in the back of the truck for weight.
7. When the snow exceeds five inches, thin it out before wind rowing.
8. Carry some quarters for emergency phone calls.
9. For personal safety, carry extra clothes, hat, gloves, heavy boots, sunglasses...and common sense.

Source: Clean Cut/Snow and Ice Managers Association.

Snow removal services help contractor stay productive year round.

"Being able to clear snow is a real added value I offer my clients. I have a snowthrower, dozer blade and rotary broom, and my system lets me change attachments fast, without tools. I'm a real believer in zero-radius maneuverability. It lets me get into spots other guys just can't reach with bigger or less maneuverable equipment. And it is a lot faster than the smaller hand-pushed snow blowers."

— Mark Moyer, Kirksville, MO



PTO-driven snowthrower delivers no-clog performance, moves snow 20 to 30 feet away.

Let it Snow. Let it Throw.

When it snows . . .



PTO-driven rotary brooms leave a clean, dry path. Shown with winter enclosure and optional heater.



Multipurpose dozer blades remove heavy snow, slush or sleet.



V-snow plow clears walkways.

Call or write for the name of your nearest dealer and a "hands on" demonstration.

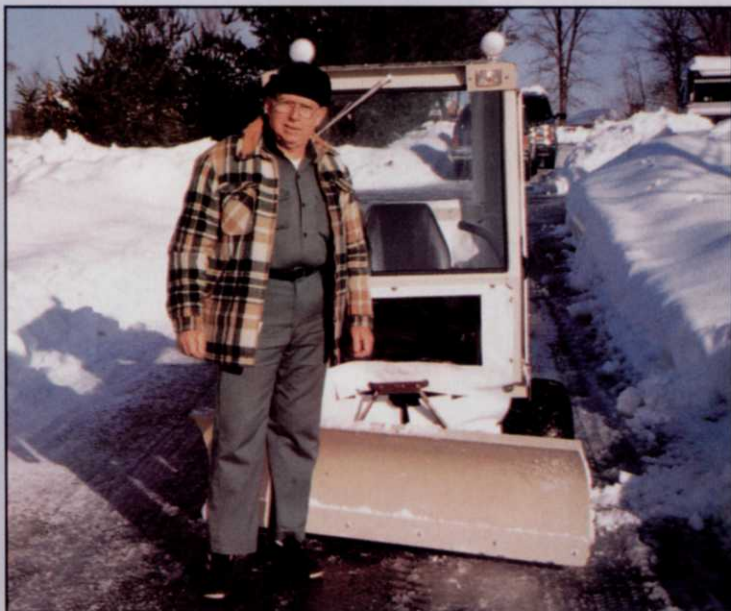
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Grasshopper passes the test in the worst storm of the decade.

"More than 25 inches of snow fell. Even though 1-2 inches fell each hour, we were able to keep the driveways in our area clear with our Grasshopper. The cab enclosure allowed us to stay warm for long periods of time – even with a minus 20° F wind chill index."

— Charles McIntire, Elkton, MD



Let it Mow.

When it shines . . .

Your Grasshopper turns into a high-efficiency zero-radius mower that lets you trim while you mow. Built for comfort, productivity and endurance, your Grasshopper will give you dependable service all year long, season after season.

Switch attachments in minutes without tools.

Grasshopper's Quik-D-Tatch® mounting system* easily connects a deck or attachment to the power unit and eliminates the alignment hassles often associated with switching attachments and deck sizes.

Other productivity tools include:

- Quik-D-Tatch Vac® Collection Systems
- Dethatcher • AERA-vator™ • Wand Vac™
- ROPS • Sunshade Canopy

Let it pick up leaves, mulch and aerate. Grasshopper lets you handle more jobs with the same machine.



GRASSHOPPER is number one in productivity. The exclusive Combo Mulching™ Deck* with full-flotation option, lets you mulch, discharge or bag with the same deck for superior results in varying conditions.

*patent pending



Plow, truck match critical for safety & success

The move to make trucks ride more like cars puts a spin on the usual truck/plow compatibility equation. Don't just take for granted what a salesman tells you. Know the facts about truck/plow compatibility.

By JOHN ALLIN

When it comes to putting plows on trucks, you can get a lot of different opinions from a lot of different people. It can be confusing. I have spent time on the phone with the manufacturers and in dealers showrooms talking with tech support people, sales people, and owners of dealerships.

I have found that one dealer can tell you that there is no problem with putting a plow on the truck they sell, and another

tell you there is no way you should put a plow on that truck. Below is a compilation of what I have been able to find out that I feel to be "reliable" information.

Much of the confusion surrounding this issue can be traced to the addition of the driver's side air bag in trucks, but it can also have a lot to do with the demands of those who purchase trucks. It is a federal law that all trucks under 8600 lbs. gross vehicle weight (GVW) must meet the same safety standards as cars.

This makes automotive engineers very conservative. Also, more than 90 percent of pickups and sport/utilities sold today are sold to car buyers who want a "new car ride" in their trucks as well as the op-

The manufacturers are saying that if you want a plow, buy yourself a three-quarter ton truck or larger.

tions that are available in cars.

Because of this, the stripped down "work truck" has become a thing of the past. Trucks are being designed with a softer ride and are now made closer to the ground so people can get into them easier. Much of this has to do with half-ton trucks and sport utilities, so truck manufacturers now consider sport utilities, half-ton trucks and smaller to be personal use vehicles, not commercial truck vehicles.

Listed below is some feedback I have acquired from the manufacturers about their recommendations regarding mounting plows on their trucks.

Chevrolet/GMC: Has approved only 10 models (only two of which are half-ton trucks) for snow work, and all of them must have the VYO snowplow prep package. They want no plows on any sport utility vehicles, no plows on extended cab trucks, crew cab trucks and Suburbans.

Ford: When the new F-150LD first came out, they said no plow, but now they seem to have backed off somewhat. It must have a 3900 lb. front axle, the plow cannot exceed 500 lbs. and the truck must have the Heavy Duty Service Package.

On the F-250LD, they only approve a



APPROXIMATE WEIGHTS FOR STANDARD SIZE PLOWS:

6-1/2' light duty plows	450 lbs.
6-1/2' standard duty plows	650 lbs.
7-1/2' standard duty plows	665 lbs. Boss
7-1/2' super duty plows	715 lbs. Boss
7-1/2' poly plows	625 lbs. Western
7-1/2' power "V" plows	795 lbs. Boss
8' standard duty plows	775 lbs. Western
8' super duty plows	765 lbs. Boss
8' poly plows	825 lbs. Western
8'2" power "V" plows	910 lbs. Boss
8-1/2' standard duty plows	790 lbs. Boss
9' standard duty plows	825 lbs. Western
9' super duty plows	813 lbs. Boss
9'2" power "V" plows	960 lbs. Boss

plow for a 3950 lb. front axle. They do not approve of plows on any sport utility vehicle.

Dodge: Only trucks with gas engines are approved for plow mounting. And these must have AHD plow packages. No half-ton trucks or Dakotas are approved.

Toyota: They say no plows are approved on any trucks.

As you can easily see, the manufacturers are saying that if you want a plow, get a three-quarter ton truck or larger.

The manufacturers' reasoning on smaller trucks is this (and it is technical): if a pickup is designed to carry three passengers, then three, 150-lb. people must be figured into the equation to see if the front axle is overloaded. And over-load-

ing is a problem not to be taken lightly, because it can effect wear and federal safety standards in braking.

If you have a four-passenger sport utility vehicle (or extended cab) or even a six-passenger Suburban (or crew cab) the problem is worse. But what if you plow alone? Or possibly with only your dog for company? This is not considered. It is a technicality. But there is another point that they have not added to the equation. That is "rear ballast." The more weight within limits that is added to the rear axle subtracts weight added to the front axle by adding a plow.

Finally, there is one more thing that has not been addressed at all by the manufacturers. This is the fact that Western has come up with an innovative addition to their plow frames. Western has added a wheel to ride under the plow frame that allows the plow to support its own weight.

The question arises: What can happen if you put a plow on an unapproved truck. Answer: the front end and front suspension will not be under warranty. The brakes may also wear prematurely. There may be some safety concerns here too. There are dealers that will install plows on almost any vehicle out there in the marketplace.

Keep in mind that my personal opinion is that you should use a three-quarter ton (or larger) truck for all snow plowing operations. □

—The author is president of The Allin Companies, Erie, PA, and a founding member of the Snow and Ice Management Association, also based in Erie. For information on joining SIMA, contact them at 814/456-9550 or on the web at www.sima.org

Top left: Chevy extended cab truck is not to be used for snow plowing. Ford truck, at right, must have a 3900 lb. front axle.





Zero-radius mowers add year-round versatility

Not only do Grasshoppers take care of mowing jobs, they are also put to work to remove mountains of snow.

High in the Rockies, getting the most out of your maintenance equipment isn't simply preferable, it is a necessity, according to Vance S. Garfield, Parks Department Superintendent for Kaysville City, Utah.

The department's Grasshopper zero-radius mowers with several attachments offer the versatility any city needs in its equipment mix to reduce costs.

"Not only is every season's weather more extreme in the upper altitudes, but, just like other municipalities, our budgets aren't getting any bigger," says Garfield. "That's why we have to make the best of what we have. Needless to say, we can't afford to buy separate equipment for each season."

The department also has two Jacobsen Turf Cats with 72-inch flail decks and snowplows for two larger department

trucks. Garfield's crew uses the big equipment for cutting the wide open spaces where maneuverability is not as crucial. And the truck plows are necessary to clear city-owned parking lots and cemetery roadways during the winter.

"A lot of our cutting requires tight turns, reaching into tight spaces and cutting close to playground equipment, shrubbery, flower beds, trees and fences," says Garfield. "We just couldn't do it all in the time we have without zero-radius mowers."

The Kaysville Parks Department operates three Model 725 Grasshoppers and one Model 721 for grass mowing, leaf mulching and snow removal.

Getting around in tight places

"These machines—equipped as mowers, plows, brooms or snowthrowers—have ample power to handle a variety of



Snow removal attachments tips



Grasshopper's PTO-driven snowthrower attachment (shown on page SR12) is available in 48- and 60-inch models. It offers 'no-clog' performance, even in deep, heavy, wet snow. Above are some of the other Grasshopper attachments.

- ▶ Snow removal on sidewalks and other narrow walkways can be done quickly and efficiently with attachments like a V-Snowplow. V-Snowplows spread the load in two directions, decreasing stress on the machine and distributing snow drifts evenly to either side.
- ▶ A dozer blade affords the opportunity to surgically remove snow around items such as parked cars. Not only does this provide for maneuverability around delicate obstacles that must be untouched, but it keeps snow on the ground, a feature especially valuable in the removal of powder snow in high winds.
- ▶ A rotary broom can be ideal in dry snow up to 8" deep. Use a broom that can adjust to a 25° angle left or right for best results.
- ▶ For deep, heavy snow, a snowthrower attachment is highly recommended for most efficient and complete removal. With an adjustable discharge chute, and PTO-driven unit to avoid belt slippage and utilize more power from the engine to the auger, a snowthrower is indispensable.
- ▶ In exceptionally deep snow conditions (over 8'), one pass with a snowthrower on a high-level setting and a second pass at full depth will ensure maximum unit efficiency and cleaner results.
- ▶ A machine that allows you to change attachments with ease will obviously reduce downtime and expenses, and increase productivity.
- ▶ Cab enclosures in harsh weather allow drivers to work all day with fewer breaks.

Courtesy, The Grasshopper Company

situations from large snow drifts to relatively tall grass growth," says Garfield.

In addition to helping the park crews keep up with the feverish pace of grass growth in the spring and throughout the summer, maneuverability during the winter is also very important. Garfield says that zero-radius turning capabilities are just as essential to snow removal during the winter as plows are for the city's trucks.

"We have a lot of areas we take care of that simply can't be reached with the big equipment," he says. "The entire two-block center of the city surrounding our city offices are honeycombed with walkways and sidewalks. Our two Grasshopper mowers—a 21-hp unit and a 25-hp unit—can be equipped with snowthrower attachments. They're ideal for that kind of job. I can't imagine how long it would take with conventional hand-pushed snow removal equipment, but the zero-radius units are fast, and allow us to clear any amount of snow."

If the snow is 8 to 10 inches or more, Garfield adds, they set the snowthrowers high and make a couple of passes.

"There is no depth these machines can't handle if you either go slow the first pass or just set it high for the first pass and then repeat at a lower setting," he says.

Garfield says his crew is also responsible for keeping the city-owned cemetery clear of snow which is especially important since snow can be found on the ground well through Memorial Day.

