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## AS WE SEE IT

RON HALL, SENIOR EDITOR



### Just another banana split?

I almost felt like reaching over the counter, snatching the waxed pint cup from her hands and thundering, "Here, this is how you're supposed to make a banana split."

Biting my lip, I kept my mouth shut on the other side of the glass counter.

The keen anticipation I'd felt when I'd finished my lunch salad ("Fat-free dressing please.") in a nearby burger joint faded by degrees.

Probably, few people have watched a banana split being built with more interest than I did that particular Sunday afternoon. In my short drive to the dairy, an almost weekly ritual in the summer, I'd worked up an unholy passion for that godly concoction of sliced, firm bananas, ice cream, strawberries and syrups. I hadn't treated myself to one for two full months.

So you can imagine the silly grin that lifted my ears when I marched into the dairy and saw the counter in front of me empty. The first nice weekends of the spring find the whole town lined up almost out the door here. You can wait 40 minutes to get a banana split. It's worth it, too.

Something didn't seem quite right this time, though.

I don't know exactly what it was. Maybe it was the attitude of the young woman who took my order. Yea, that's it. To her, it seemed to be only another banana split.

Had she looked up from her job, she would have recognized the anxious look in my face. I tried to make it read: don't you understand, if I'd wanted *just* a banana split, I would have stopped at *just* another dairy. I want a banana split like I always get here, a "you're-not-going-to-eat-all-that-are-you?" banana split.

As I watched, my apprehension grew.

The dairy worker was polite and nice and all that, but she didn't construct this banana split with the same