"The snow tends to stay for long periods here in Kaysville City," says Garfield. "If there's a scheduled funeral, it has to be cleared in that one spot. If the snow can't be simply blown off with a blower,

we can use the snowthrowers because they don't scalp the grass under the snow like other units we have used. And their zero-radius ability makes removing snow around traditional monuments quick and efficient." □



Snow removal starts in summer

Ron Brubaker says that if you're in the snow removal business, you have to prepare for it. That's why he starts in mid summer to gather all that he will need to keep his clients happy for the approaching winter season. This includes lining up customers and drivers, and making sure that he'll have enough product, including ice melters, once the first snow or freezing rain fall.

"Typically I try to have my contracts

out right around the first of September," says Brubaker of Brubaker Maintenance, Columbus, Ohio.

Brubaker, who has been in the commercial snow removal business since 1962, secures the contracts from industrial and commercial clients, then sub-contracts the actual plowing to a network of other drivers. Most operate small seasonal businesses and appreciate the extra income. He can have 22 trucks on the road at one time.

While rock salt is Brubaker's product of choice for parking lots and other large areas, he stocks more specialized

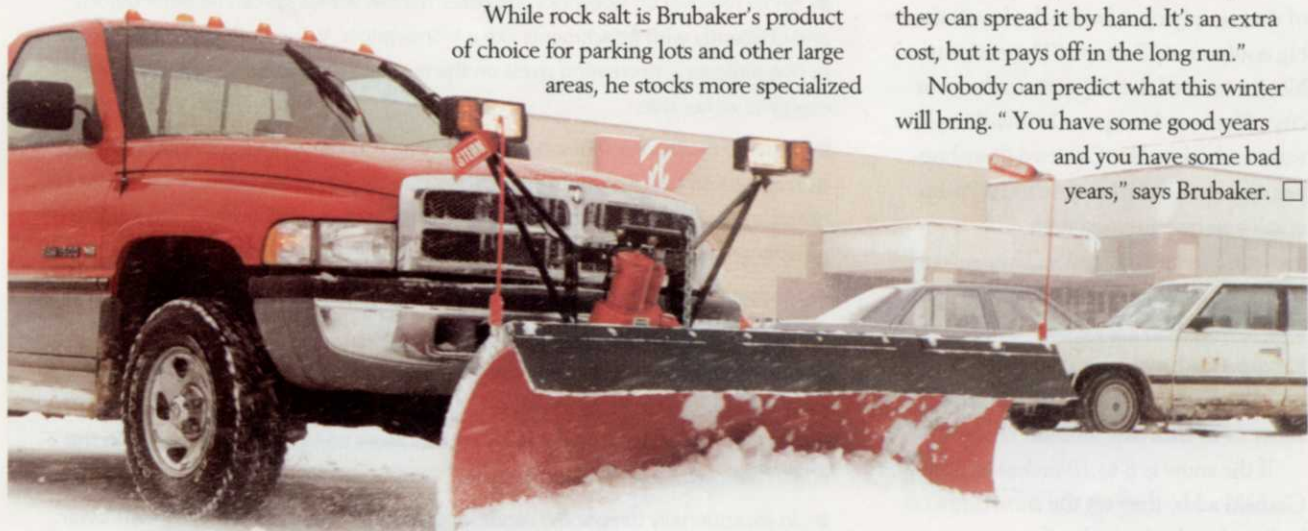
deicers for walkways or areas with decorative concrete.

"We have a lot of moisture and humidity in our area, and sometimes we get a black ice on sidewalks," he explains. Since his customers include banks and medical buildings, he has to have products that work without causing any additional problems.

For long sidewalks these deicers can be applied with a push spreader. Hand spreading from a 5-gallon bucket works fine in smaller areas.

"As a courtesy to some of the my customers, like banks, I'll put a bag of deicer in their foyers," explains Brubaker. "If I can't get there in time—like when it starts icing up and we're on the other side of town and can't get there right away—they can spread it by hand. It's an extra cost, but it pays off in the long run."

Nobody can predict what this winter will bring. "You have some good years and you have some bad years," says Brubaker. □



Snow equipment check list

EQUIPMENT

1. Check and change parts or fluids as needed:

- antifreeze
- radiator hoses
- air filter
- battery cables and water lines
- power steering fluid
- engine belts
- engine oil & filter
- brake fluid (if color has changed, replace)
- wiper blades
- top off washer fluid
- engine tune up
 - for gas engines: plugs & wires
 - for diesel engines: glow plugs.
- hydraulic oil, if applicable
- gear lube front and rear axles

2. Change, regardless of when changed last:

- fuel filter
- automatic transmission fluid and filter
- transfer case oil
- hydraulic filter if applicable

3. Front axle check

- inner spindle bearing
- U-joints (front axles, drive shaft, steering)
- wheel bearings, check and grease
- brakes and seals, adjust if necessary
- manual lockout hubs, clean and lube

4. Rear axle check

- U-joints, drive shaft
- brakes and seals, adjust if necessary

PLOWS

1. Check fluid in pump and rams, check filter
2. Mount plow and check for movement
3. Check hoses and seals for nicks or leaks
4. Check plows for cracks
5. Check cutting blade for amount of wear left and make sure bolts are tight
6. Check carriage bolts to make sure they are tight

SPREADERS

1. Mount on truck
2. Check drive chain or gears. Lube them. Chain should be lubed in spring when put away.
3. Check hoses for nicks and leaks.
4. Check and adjust pattern.



These plows built for heavy duty use

The all new Fisher 9' and 10' Municipal/Commercial plows were designed for today's new 'Super Duty'



style trucks. Now available with the Fisher trip-edge design, these plows can be used for parking lots, narrow streets and intersections.

Applications include the Ford F450SD, F550SD, F700 and F800; GM Kodiak/Topkick, both regular and low pro, and ICH 4700, 4800 and 4900. For more information, contact: FISHER ENGINEERING
12 Water Street
Rockland, ME 04841
www.fisherplows.com
Circle No. 278

Tailgate spreaders handle various size jobs

The Western line of Pro-Flo tailgate spreaders offers the ice control professional a choice of two spreaders ideal for parking lots of any size. The Pro-Flo spreads dry #1 rock salt, calcium chloride and other ice melting material. The Pro-Flo2 tailgate spreader has a 2-stage delivery system with 16" belt conveyor to assure positive feed of all



materials including wet sand. For more information, contact: Western Products
7777 N. 73rd Street
Milwaukee, WI 53223
www.westernplows.com
Circle No. 279

Adjustable V-Plow can do it all



The 8.5' MVP plow, from Western Products, adapts to any plowing situation because it's hinged in the center to allow plowing in the scoop, 'V' or straight blade position. Each wing has a trip-edge; when the blade strikes an obstacle only the lower edge trips back. This plow has exclusive, handheld CabCommand control. The FloStat Hydraulic System, allows you to hydraulically lock the blade wings to act as one, along with double acting cylinders for efficient back-dragging. For more information, contact: Western Products
7777 N. 73rd Street
Milwaukee, WI 53223
www.westernplows.com
Circle No. 280

Snowthrower offers 'no-clog' performance



A snowthrower attachment for Grasshopper's full line of zero-radius mowers delivers "no-clog" performance, even in deep or heavy wet snows. A discharge spout rotates a full 180 degrees to deliver snow 20 to 30 feet away.

Available in 48-inch and 60-inch models, Grasshopper snowthrowers feature heavy-gauge welded steel construction, a high-speed 12-inch diameter auger with heavy-duty 3/16-inch flighting and a built-in heavy-duty scraper blade.

Grasshopper's exclusive Quik-D-Tatch" mounting system lets you change deck sizes or add attachments in minutes without tools.
Circle No. 281

Rotary brooms for all seasons

Grasshopper's PTO-driven rotary brooms handle dirt, debris and clear up to eight inches of snow, leaving a clean, dry path. Rotary brooms are ideal for



clearing sidewalks, parking lots and other public areas. Units can also be used to remove gravel from grassy areas near driveways and roads.

The 60-inch bidirectional model is effective for dethatching at half-throttle speed, while full-throttle speed works best for snow removal.

The 48-inch and 60-inch fixed-angle models operate at a 25 degree

right angle, while the 60-inch bidirectional model can be raised up to two inches and angled up to 25 degrees.
Circle No. 282

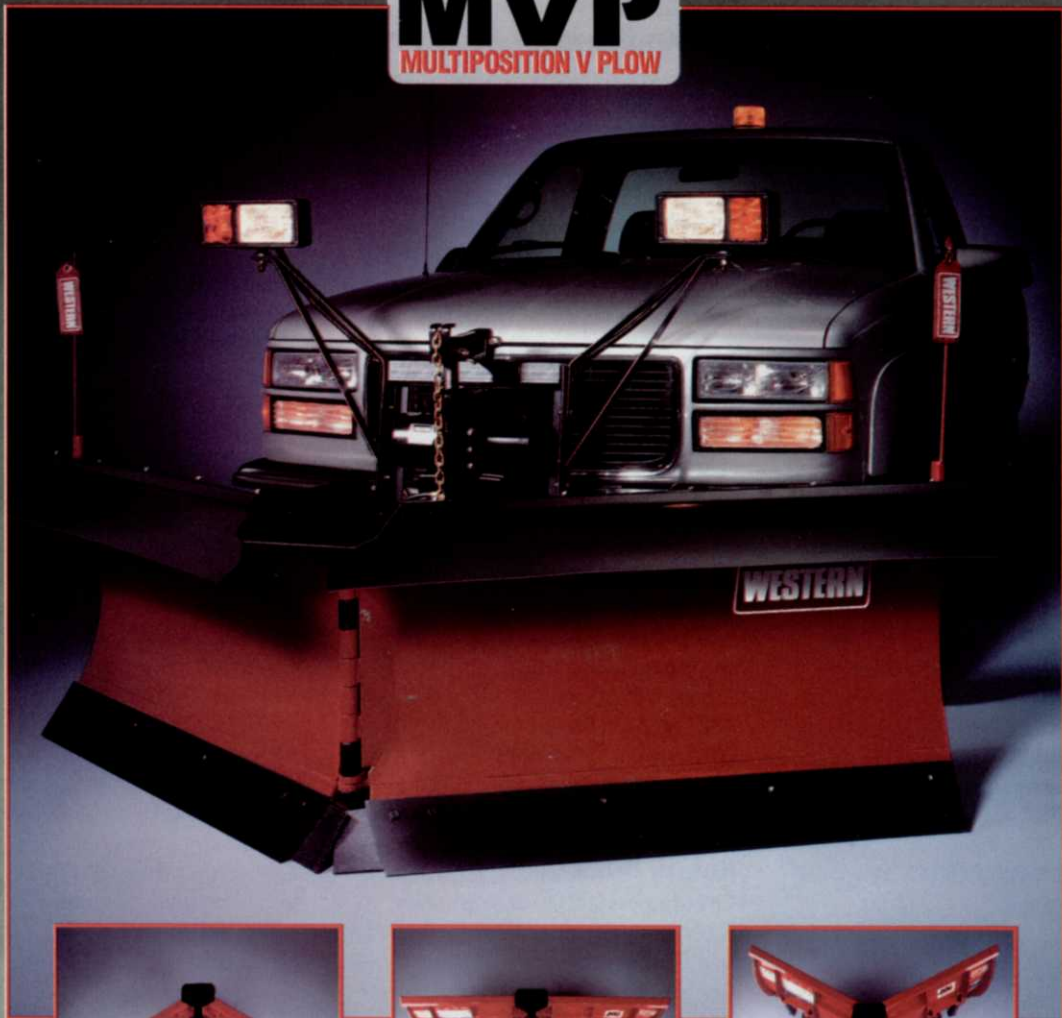
Multipurpose dozer blades

Grasshopper's multipurpose dozer blades move dirt, sand, gravel and snow, and are particularly effective in dislodging stubborn ice from sidewalks and drives.

Available in both 48-inch and 60-inch widths, Grasshopper's dozer blades are adjustable to allow operation straight ahead or 25 degrees left or right. An easy-to-use control lever permits pre-set height adjustment, while a quick response foot control allows intermittent height adjustment. A V-snow plow is also available for sidewalks and other open areas.
Circle No. 283

For more information on these products, contact:
The Grasshopper Company
One Grasshopper Trail ¥
P.O. Box 637
Moundridge, KS 67107 U.S.A.
www.grasshoppermower.com

MVP™
MULTIPOSITION V PLOW



ONE SNOWPLOW DOES IT ALL!

The versatile 8½' MVP™ snowplow from WESTERN® adapts to any plowing situation because it's hinged in the center to allow plowing in the scoop, "V" or straight blade position.

The feature that separates this plow from the rest is the exclusive, hand-held CABCOMMAND control. Now all blade functions – including moving the two wings in or out either simultaneously or separately – are right in the palm of your hand.

Add trip-edge blade technology, double acting cylinders and the patented Uni-Mount® System for easy on/off, and it's easy to see why the MVP snowplow provides the professional with the ultimate in plowing efficiency.

WESTERN

WESTERN PRODUCTS 7777 N. 73rd Street Milwaukee, WI 53223
World Wide Web: <http://www.westernplows.com>

Circle No. 136 on Reader Inquiry Card

Century Rain Aid has acquired The Pipe Connection, a three-store distributorship in Utah. The expansion into western US markets brings the total number of locations to 83 branches in 20 states and Canada. The new branches are located in Draper, Salt Lake City and St. George, Utah. www.rainaid.com

The Board of Directors of **Briggs and Stratton** has elected William Reitman, VP of Marketing, as a corporate officer. Marv Klowak has been named VP of Engineering and Quality Assurance.

Case Corporation has introduced AvailabilityMAX, a new dealer parts inventory management process that significantly improves parts availabil-

ity, selection and service for customers. AvailabilityMAX is presently up and running at select Case dealerships.

www.casecorp.com

Castart® by Naturescapes™ has been approved to franchise in California. California, an important pool and landscaping market, is one of 14 states which require franchisers to comply with individual state law and regulation rather than relying solely on the FTC's regulations. www.castartinc.com

CCL Organics has hired Ed Ruszel to manage its organic material collection and recycling company in the East San Francisco Bay Area. The company is licensed to handle approx. 30,000 yd³ of material a

year, which it composts and sells as a soil amendment.

JCB, Europe's largest construction equipment manufacturer announced that it is building its first factory outside Britain. The new plant, to be located in Savannah, Georgia, is to be 500,000 sq. ft and create up to 100 jobs in the first phase. The factory will initially make backhoe loaders. Manufacturing is planned to start late 1999.

Sales and Marketing Management magazine has awarded **John Deere** with the "1997 Best Sales Force Award", after looking at sales performance during the past three years, reputation for customer service and reputation for employee satisfaction, revenue growth, number of sales peo-

ple and keys sales executives.

Keystone South now represents **Keystone Retaining Wall Systems** throughout Georgia, Florida, and eastern Tennessee. Scott Pannell, Sales Manager, will be based in Atlanta.

Nature Safe Natural and Organic Fertilizers announces a new distributor, Golf Enviro Systems, which will cover Colorado, New Mexico and west Texas. www.naturesafe.com

Toro has a new marketing strategy to expand the distribution of Toro-branded mowers to selected home centers. This is a change from Toro's exclusive distribution of its mowers through independent dealers. The plan is to build on the ability of dealers to combine sales and superior after-sale service by matching dealers with home centers to begin a partnership of customer service. Toro Super Recycler mowers will still be exclusively distributed through dealers. www.toro.com

Turf-Seed, Inc. has brought on John Rector as National Sales Representative/ Agronomist, to act in a sales and advisory role and to help set up turfgrass trial plots in strategic locations. Rector has 20 years of Southern California sod-producing experience, including management of cool- and warm-season turfgrasses, agronomy, pest control, research and development, marketing and sales. www.turfseed.com

Info center

VIDEOS AND LITERATURE FOR THE GREEN INDUSTRY

PlantAmerica CD-ROM... Allan M. Armitage's Photo-Library of Herbaceous Plants contains images of annuals, perennials, ferns, bulbs, ferns, wildflowers and ornamental grasses, as well as cut flowers, bedding plants and greenhouse crops. Over 2,600 different plants and cultivars, with over 7,000 images, can be accessed by common, scientific and family names. Available for \$149.95 + \$5 shipping, from PlantAmerica at 888-PLANT-CD or www.plantamerica.com

An Environmental Approach to Golf Course Development... is a 48-page brochure available from the American Society of Golf Course Architects. Developed for any person or group involved in golf course development, the brochure provides information on how golf courses complement the environment and includes 12 case studies, specific checklists for reference during the permitting process and a list of suggested references and organizations. The brochure is available for \$10, from the American Society of Golf Course Architects. 221 N. LaSalle St., Chicago, IL 60601.

Free storm water retention/detention design CD-ROM... from Hancor, Inc. The LandMax CD-ROM has over 100 CAD drawings to allow users to design their own storm water retention/detention systems. Compatible with all Windows'95 and NT-based systems, the CD includes pipe drawings, as well as complete design information and installation guidelines for the underground LandMax system. To receive a copy call (800) 848-3546, ext. 258 or fax (419) 424-8302.

Events

SEPTEMBER

11: Building With Trees

Workshop Sacramento, CA. For more information contact the National Arbor Day Foundation at (402) 474-5655

11-13: Florida Nursery and Allied Trades Show

Orange County Convention Center, Orlando, FL. Call (800)375-FNGA, fax (407) 295-1619, or email fnga@aol.com

15: Turfgrass Research Conference and Field Day

UC Riverside, Riverside, CA. Contact Susana Vélez at (909) 787-4430 or email

susana@ucr.ac1.ucr.edu

16: Landscape Management Research Conference and Field Day

UC Riverside, Riverside, CA. Contact Susana Vélez at (909) 787-4430 or email susana@ucr.ac1.ucr.edu

16-18: National Lawn and Garden Trade Show

Philadelphia, PA. Contact Liz Wylie at (203) 847-9599

18-19: Washington Landscape Trade Show and Field Day

King County Fairgrounds, Enumclaw, WA. Contact Peter Dervin at (800) 833-2186

22-24: Turf and Landscape Field Days Virginia Tech Campus, Blacksburg, VA. Contact David McKisack at (540) 231-5897 or email turf1@vt.edu

9350

15: Building With Trees Workshop

Laurel, MD. For more information contact the National Arbor Day Foundation at (402) 474-5655

OCTOBER

7-8: Western Nursery and Garden Expo

Sands Expo Center, Las Vegas, NV. Contact Margo Chevront or Uraina Perry at (800) 517-0391

7-9: IPAA Annual Convention 'Mystery in the Woods'

Skamania Lodge, Stevenson, WA. Call David Harlan (425) 823-2600

8-10: International Plug Conference

Hyatt Orlando Hotel, Kissimmee, FL. Contact Ball Publishing at (630) 208-9080 or fax (630) 208-

20-23: Southwest Turfgrass Conference

Convention and Civics Events Center, Ruidoso, NM. Contact Curtis Smith at (505) 275-2576

25-28

Southern Crop Protection Association

Kingsmill Resort, Williamsburg, VA. Call (912) 995-2125 or fax (912) 995-4000

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— Jerry Gaeta
Vander Kooi & Associates, Inc.

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LM



Powered hauler from Foster

The Haulzall is a 450-pound machine with an 800 pound load capacity and a 7.4 ft³ hopper. The hauler has a comfortable forward walking speed and a controlled slower reverse speed as well as a 360° rear-swivel wheel, for easy control and maneuverability. Powered by a 5 hp Honda engine and able to carry any load up a 20° incline, the Haulzall also has automatic and parking brakes. The variety of attachments include a flat bed, snow plow blade, hydraulic lift-dump cylinder, dolly attachment, trailer hitch attachment. For more information contact Foster Manufacturing Corp., Racine, WI at (414) 633-7073, fax (414) 633-4458 or

Circle No. 250

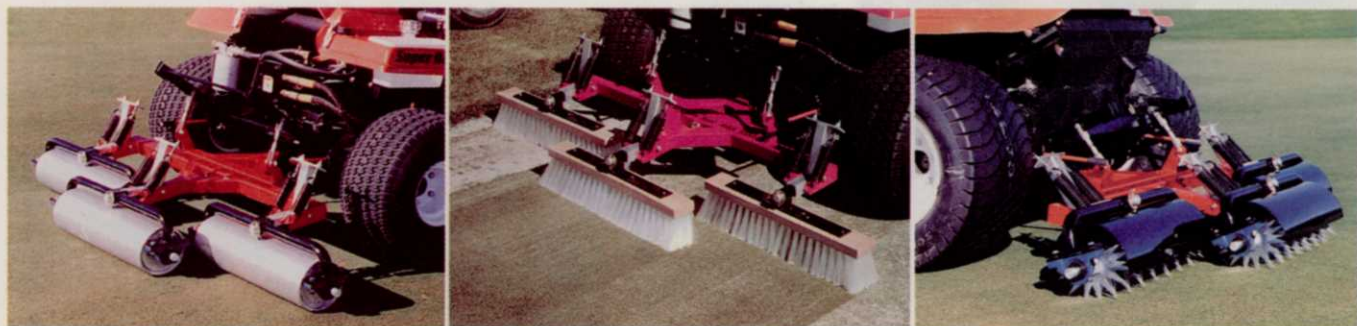
Green Star 3- implement system

The Green Star RBS System for the rolling, brushing and spiking of greens and turf, is now available on all Smithco bunker rakes. The system can also be mounted on Toro Sand Pro and Ransomes/Cushman bunker raking units.

All three implements (shown below) mount with Smithco's Quad-Pivot hook-up system, designed to allow maximum flexibility and conformity to undulating terrain. The implements are available separately or as a complete three-function system.

For more information contact Smithco at (610) 993-8181 or

Circle No. 251



Hydraulic powered pruner

The PR41 hydraulic powered pruner from Stanley offers rugged, heavy duty cutting power in a lightweight, balanced and durable pruner. The lightweight head design and full power operation make the pruner fast, efficient and safe to operate. An external knife adjustment allows easy maintenance for peak cutting performance. The unit weighs 11.5 pounds and can cut branches up to 2.25 inches in diameter. It is 84 inches long, with a flow range of 3-9 gpm and 1000-2000 psi.



For more information contact Stanley at (503) 659-5660 or

Circle No. 252

New preemergent from Scotts

Scotts introduces Barricade, a preemergent herbicide for crabgrass and *Poa annua*. Due to its long residual, Barricade is well-suited to fall application in both northern and southern climates. A properly timed fall application in southern areas can control *Poa annua* while in northern climates a fall application can control crabgrass in the spring.

Barricade comes in two formulations: a low-nitrogen, high potassium formula, 8-4-24 plus 0.426 percent Barricade, and a high nitrogen/high potassium formula, 21-0-20 plus 0.426 percent Barricade.

For more information contact Scotts at (800) 543-0006 or

Circle No. 253

Marble chips for the landscape

Marble Dimensions has a new line of marble chips available in a variety of colors, including gray, red and green, and two sizes of chips. An alternative to presently available rock products, the chips can be purchased in 40 pound bags or in bulk. For more information call (801) 943-2995, fax (801) 943-2865 or

Circle No. 254

Soft-Plug aerator from JRCO

The Model 700 Series Hooker Soft-Plug Aerator is a front-mount model which fits commercial hydro walk-behinds and riding mowers.



The 38" wide aerator has zero-turn maneuverability with up to a 3" hole depth and can aerate 66,000 ft² per hour at 5 mph.

For more information

contact JRCO, Inc., P.O. Box 41304, Minneapolis, MN 55441, call (800) 966-8441 or

Circle No. 256

New Tupersan label

PBI/Gordon has announced two new label changes for Tupersan Herbicide Wettable Powder. It is now labeled for bermudagrass suppression into bentgrass golf greens and for application to roadside slopes and other areas via hydroseeding and other hydraulic seeders. Gordon's Tupersan is a sprayable formulation of siduron. It is the only sprayable pre-emergent herbicide that may be used in newly-seeded areas or even applied at the time of seeding without causing injury to germinating seedlings of most cool-season turf-grasses. For more information, call PBI/Gordon Corp. at (800) 821-7925.

Circle No. 257

PELA Oil Extractor

For quick and easy oil changes on power equipment the PELA Oil Extractor is a manually operated vacuum pump that sucks out old oil from the engine crankcase. The integrated container holds 1.7 gallons, preventing spills and has a built-in float switch which automatically shuts the pump off once the container is full. This tool eliminates the need to remove drain plugs when changing oil. The Oil Extractor is



easy to use, fast and very clean.

For more information call Pelican Marine at (888) 272-7964 or

Circle No. 255

New Husqvarna chain saw

The new Model 350 chain saw from Husqvarna offers a combination of toughness and a power-to-weight ratio of 0.48 kw/kg. Although weighing only 10.6 pounds without the 18" bar and chain, the 3.1 cubic inch (50 cc), 3.1 hp engine can generate more than 13,000 rpms at top speed. The saw chain is a reduced kickback chain combining low vibration and high performance.

For more information contact Husqvarna at (800) HUSKY62, website www.husqvarna.com, or

Circle No. 258



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NYSTA, PO Box 612, Latham, NY 12110 or
Fax to (518) 783-1258

TurfVent corecaster

Feldman introduces a front mount turf aerator which turns without tearing the turf. The new TurfVent CoreCaster CTV-



52 core plug aerator allows the operator to aerate while turning in any direction, no matter how sharp the turns.

Featuring heavy-duty caster assemblies with 360° dual-quad tine clusters, the CTV-52 has a 52" effective coring swath. The Turf-Vent Ejector coring tines have a 3.5" maximum penetration. The CTV-52 comes equipped with the connections needed to attach to all motorized equipment with a Category 1 three-point hitch.

For more information contact Feldman Engineering at (800) 344-0712, e-mail feldman.engineering@excel.net or

Circle No. 259

FMC gives PBI Gordon rights to herbicides

FMC Corporation and PBI/Gordon Corporation have announced a recent agreement covering two new FMC herbicides, sulfentrazone and carfentrazone-ethyl. US marketing rights for the use of these compounds in PBI Gordon's Trimec herbicides have been assigned solely to PBI/Gordon for professional turf and ornamental, industrial vegetation management and consumer product markets. For more information, contact PBI Gordon at (800) 821-7925 or,

Circle No. 261

Rain Bird says new Easy Rain is better

Rain Bird Sales, Inc. has made several improvements to its Easy Rain battery-operated controller.

Designed for residential and light commercial applications, the single-valve controller is powered by an alkaline nine-volt battery. The improvements will help boost the Easy Rain's overall performance, including a pressure rating of 150 psi and a self-cleaning solenoid. For more info, contact Rain Bird at (626) 963-9311 or

Circle No. 262

Packaged mulch available

Garick Corp. has mulches now available in the Bark Bale, 4 yd³ of mulch compressed into a bale a little over 2 yd³. The compressed bale means that there is no need for a bucket loader or dump truck as it can be handled using a forklift. Easy to store and handle, inventory control is also simplified. The Bark Bale is available in hardwood, Ozark cedar, cypress, pine and Alabama Auburn, a reddish oak material.

For more information call (800) 2GARICK extension 15 or

Circle No. 260

Bunton BZT 31

The new zero-turn rotary mower from Textron Turf Care and Specialty Products also has a liquid-cooled gas engine. The Bunton BZT 31 is powered by a 3-cylinder, 31 hp, liquid-cooled Briggs & Stratton Daihatsu engine, designed to provide cooler, quieter engine operation and longer, more dependable engine life.

The BZT 31 features a 72" cutting deck with adjustable cutting heights from one to five inches, using the electronic deck lift and adjustment system. The mower can travel up to 9.5 mph, has 24x12-12 tires, a wider wheelbase than other mowers and a low center of gravity. An optional rollover protection system is also available.

For more information call Textron at (414) 635-1249 or

Circle No. 263



LANDSCAPE
management

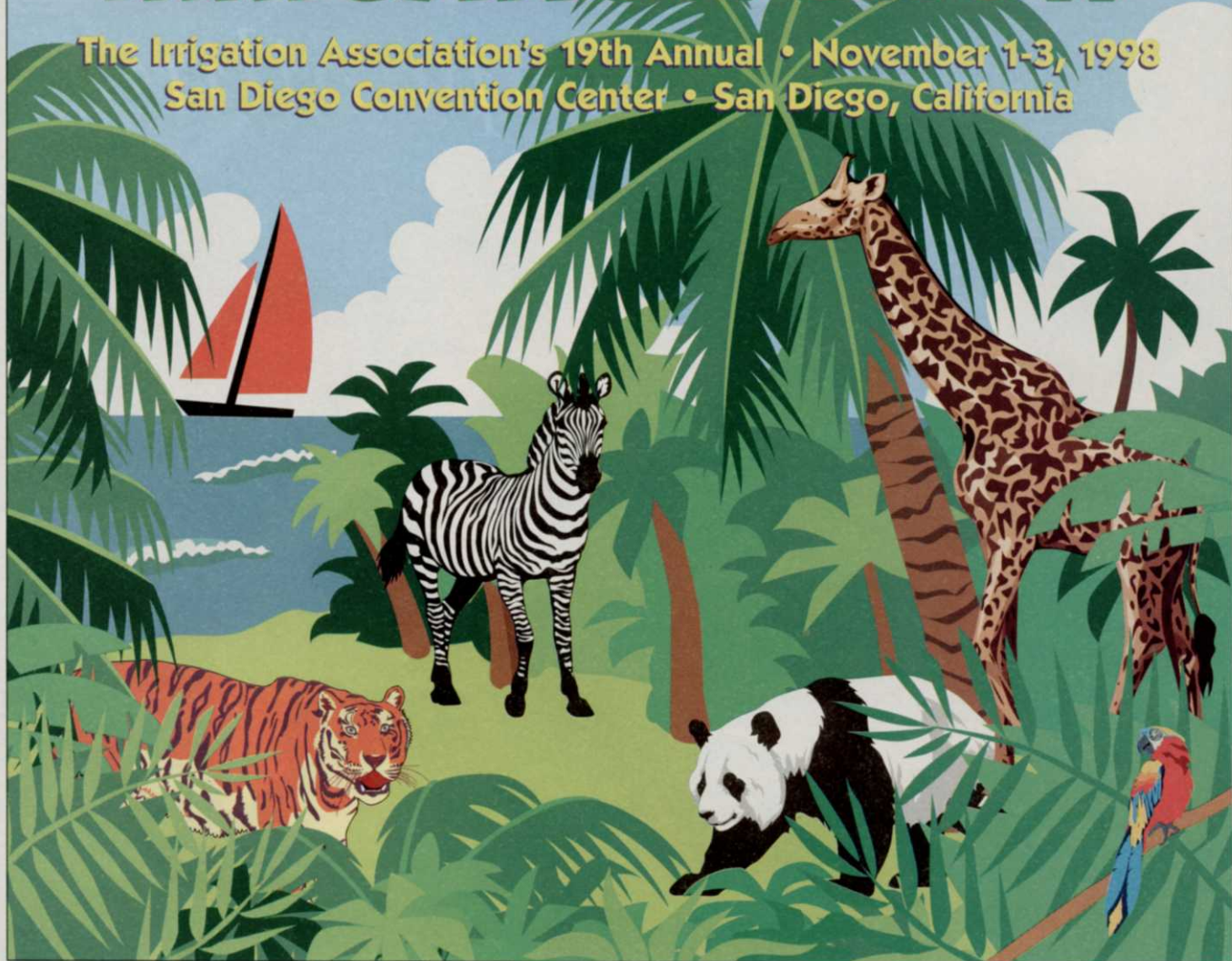
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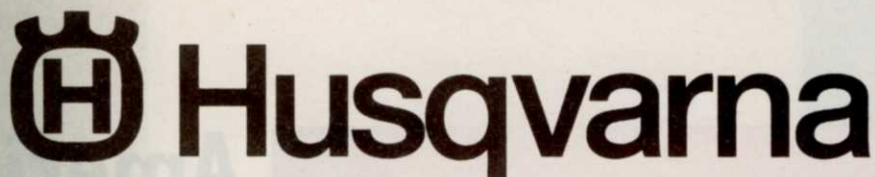
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Company _____

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Husqvarna Forest & Garden Co.

PRODUCT FOCUS

Since 1689, Husqvarna Forest and Garden Co. has been committed to providing superior value to the people that rely on its products. The company manufactures a complete line of outdoor power equipment for landscape professionals, arborists, loggers and homeowners. Husqvarna incorporates the best in engineering, ergonomics, efficiency and economy in its products.

trends and technologies in order to better serve its customers and set a leading pace for the industry. Each year, hundreds of Husqvarna's retailers attend training seminars at the state-of-the-art North American Training Center, which features the latest computer-operated audio/visual equipment, fully equipped workstations for hands-on training in equipment systems and a model store with merchandise on display.

MANUFACTURING FACILITY:

Husqvarna's facility has been located in Huskvarna, Sweden, for its more than three centuries of operations. Husqvarna's experience in motorcycles in the late 1800's led to the introduction of the first chain saw in 1959. The company's North American headquarters, which markets its products to retailers across the U.S., Ontario and British Columbia, is located in Charlotte, N.C.

MAJOR PRODUCT LINES

Husqvarna markets a complete line of chain saws, trimmers, backpack blowers, hand-held blowers, clearing saws and cut-off saws. Husqvarna also manufactures a full line of lawn and garden products, including riding and walk-behind mowers, yard and garden tractors, tillers, edgers, brushcutters and more.

TECHNICAL SUPPORT, SALES, TRAINING AND CUSTOMER SERVICE:

Husqvarna dedicates a substantial portion of its budget to keep its associates abreast of the latest

Husqvarna

Forest & Garden Co.

9006 Perimeter Woods Drive
Charlotte, NC 28216
(800) GET-SAWS (438-7299)
Fax: (704) 599-4302

HYPERLINK <http://www.husqvarna.com>
www.husqvarna.com

Date founded: 1689

PRESIDENT
David Zerfoss

OTHER STAFF
Barbara Paez
Director of Marketing

Don Roop
Director of Sales & Customer Service

Mark Michaels
Senior Forestry Product Manager

Bob Buzzard
Product Manager of
Whole Goods/Accessories



American Cyanamid Company

The plant's integrated environmental systems provide management control levels that are designed to meet or exceed industry standards for air, water, solid and hazardous wastes. Pollution prevention and waste reduction efforts are an important part of ongoing programs in all production areas. Cyanamid manufacturing plants also participate in the Chemical Manufacturers Association's Responsible Care Program.

Product Focus:

The Specialty Products Department of American Cyanamid Company's Agricultural Products Division researches and develops special-use chemical products, and markets them throughout the United States.

The department's herbicides, plant growth regulators and insecticides are used in forestry, professional turf management, consumer lawn and garden, industrial vegetation management, horticultural and greenhouse industries, professional pest control and public health markets.

American Cyanamid is committed to the development of products that are effective, convenient and respectful of the environment. Along with others in the turfgrass and golf course industries, the company believes it has a responsibility to protect the environment, to improve the aesthetics of America's communities and provide enhanced recreational opportunities for all. The company is committed to helping secure a superior habitat for people and wildlife through the manufacture and marketing of environmentally-sensitive products.

Manufacturing Facilities:

American Cyanamid has a number of manufacturing facilities worldwide. Many of the company's products are manufactured at a 2,000-acre complex in Hannibal, Missouri. In addition to using state-of-the-art technology, this plant is a model for safety and environmental responsibility, emphasizing strong programs in recycling and reuse in all production areas to minimize waste.

Tech Support / Training:

The Specialty Products Department is fully-supported by a dedicated staff of research, sales, marketing, technical, service, logistic telemarketing and support professionals. The sales force is among the best-trained in the industry. Cyanamid's Technical Service Group in Princeton, New Jersey, supports sales representatives in their effort to keep lawn care operators, golf course superintendents and custom applicators informed about the performance and environmental aspects of Cyanamid's products.

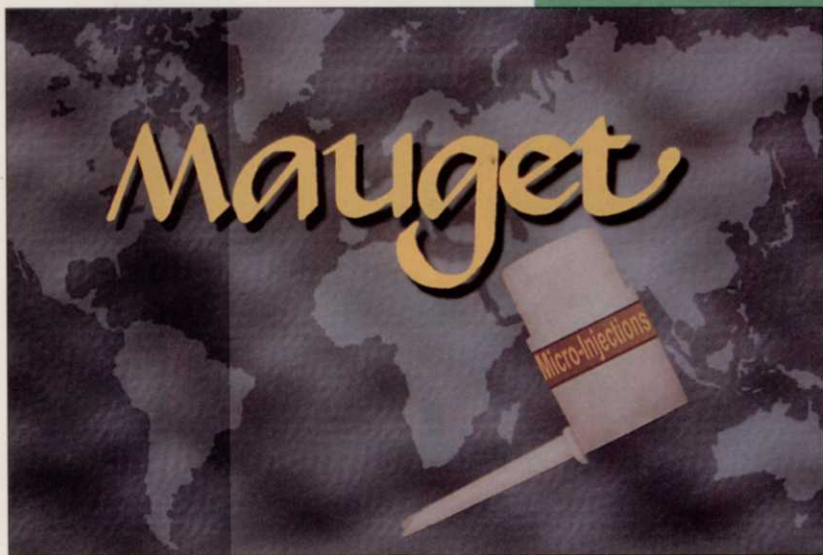
Major Product Lines:

American Cyanamid produces and markets leadership products such as pendimethalin technical, the most widely used preemergent herbicide for turfgrass weed control in the United States; Pendulum herbicide, for preemergent control of annual grasses and many broadleaf weeds in turfgrass and for over-the-top control in more than 260 labeled ornamental plants, available in 60 WDG and 3.3 EC formulations; Image herbicide, available to professional applicators for postemergent use on hard-to-control weeds like nutsedge in warm-season turf; Cycocel plant growth regulant, used by greenhouse horticulturists, primarily on poinsettias, azaleas and geraniums; and Amdro fire ant insecticide, America's leading fire ant bait.

American Cyanamid Company

Specialty Products
Department
One Campus Dr.
Parsippany, NJ 07054
(800) 545-9525

J.J. Mauget Company



Product Focus:

Mauget, the company which pioneered micro-injection for trees, is also the company that was chosen by Shell Chemical in 1965 to introduce its new insecticide to prevent Dutch Elm disease, called Bidrin. Today, Inject-A-Cide B (Bidrin) is labeled for systemic treatment for aphids and many borers, caterpillars, psyllids, scale insects, gall causing larvae, spider mites and spittlebug nymphs. Micro-injection, performed in just minutes, eliminates concern over drift, groundwater contamination, or applicator and customer exposure.

Manufacturing Facilities:

In 1997, Mauget doubled the size of its manufacturing and headquarters facility by moving from Los Angeles to Arcadia, Calif. The new facility enables the company to continue to meet the growing demand for highly-targeted systemic, closed-system, micro-injected products. An aggressive research effort recently resulted in the introduction of two new insecticides, a fungicide and an antibiotic.

Technical Support / Training:

Mauget maintains a technical support staff to answer its toll-free telephone support line—800/TREES RX. This service is available to all professional applicators and nearly 35 distributors across the nation.

Additional support is available through its website—www.mauget.com.

For more than 20 years, Mauget has provided winter training workshops throughout the country through its distributors. Its comprehensive Micro-Injection Field Manual is available from distributors for training and reference.

Major Product Lines:

Since 1965, Mauget has developed 15 systemic products to serve the ornamental tree care market. Combinations of these products are available in capsule form for micro-injection.

- Antibiotics: Mycoject
- Fertilizers: Stemix, Stemix Iron/Zinc, Stemix Zinc, Stemix Hi-Volume
- Micro-Nutrients: Inject-A-Min (Iron, Zinc and Manganese)
- Fungicides: Fungisol and Carboject
- Insecticides: Imicide, Inject-A-Cide; Inject-A-Cide B and Abacide
- Combination: Abasol (Fungicide/Insecticide)

In Tree Health Care, Tomorrow is Today at Mauget

J.J. Mauget Company

5435 Peck Rd.
Arcadia, CA 91006-5847
(800) 873-3779,
(818) 444-1057

Fax number:

(818) 444-7414

E-mail address:

mauget@mauget.com

Website:

www.mauget.com
Incorporated 1958

Staff

Dale I. Dodds, president/CEO
Nathan E. Dodds,
vice president, general manager
Charles A. Dodds,
vice president, operations
Arnold Farran, digital operations/field & technical support
Joanne Najjar, administrative assistance



John Deere

**John Deere Worldwide
Commercial &
Consumer Equipment
Division**

4401 Bland Road
Raleigh, NC 27609
(414) 354-2310

Fax number:

(919) 850-0123 (div. head-
quarters)
(800) 537-8233 (customer
communications center)

Website:

www.Deere.com

Date Founded:

Deere & Co. - 1837
Worldwide Commercial &
Consumer Equipment
Division - 1962

Staff:

Fred Korndorf, President
Mark Rostvold, Senior Vice
President

Product Focus:

The John Deere Worldwide Commercial & Consumer Equipment Division manufactures and distributes a full line of lawn care products for residential, commercial and golf and turf applications. The John Deere Company is noted for more than 160 years of innovation, the highest quality products and product and operator safety initiatives.

Manufacturing Facilities:

The John Deere Worldwide Commercial & Consumer Equipment Division is comprised of four major product groups — Consumer Products Group, Commercial Worksite Products Group, Lawn & Garden Products Group and the Commercial Grounds Care Products Group. Manufacturing facilities are located in Georgia, North Carolina, South Carolina, Tennessee and Wisconsin.

Technical Support/Training:

Deere places a high emphasis on its customers and provides a number of options for customers to contact the company. To locate a dealer, customers can use John Deere's dealer locator online at www.deere.com. Customers can also locate dealers by calling John Deere at (888) MOW-PROS. For more information on John Deere products, customers can call the Customer Communication Center at (800) 537-8233. Additionally, John Deere provides its dealers with the advanced technical training and support as well as sales tools and techniques.

Major Product Lines:

John Deere offers a full line of equipment for homeowners, commercial groundskeepers, and golf and turf property managers. Equipment includes, but is not limited to, commercial and greens mowers, utility tractors, skid steers, front mowers, zero-turning-radius mowers, residential lawn and lawn & garden tractors, residential and commercial walk-behind mowers, and hand-held equipment.

Kubota

Product Focus:

Incorporated in California in 1972, Kubota Tractor Corporation (KTC) has since become a leading U.S. marketer and distributor of under-40 hp compact tractors by consistently marketing high-quality products that meet the needs of today's customers.

Kubota Tractor Corporation markets a complete line of tractors from 12.5 to 91 PTO horsepower, along with a complete line of performance-matched implements, compact construction equipment, pumps and generators, consumer lawn and garden equipment and commercial turf products.

Manufacturing Facilities:

KTC is affiliated with the Kubota Corporation of Osaka, Japan, which introduced the first Kubota tractor to the United States in 1968. Kubota Corporation has affiliates and subsidiaries that manufacture and/or market in 11 countries around the world, and Kubota Corporation products are sold in more than 130 countries. In the United States, Kubota Tractor Corporation, Kubota Credit Corporation (KCC) and Kubota Manufacturing of America support authorized Kubota dealers and customers. Kubota Manufacturing of America is located in Gainesville, GA. Production started in 1989, making loaders for Kubota B and L-Series tractors. Backhoe production began in 1990. And, in 1995, the first Kubota tractor manufactured in the United States started rolling off the assembly line.

Based in Torrance, CA, KTC has facilities throughout the United States. Division offices are located in Columbus, OH; Atlanta, GA; Dallas, TX; and Stockton, CA. The Engine Division is located in Schaumburg, IL. Nearly 1200 dealers comprise Kubota Tractor Corporation's coast-to-coast network.

Technical Support / Training:

Kubota Tractor Corporation supplements



its high-quality, dependable products with the service, parts, training and financing necessary to ensure customer satisfaction. Service personnel in the dealerships are provided with annual training on new products, and additional in-shop service training is available through printed materials and video-based programs. Kubota also provides dealers with a computerized parts ordering system which links dealerships to an inventory of more than 60,000 part numbers strategically located in four warehouses across the country. Kubota Credit Corporation offers flexible programs such as low A.P.R. financing, equity financing, tailored customer repayment plans, rental purchase plans and leasing options.

Major Product Lines:

Kubota's residential and commercial mowing equipment consists of the F-60 Series front mower, T-Series lawn tractors, G-Series garden tractors and GF-Series front mowers, along with a variety of implements. Designed to deliver top performance, Kubota's tractor and implement line-up features the B-Series tractors, Grand L Series and L Series products, M-Series tractors and the M-Series Turf Special. Kubota's compact construction equipment line boasts the powerful new generation KX-2 Series excavators, R-20 Series wheel loaders, L-35 and B21 tractor-loader-backhoes and an impressive array of related implements and attachments. Ideal for a range of indoor and outdoor construction and emergency-power applications, Kubota offers customers and extensive line of gas and diesel generators and pumps.

Kubota Tractor Corp.

3401 Del Amo Blvd.
Torrance, CA 90503
(310) 370-3370

Staff:

Mr. S. Majima, president
Mr. Robin Killian, senior vice
president of sales



Lofts Seed Company, Inc.

Product Focus:

Production and development of turfgrass varieties, along with several wild-flower and native grass mixtures.

Manufacturing Facilities:

Intensive research facility located in Lebanon, OR, where Lofts' staff of agronomists and technicians work to develop new and improved turfgrass varieties.

Technical Support/Training:

Offer a technical support line — (888) LOFTS-CO, along with our website which provides detailed information about our company and products. We produce an informative landscape catalog, along with consumer lawncare guides.

Major Product Lines:

The Rebels turf-type tall fescues; Palmer line of perennial ryegrasses; Preakness Kentucky Bluegrass; Supreme Sport mixture; Tri-Plex Ryegrass blend; Rugged Wear blend.

Lofts Seed Company, Inc.

2325 Stratford Road
Winston-Salem, NC 27103
(800) 526-3890

Fax number:
(336) 659-1927

Website:
www.turf.com

Date Founded:
1923

Staff:
Ken Budd, President/CEO
Neil Myers, Director of
Marketing

Novartis Crop Protection, Inc.

Product Focus:

Novartis Turf and Ornamental Products was founded in December, 1996 with the FTC approval of the merger of Ciba and Sandoz Agro, Inc. With this major merger, combined with the recent acquisition of Merck & Co. Inc.'s global crop protection unit, Novartis has made the commitment to become the worldwide leader in providing innovative products and services, and developing superior technology to protect the production and care of turfgrass and ornamental plants.

Manufacturing Facilities:

Novartis' U.S. Crop Protection, Inc. headquarters is located in Greensboro, NC. Its headquarters houses approximately 1500 employees including the Turf and Ornamental Products Group, as well as the Crop Protection, Inc. Agricultural Division.

Technical support / Training:

Novartis is committed to discovering and marketing a broad range of leading-edge products for the Turf and Ornamental industry. With that in mind, Novartis has six highly dedicated Turf and Ornamental field scientists who are setting the pace by researching products that are both highly effective and environmentally compatible. To reach their goal of listening to the needs of their customers, Novartis Turf and Ornamental Products has a field sales force which includes 19 dedicated turf product sales representatives and three ornamental product sales representatives. In addition, Novartis also offers an on-site customer service staff to provide information and literature on Novartis Turf and Ornamental products and services. For more informa-



tion, please call 1-800-395-TURF.

Major Product Lines:

Turf Product Line:

Primo®: Plant Growth Regulator;
Barricade® Preemergence Herbicide: Poa annua, Crabgrass, Goosegrass and 28 other weeds; **Banner® MAXX®** Fungicide: dollar spot, summer patch; **Subdue® MAXX®** new formulation Fungicide: Pythium and Phytophthora; **Sentinel®** Fungicide: brown patch, dollar spot; and **Award®** Insect Growth Regulator: fire ants.

Ornamentals Product Line:

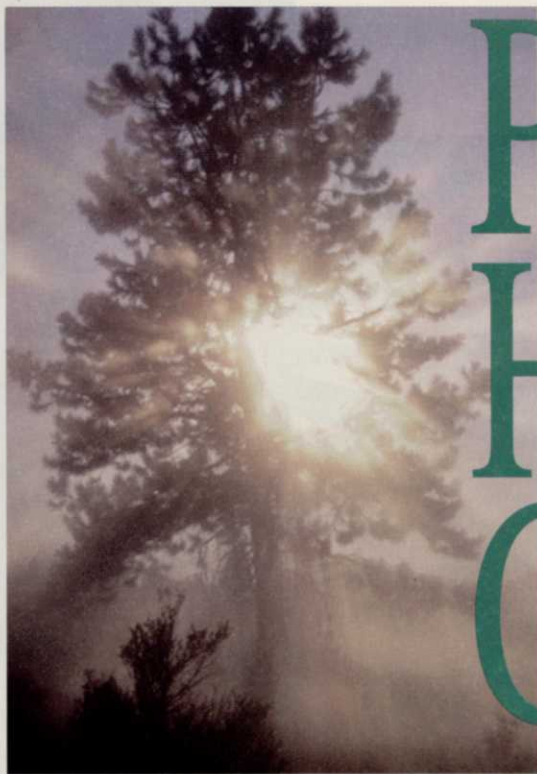
Subdue® MAXX® new formulation Fungicide (features zero hour reentry interval): Pythium and Phytophthora; **Medallion™** new Contact Fungicide: Rhizoctonia, Botrytis and Alternaria; **Factor®** Herbicide: problem grass and annual broadleaf weed control all season; **Avid®** Insecticide: spider mites and leafminers; **Banner® MAXX®** Fungicide: Broad spectrum tree and shrub disease control including powdery mildew, rusts, leafspot, blights, scab and anthracnose; **Precision®** Insect Growth Regulator: whiteflies, soft scales, fungus gnats and shore flies; **Citation®** Insect Growth Regulator: dipterous leafminer larvae developing in the foliage of chrysanthemus.

Novartis Crop Protection, Inc.

410 Swing Road
P.O. Box 18300
Greensboro, NC 27419-8300
(800) 334-9481
(910) 632-6278

Staff:

Leo Bontempo,
President/CEO
Tom McGowan, Vice
President of Specialty
Products Business Unit
Gene Hintze, Director, Turf
and Ornamental Product
Michael Joyce, Director,
Marketing Services
Joe Yoder, Director, Research
and Development



Plant Health Care, Inc.

PLANT HEALTH CARE, INC. • A NATURAL SYSTEMS APPROACH™

Plant Health Care, Inc.

440 William Pitt Way • Pittsburgh, PA 15238

1-800-421-9051

Fax: 412-826-5445

www.planthealthcare.com

E-mail-address:

www@planthealthcare.com

Date founded:

November 1994



COMPANY OVERVIEW:

Plant Health Care, Inc. (PHC, Inc.) is a microbial biotechnology company specializing in the development of biological "plant health care" products and natural systems solutions for the commercial horticulture, turfgrass, forestry and land reclamation industries. The Company is the world technology leader in the commercial development of endo- and ectomycorrhizal fungi inoculant products, and is fast becoming a leader in beneficial bacteria technology. PHC, Inc. has developed more than 30 proprietary products for improving plant, soil and water quality.

MANUFACTURING FACILITIES:

PHC, Inc.'s principal laboratory and production facilities are housed at the University of Pittsburgh Applied Research Center ("UPARC") where it also maintains the world's largest private pure culture collection of ectomycorrhizal fungi. The Company operates a 20,000 sq. ft. automated dry materials blending and packaging facility in Pittsburgh, PA where it manufactures both brand name and private label products. Recently the company received an excellent environmental rating by Eco-Rating International for its manufacturing processes, products and services.

TECHNICAL SUPPORT:

PHC, Inc. scientists and technical experts help design and implement "plant health care" solutions for difficult landscape and land restoration projects, including large-scale mineland reclamation, habitat restoration and reforestation of degraded sites.

MAJOR PRODUCT LINES:

Mycorrhizal Fungi Product Line: MycorTree™, Mycor™ and VAM Cocktail™ brand mycorrhizal inoculants for trees, turf, flower beds, ornamental plantings and propagation.

Water Management Product Line: Pond Saver™ microbial pond cleaner, BioWash™ microbial wash rack cleaner, Yuccah™ brand natural wetting agents, and Terra-Sorb™ hydrogels..

Soil Nutrient/Bacteria Product Line: BioPak™ and Flexx™ brand dry, water soluble biostimulants with beneficial bacteria and chelated micronutrients, Healthy Start™ brand biofertilizer products, Humex™ WS dry, water soluble humic acid, and PHC™ Seakelp™ dry, soluble seaweed extract.

Biocontrol Products: Compete™ Soil Inoculant, AQ10™ Biofungicide, Crymax™ and Lepinox™ bioinsecticides, and Cruiser™ brand beneficial nematodes.

PHC™, Green for Life™, A Natural Systems Approach™, MycorTree™, Mycor™, VAM Cocktail™, PondSaver™, BioWash™, Yuccah™, Terra-Sorb™, BioPak™, Flexx™, Healthy Start™, Humex™, Compete™ and Seakelp™ are trademarks of PHC Royalty, Inc. ©1998

AQ10™, Crymax™, Lepinox™ and Cruiser™ are trademarks of Ecogen, Inc.

**CALL FOR OUR NEW GREEN FOR LIFE™
PRODUCTS CATALOG: 1-800-421-9051**

Rain Bird

Express
Blowers



Product Focus:

Rain Bird manufactures a wide range of irrigation products for turf, golf and agricultural applications. Products include the market-leading T-Bird series of rotors, 1800 spray heads, the new E class controllers, Easy Rain and Unik battery-operated controllers, and a full range of valves and drip irrigation equipment.

Manufacturing Facilities:

Rain Bird has manufacturing facilities in the U.S., Mexico and Europe.

Technical Support/Training:

All products are supported by a toll-free technical services hotline (800) 247-3782.

Major Product Lines:

Rain Bird is the world's leading manufacturer of irrigation equipment and water management products. Available internationally through an extensive network of distributors, the full line of quality products includes rotors, sprays, valves and Xerigation® drip irrigation equipment.

Rain Bird Sales, Inc.

970 West Sierra Madre Ave.
Glendora, CA
(626) 812-3400
(800) 247-3782

Fax number:
(626) 812-3411

Website:
www.rainbird.com

Date Founded:
1933

Staff:
Tony LaFetra, President/CEO



Rexius Express Blowers

Product Focus:

The Express Blower is a truck powered, remote control operated material blowing system that can blow a variety of organic materials. Mulch, compost and soil mixes can be blown up to 800 feet from the truck and from 30 to 100 cubic yards per hour, depending on material and sizing. Primary markets for the Express Blower are landscaping, turf topdressing and erosion control.

Manufacturing Facilities:

Rexius Express Blowers is located in Eugene, OR at the 25-acre facility of Rexius Forest By-Products, Inc., a 50-year-old company with 160 employees producing a variety of landscape and garden products. Rexius utilizes a 10,000+ square foot shop which maintains its 80 trucks and uses to manufacture its blower trucks. The facility operates 24 hours a day, 6 days a week.

Technical Support/Training:

Rexius employs a highly talented group of 20 technicians, fabricators and mechanics, in addition to its own parts department, to support the Express Blower division. Rexius has two full-time training technicians and three full-time service technicians offering help in trouble-shooting and general service and maintenance. Rexius also offers a variety of help in sales and marketing of the blower business in general.

Major Products Lines:

The standard model Express Blower is a 40 foot straight unit with a 28 foot, 56 yd³ box. This unit is primarily mounted on a new model Freightliner FL112, but custom configurations are optional. The second unit is the 43 foot semi Express blower trailer which can be configured with most existing semi tractors. Its capacity is 86 yd³, designed more for commercial work and high volume production. Other new models are in the design process.

Rexius Express Blowers

750 Chambers St.
Eugene, OR 97402
(541) 342-1835

Fax number:
(541) 343-4802

E-Mail Address:
dans@expressblower.com

Website:
www.expressblower.com

Date Founded:
1947

Staff:

Marv Rexius, President
Arlen Rexius, Senior VP
Rusty Rexius, VP Public
Relations
Dan Sutton, VP Sales
Jack Hoeck, VP Production
Jerry Cunningham, Controller

Riverdale Chemical Company

Riverdale

Product Focus:

Riverdale produces primarily post emergent broadleaf herbicides. The most recent focus is on the new compounds; Millennium, Ultra, Cool Power and Horsepower, each containing revolutionary Dow components.

Manufacturing Facilities:

Riverdale's home office is in Glenwood, IL. All products are manufactured, formulated, packaged and shipped from Chicago Heights, IL.

Technical Support/Training:

Riverdale supplies label books, labels on CD-ROM and product information bulletins. Sales representatives provide product stewardship and training to distributors and end users.

Major Product Lines:

Post emergent broadleaf herbicides: Millennium, Ultra, Cool Power, Horsepower, Solution, Triplet.

Riverdale Chemical Company

425 W. 194th St.
Glenwood, IL 60425
(800) 345-3330

Fax number:
(708) 754-0314

Website:
www.Riverdalecc.com

Date Founded:
1941

Staff:
Jim Champion, President
Marvin Moore, VP Sales &
Marketing
Curtis Clark, Marketing
Manager



Tee-2-Green

Technical Support / Training:

Tee-2-Green® supports distributors and golf course superintendents through advertising, tech sheets and publications, plus trade show and seminar participation.

Technical representatives Russ Hayworth in Arizona and Rick Elyea from Ohio work with golf course architects, designers and distributors to help spec the right bentgrass for their course.

Tee-2-Green® supports education through scholarships for Penn State University turfgrass students, and through The Annual Musser Golf Tournament which awards scholarships to graduate students involved in turfgrass research.

Major Product Lines:

Tee-2-Green® markets only premium bentgrasses for turf maintenance professionals.

Penncross, introduced in 1955, remains the best selling bentgrass year after year.

Penneagle, introduced in 1979, is an excellent choice for fairways, and consistently tops fairway trials.

PennLinks, introduced in 1986, rapidly became the new choice for true putting.

Pennway is an economical fairway and winter overseeding blend

PennTrio is a certified creeping bentgrass blend with 1/3 each Penncross, Penneagle and PennLinks

Penn A-1, Penn A-2, Penn A-4, Penn G-1, Penn G-2, and Penn G-6 (shown above prior to harvest), the new "Penn Pals", are typically lower growing and well adapted to a cutting height of 1/8 inch. They are dense, fine leafed and have an upright growth habit

Seaside II is salt tolerant, and was developed exclusively for fairway use.

Product Focus:

Tee-2-Green® is a registered trademark of Tee-2-Green Corp. founded in 1973 to market Penncross creeping bentgrass produced by the Penncross Creeping Bentgrass Association, in agreement with Penn State University. The growers association and Tee-2-Green® have maintained the high production standards set forth in 1955 by Professor Bert Musser, then assisted by Dr. Joe Duich. As Dr. Duich later released Penneagle and PennLinks, the varieties became the "Penn Pals," and set high standards for tees, fairways and putting greens worldwide.

The Penn "A" and "G" series, plus Seaside II, developed by Dr. Joe Duich, were introduced in 1995 and are the new generation of creeping bents. The "A" and "G" series are finer and denser than other commercial varieties, and demand close mowing. Seaside II is salt tolerant and was developed exclusively for fairway use.

Manufacturing Facilities:

All of the Penn bentgrass varieties are grown and certified in Oregon and meet higher standards than any other creeping bentgrass produced anywhere in the world. Seed is conditioned in the individual grower's cleaner, and stored in one of Tee-2-Green's warehouses. Shipments are carefully palletized and shrink-wrapped to avoid contamination. Pure Seed Testing Inc., West and East facilities maintain ongoing research and evaluation of all the "Penn Pals" varieties.

Tee-2-Green®

P.O. Box 250
Hubbard, OR 97032
(800) 547-0255,
(503) 651-2130
www.bentinfo@tee-2-
green.com

Fax number:

(503) 651-2351

Date founded:

1973

Staff:

Bill L. Rose, president
Charlotte Flowers, general
manager
Dr. Joe Duich, consultant
Rick Elyea, consultant

Photo description: Bill Rose,
President of Tee-2-Green in-
spects a Penn A-4™ field

Terra Industries Inc.



Product Focus:

Terra is a leading marketer and producer of nitrogen fertilizers, plant protection products, seeds and services to growers. Terra meets the needs of non-agriculture customers through its Professional Products group, working with turf growers, lawn care/landscape professionals, golf course superintendents, nursery operators, park supervisors, foresters and vegetation control managers.

Manufacturing Facilities:

Terra operates over 425 service centers supplying plant input products and services. Terra also operates two methanol and four nitrogen fertilizer manufacturing facilities in the U.S., one nitrogen plant in Canada and two in the U.K. Terra has five formulation facilities as well as fertilizer blending facilities geographically located to meet customers' needs.

Technical Support/Training:

Terra Professional Products employs a dedicated sales force of more than 130, working from 425 locations throughout the Midwest, South, south-east and Atlantic states. This distribution network is supported by Terra's own full-service soil and leaf tissue laboratory, a staff of technical service representatives, technical literature and research center.

Major Product Lines:

Terra offers an extensive line of pesticides, fertilizers, seed, other supplies and services. Terra Professional Products carries over 3,000 products, including products marketed under Terra and Riverside brand names, as well as from other industry leaders. Terra recently expanded their turf fertilizer line with the introduction of Terra fertilizers with GoldCote™.

Terra Industries Inc.

600 Fourth St.
PO Box 6000
Sioux City, IA 51102
(800) 831-1002

Fax number:
(712) 233-6136

E-Mail Address:
bwoerner@terrainindustries.com

Website:
www.terrainindustries.com

Date Founded:
1964

Staff:
Burton Joyce, President and Chief Executive Officer
Mike Bennett, Executive Vice President and Chief Operating Officer
Monty Summa, Senior Vice President - Terra Division
Dale Locken, Vice President - Northern Division
John Taylor, Vice President - Southern Division
Robert Yarborough, Professional Products Manager - Northern Division
Karen Hartman, Professional Products Manager - Southern Division



The Toro Company

Product Focus:

The Toro Company offers one of the broadest lines of outdoor power equipment available for landscape professionals worldwide. Toro listens to contractor needs and translates them into innovative products designed to achieve the highest level of productivity. A Toro product signifies superior engineering, guaranteed service and a commitment to operator safety.

Manufacturing Facilities:

Toro's Tomah, WI manufacturing plant, the main manufacturing facility for commercial products, has achieved the prestigious ISO 9002 certification for international quality consistency. This certification is tangible proof that Toro has a documented system and the long-term commitment to provide the level of process consistency and quality that customers expect.

Technical Support / Training:

Toro is supported by an exclusive network of highly-trained and knowledgeable distributors and dealers. This distribution network offers superb parts availability and convenient after-sale services. Every Toro product comes with owners and parts manuals. Also available are instructional videos for training employees in operating procedures and safety precautions.

Major Product Lines:

Toro offers a wide variety of product lines including: ProLine hydro- and gear-drive mid-size mowers, Z Master zero radius tractors, Groundsmaster outfront riding rotary mowers, Workman utility vehicles, as well as debris management and aeration equipment. All backed by Toro's exclusive technologies that increase productivity, operator safety and versatility.

The Toro Company
8111 Lyndale Ave. S.
Bloomington, MN 55420-1196
(612) 888-8801
Fax number:
(612) 887-8258

Turf Merchants, Inc.



Product Focus:

TMI sources from private breeding programs the latest in improved turfgrass seeds. Our major focus is on improved turfgrasses for the professional markets of golf, landscaping and landscape architecture.

These include creeping bentgrasses, turf-type tall fescues, perennial ryegrasses and Kentucky bluegrasses. TMI also offers domestically-produced, warm-season grasses such as bermudagrass and zoysiagrass.

From its own conventional breeding program, to university sources such as Rutgers University and Texas A&M, TMI is looking forward to offering the latest technologically-advanced varieties available anywhere.

Manufacturing Facilities:

Turf Merchants, Inc. is located in the heart of Oregon: southern Willamette Valley, where over 65 percent of the world's supply of grass seed is grown.

Natural rainfall and expertise in production make the quality of Oregon grass seed the best in the world. TMI operates from three satellite warehouses located strategically around the valley with points north, south and west. This makes customer response an industry standard, with promptness and accuracy in shipments that are un-

paralleled. TMI has the ability to blend, process and ship simultaneously from any of these locations where over 30 million pounds of seed are processed each year.

Technical Support / Training:

TMI has a variety of technical support through extensive trial systems, product literature and data bases. Results from turf trials in dozens of locations make the process of selling a simplified matter when comparative data is essential. Color slides of the production process and research add an additional dimension to the support available.

Major Product Lines:

Turf-type perennial ryegrasses including Affinity, Manhattan 3, Rodeo II, Allaire II, Patriot II, Evening Shade, Nomad (spreading type), Pennfine II and VIP II.

Turf-type tall fescues include Bonsai 3, Twilight II, Taurus, TurfGem II, Adventure II, Micro, Earthsave, Avanti II.

Kentucky bluegrasses are Gnome, Cobalt, Sodnet, Rugby, Viva and Trueblue.

Creeping bentgrasses are Backspin and Trueline.

Zen zoysiagrass and Del Sol bermudagrass round out the warm-season lines.

Turf Merchants Inc.

33390 Tangent Loop
Tangent, OR 97389
(541) 926-8649

Fax number:

(541) 926-4435

Staff:

Steven P. Tubbs, president
Nancy Aerni, vice president
Frank Gill, vice president
Robin Mankle, secretary/
treasurer



Turf-Seed Inc.

P.O. Box 250
Hubbard, OR 97032
(800) 247-6910
(503) 651-2130
e-mail: info@turfseed.com
www.turf-seed.com

Fax number:
(503) 651-2351

Date founded:
1970

Staff:

Bill L. Rose, president
Gordon Zielinski, executive
vice president
Darcy Loscutoff, general
manager
Tom Stanley, marketing
director
Duane Klundt, customer
service
Vanessa Jensen, southeast
marketing
Rick Elyea, golf course
consulting
John Rector, national sales
representative

Product Focus:

Turf-Seed, Inc. was founded in 1970 by Mr. Bill Rose, president, to market only premium quality turfgrass cultivars and blends, foragegrass cultivars and mixtures, plus wildflower mixtures through an established distributor network. Golf courses, sod production farms, athletic field managers, parks departments, and homeowners rely on Turf-Seed's Research/Production/Marketing (RPM) program. Turf-Seed's industry-wide reputation for top-performing proprietary varieties developed by Pure Seed Testing, Inc., production by Roselawn Seed and select contract growers, plus systematic marketing managed by Mr. Tom Stanley complete the RPM cycle.

Manufacturing Facilities:

Turf-Seed, Inc. is located near Hubbard, Oregon, in the center of the fertile Willamette Valley, "grass seed capital of the world." Most of the production comes from this region, with its ideal growing conditions. Crops are cleaned by growers or in nearby seed conditioning plants where blue tags are attached, and delivered to the Turf-Seed warehouses. Blends and mixtures are made at this Turf-Seed facility on two blending lines. Turf-Seed's corporate offices are attached to the warehouse for efficient marketing communication and shipping coordination. Employees enjoy breaks and lunch on the grassed picnic area in the back.

Turf-Seed, Inc.

Technical Support / Training:

Turf-Seed sets the pace in providing information to distributors and consumers through technical publications, Turf-Seed Trends newsletter, variety and blend tech sheets, vis-a-vis trade show and seminar participation, plus the first and largest independent field day in the United States. This annual event, now in its 15th year, is held alternately at the Pure Seed Testing West 110-acre research farm near Hubbard, Oregon, or Pure Seed Testing East near Rolesville, North Carolina. The Oregon event, held the third Thursday in June during even numbered years, focuses on cool-season grasses, while the North Carolina event is Friday preceding ASTA, and features tall fescue, bermudagrass, and zoysia, and addresses humidity-induced disease pressures. For information, call 503/651-2130.

Major Product Lines:

Perennial ryegrass: Alliance Brand blend, BrightStar, BrightStar II, Catalina, Chaparral, Charger, Citation III, Manhattan 3, Navajo, QuickStart, Roadrunner, Sunrye (246). Tall fescue: Confederate blend, MowLess blend, Triathalawn blend, Apache II, Coronado, Coronado Gold, Eldorado, Matador, Murietta, Olympic II, Safari, Silverado, Tar Heel, Tomahawk, Wolfpack. Kentucky bluegrass: Galaxy Brand blend, Blacksburg, BlueStar, Challenger, Columbia, Livingston, Marquis, Midnight, Opti-Green, Unique, Voyager common Ky., Winterplay Poa trivialis. Fine fescue: Aurora, Discovery hard fescue, Shademaster II creeping red fescue, Seabreeze slender creeper, Shadow, Tiffany chewings fescue; Bighorn sheeps fescue, Seabreeze slender creeper. Creeping bentgrass: PennTrio blend, Pennway blend, Penncross, Penneagle, PennLinks, Penn A-4, Penn G-6, Seaside II. Wildflowers: Bloomers® wildflower mixture, Baby Bloomers wildflower mixture, DeBlooms annual wildflower mixture.

United Horticultural Supply

Product Focus:

United Horticultural Supply is specifically designed to serve the professional turf and ornamental industries by providing the finest products and technical expertise available. Since our inception, we have committed ourselves to three principles: to provide the highest quality products available; to provide qualified technical personnel dedicated strictly to the horticulture industry; and to implement and promote environmental stewardship. UHS's national strength provides customers a wider selection of products and is the reason we are leaders in bringing innovative and cutting-edge technologies to the market.

Manufacturing Facilities:

Seven regional divisions, each operating as a local business with its own sales, management and marketing staffs, enable us to concentrate on the unique needs of the diverse parts of the country as well. This blend of national scope and local focus is what makes United Horticultural Supply unrivaled in the industry. Each regional United Horticultural Supply division is linked to a series of strategically located warehouses, which ensures prompt delivery and availability of product.

Technical Support/Training:

Complementing our extensive line is a staff of dedicated professionals who are knowledgeable about the items they sell as well as their intended markets. Each salesperson has working experience within the industry they serve, enabling them to provide solid advice and accurate answers to your questions. Regional research and field trials enhance our position in responding to local needs and our ability to bring effective and



innovative products to market.

Major Product Lines:

United Horticultural Supply is uniquely positioned with all major manufacturers of chemicals, fertilizers and related products, carrying only the finest items in order to satisfy the needs of today's working professional. In addition, we have developed our own exclusive line of premium products. Marketed under the UHS label, these products are recognized as top performers in the business. Several of these products were first introduced by UHS and have quickly become industry standards. Examples include Dursban TNP and 2CG insecticides, Chaser and Pre PairR herbicides, RespondR wetting agent plus several surfactants and spray additives. We also carry: Fertilizers - blends formulated to perform best in the various micro-climates and management programs found throughout the United States. Turf Seed - perennial ryegrass, bluegrass, fine and turf-type fescues plus custom blends and mixtures. Safety & Professional Products - a comprehensive line of safety products to meet worker protection standards. Equipment - we also feature quality-built fertilizer spreaders and backpack sprayers plus unique items such as the Powerhead trimmer disk.

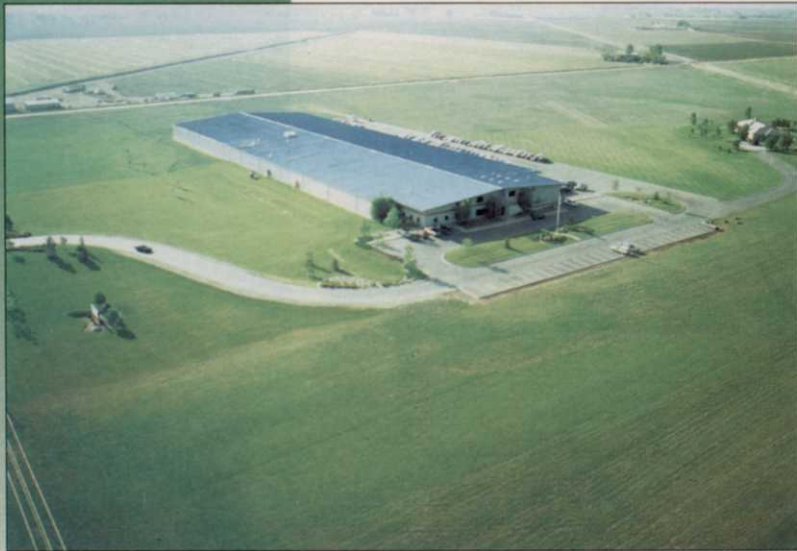
United Horticultural Supply

9335 Elm Court
Denver, CO 80221
(800) 847-6417

Fax number:
(303) 487-9010

Website:
www.uhsonline.com

Staff:
Jeff Allison, Atlantic Division
Manager
(410) 548-2200
Russ Mitchell, Great Lakes
Division Manager
(517) 333-8788
Steve Jackson, Gulf States
Division Manager
(800) 457-0415
Bob Flynn, Midwest Division
Manager
(800) 833-4827
Randy Davis, Pacific Division
Manager
(800) 637-0422
John Walther, Southern
Division Manager
(409) 731-1017
Mike Thurlow, Western
Division Manager
(209) 253-5700



Walker Manufacturing Company

Walker Manufacturing Company

5925 East Harmony Road
Fort Collins, CO 80528
(970) 221-2614

Fax number:
(970) 221-2619

E-Mail Address:
walker@frii.com

Website:
www.walkermowers.com

Date Founded:
1957

Staff:
Bob Walker, President
(Marketing/Finance)
Dean Walker, VP
(Engineering/Manufacturing)
Max Walker, VP (Chairman)
Bob Tomasek, Customer
Service/Warranty

Product Focus:

Walker manufacturing designs, develops and manufactures a line of compact, mid-size commercial riding mowers and attachments. The mowers are targeted for use in landscaped areas with combinations of trimming and open space where quick maneuverability and fitting into tight spots increase productivity.

Manufacturing Facilities:

The company's factory is at Fort Collins, CO, situated on 25 acres. It has 100,000 square feet of manufacturing area and 16,000 square feet of offices and research and development. The manufacturing operation includes parts fabrication, welding, painting and assembly. Fifteen acres of irrigated turfgrass around the facility provides in-site test mowing area. The current facility will allow growth to produce up to 25 units per day.

Technical Support/Training:

The factory customer service staff is available for technical support to dealers and end-customers. A dealer program is administered by 33 independent territorial distributors across the U.S.

Major Product Lines:

Walker makes mid-size commercial riding mowers and attachments. Five tractor models have gasoline or diesel engines from 11 to 25 hp. Nine interchangeable mower decks with cutting widths from 36 to 62 inches are offered, each with grass collection, side discharge or mulching available. Six front-mounted implements are also marketed: two snow blowers, a rotary broom, a dozer blade, a dethatcher and an edger.

Western Products



Product Focus:

Western Products manufactures a full line of snowplows and salt and sand spreaders for four-wheel drive trucks. Snow and ice control products are distributed through a nationwide network of distributors.

Manufacturing Facilities:

Plows and ice control products are manufactured in three plants located in Milwaukee, WI; Johnson City, TN; and Rockland, ME.

Technical Support/Training:

Western Products distributors, located throughout the snow belt, sell wholegoods, service parts and provide service and warranty support for all product lines.

Major Product Lines:

Products include: steel and poly blade snowplows in 6.5' to 10' blade widths and hopper, insert-type spreaders in steel and stainless steel and four models of tailgate-type spreaders

Western Products

7777 N. 73rd Street
Milwaukee, WI 53223
(414) 354-2310

Fax number:

(414) 354-8448

E-Mail Address:

info@westernplows.com

Website:

www.westernplows.com

Date Founded:

1950

Staff:

Eric Smitsdorff, Sales and
Marketing Manager
Rick Coolman, Advertising
Manager



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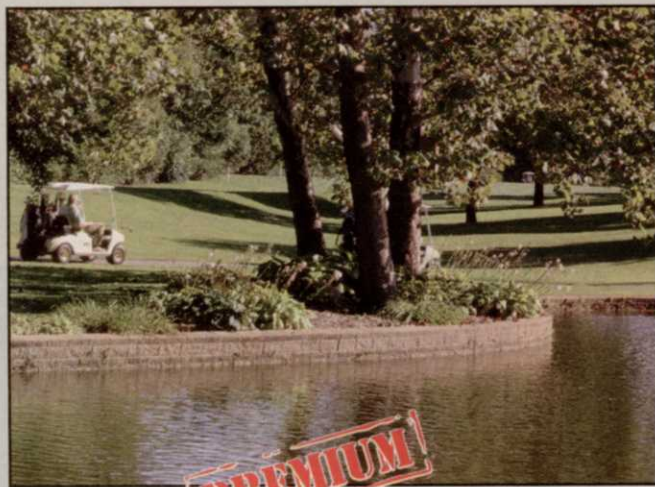
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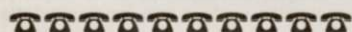


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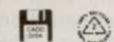
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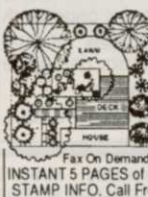
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DIVISION MANAGERS- Well established Central Indiana full service Co. specializing in commercial accounts in need of professional managers for the following divisions: **MAINTENANCE DIV. MANAGER-** This division encompasses T&O treatments, Annual Flowers, Pruning & Bed care. Position entails customer service, plant diagnosis estimating, employee management & sales. Candidate should possess related degree. 5 yr. exp. in all facets of landscape maintenance. **CUTTING DIV. MANAGER-** This division encompasses grass cutting for commercial properties of up to 20 acres, bushog & fall leaf removal. Position entails customer service estimating, employee management & sales. Candidate should possess a college degree, strong communication and organizational skills, 5 yr.'s experience in commercial cutting. All positions offer competitive salary, insurance, company truck & profit sharing. We are an Equal Opportunity Employer. Send resume to: P.O. Box 34231, Indianapolis, IN 46234. 8/98

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Grab Bag

NGF to study the 'state of the game'

The National Golf Foundation reported in August that it would begin a comprehensive study on the future of golf. The study will analyze the current golf growth environment, examine changes made over the past 10 years and make some predictions about what lies ahead in the next decade. Golf demand in specific demographic segments of the population—including "baby boomers" and their children—will be studied.

Big harvest for '98

Pennington Seed, Inc. has announced that it will harvest more than 100 million pounds of turfgrass seed this year. As dramatic as that number sounds it accounts for only 10 percent of the one billion pounds of turf and forage seed produced industry-wide.

The unusually rainy conditions during the winter and spring benefited the Oregon crops, which annually produce half the seed worldwide, increasing turf seed supply. Increased acreage and strong yields mean good news for retailers and consumers. Turf-type tall fescue pricing could drop 10 to 15 percent and Kentucky bluegrass and perennial rye varieties could be 5 percent lower.

Supplies for varieties produced outside of Oregon are also plentiful.



Last look at one of 100

The Mohonk Mountain Resort, New Paltz, NY, is truly deserving of *LM 100* membership. John van Etten is the grounds manager at the 500-acre, 110-year-old resort. This organic show garden is one of the many highlights.

21,000 attend Expo in Louisville

The International Lawn, Garden and Power Equipment Expo was successful once again in attracting both exhibitors and visitors in its 15th year.

Of the 613 exhibitors, 218 were either returnees to the Expo after a break or new, while 68 were recognized as having exhibited every year of the Expo, and 174 companies exhibited in the demo area. In attendance were international exhibitors from Australia, Canada, Finland, France, Germany, Ireland, Italy, Sweden and Switzerland.

Of the 21,135 visitors, 35 percent were dealers; 34 percent were lawn and landscape professionals; 12 percent were distributors; 10 percent merchandisers/buyers, retailers, lawn and garden centers; and 9 percent were manufacturers representatives.

Arizona companies form compost alliance

The Groundskeeper, parent company of Desert Compost, and Western Organics, Inc. have joined forces at Desert Compost's Tempe, AZ facility. Western Organics will manage the site, receiving, mulching and composting yard waste, grass clippings, sawdust and wood waste products. This will allow The Groundskeeper to focus on its core business and maintain its commitment to environmental sensitivity.

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...

SUPRANOVA SUPINA BLUEGRASS

**The Dunthorpe Garden Tour.
Five exquisite estate gardens.
Rows of award-winning roses.
Rainbows of peonies and azaleas.
Elegant fountains and waterfalls.
But what really stole the show,
was the grass.**

It's not everyday a lawn gets more attention than endless acres of magnificent flowers. Unless, of course, it was seeded with Supranova Supina Bluegrass from Fine Lawn Research. Or one of 14 other Fine Lawn varieties, each specifically developed to thrive in a particular environment. Whether your lawn basks in the humid heat of the Southeast, or drowns in the moisture-rich Northwest, the experienced



agronomists at Fine Lawn can help you select a seed mixture that will exceed your expectations. We can even blend different varieties to solve specific needs.

The benefits of using Fine Lawn seed are easy to see in residential lawns, athletic fields, parks, golf courses and commercial properties. For more information, or to find the location of the dealer nearest you, please give us a call.

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What they're saying about **The New Penn Pals**

"Penn A-4 enhances the game of golf. It is my personal feeling that Penn A-4 is one of a number of significant contributions to the game of golf by Dr. Joe Duich." "Awesome."

Cutler Robinson, CGCS, Supt.
Bayville GC, Virginia Beach, VA

"Simply stated, everyone who has played Bayville comments the greens are 'the best they have ever puttied.' This grass allows our members to experience 'tour' quality putting and green speed without jeopardizing fairness and enjoyment. Properly managed, Penn A-4 is, in my opinion, the best grass to date and has set a new standard for excellence."

Dean Hurst, PGA Professional
Bayville GC, Virginia Beach, VA

"Even though summer temperatures can reach 115-120°, we've cut our Penn A-4 at 7/64" for more than a year with no problems."

Doug Anderson, CGCS, Supt.
The Vintage Club, Palm Desert, CA

"The density of Penn G-6 helps to control moss. For me, the lower the cutting height, the easier the management (Penn G-6)."

Pete Gerdon, Supt.
Grandfather Golf and CC, Linville, NC

"Because of the short season at our 7,500 ft. elevation, we sodded our rebuilt greens with 42" wide rolls of Penn A-4 from West Coast Turf in California.

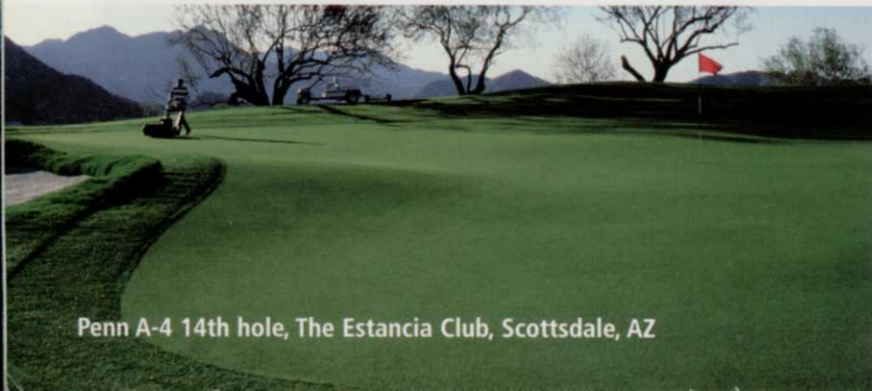
There, we found a source for rootzone sand that closely matched our own, and the long, wide rolls minimized seams. We re-opened 5 weeks after sodding, and dense, fibrous roots reached 10-12" in a matter of months."

Kevin Ross, CGCS, Supt.
CC of the Rockies, Edwards, CO

"Quality of the Penn A-4 putting surfaces at The Estancia Club is beyond comparison. Ball roll and the pace of the greens are excellent. I would not hesitate using Penn A-4 again."

Carl Rygg, CGCS, Supt.
The Estancia Club, Scottsdale, AZ

Circle No. 103 on Reader Inquiry Card



Penn A-4 14th hole, The Estancia Club, Scottsdale, AZ

"Penn A-4 Greens do not cost more. While they do need more topdressing and aerification, they require significantly less water, fertilizer, and pesticides."

Ted Hunker, Supt.
Tartan Fields GC, Dublin, OH

"We've overseeded Penn G-6 into our Poa/bentgrass greens after aerifying a total of five times. We fill the holes within 1/4 to 1/8" with sand, seed with one lb. per 1,000 sq. ft., then topdress. When the Poa stresses under heat pressure, Penn G-6 will re-populate that area."

John Lof, Supt.
Michelbook CC, McMinnville, OR

"Penn A-4 greens do not mean more work, more trouble, and do not cost more money to maintain. In fact, just the opposite may be true. We have found that they require fewer cultural practices such as vertical mowing and brushing.

In two years of managing Penn A-4, we have not observed any brown patch or dollar spot, and greens require limited amounts of fertilizer."

Kurt Thuemmel, CGCS, Supt.
Walnut Hills CC, East Lansing, MI

"I overseed our 18 old greens with 1/4 lb. per 1,000 sq. ft. of Penn A-4 each time we aerify. Now, with single cut and roll, we can vary our green speeds from 9 to 12 1/2'. Where ball marks tend to tear older bents, they just make dents in Penn A-4."

Pat Franklin, Supt.
Plum Creek CC, Fishers, IN

"We resodded high stress areas in our PennLinks fairways with Seaside II, and are very pleased with its performance. I selected Seaside II with improved dollar spot disease resistance and salt tolerance to address two major turf challenges; the coastal influence and potential sodium buildup from irrigation.

We find Seaside II a strong ally to our PennLinks fairways, and in the future, will slit seed with Seaside II where needed to enhance turf quality."

David Major, CGCS, Supt.
Del Mar CC, Rancho Santa Fe, CA

"We have 36 putting greens and 4 practice greens that have been converted from Toronto C-15 to Penn A-4 Creeping bentgrass.

When the greens were placed in play the spring after conversion, comments from our golfing membership were very positive even though turf maturity had not been reached. Putting trueness and turf appearance were among the positive remarks most often mentioned. Now that the putting surfaces have additional development, comments are the greens are superior to anything they've played."

Bill Byers, CGCS, Supt.
Des Moines G & CC, West Des Moines, IA

"Comments from golfers have been extremely positive (Penn G-2)."

Jeff Hill, CGCS, Supt.
Pinehurst Resort and CC, No. 8, Pinehurst, NC

Penn A-1
Penn A-2
Penn A-4
Penn G-1
Penn G-2
Penn G-6
Seaside II
NuPenn Blend

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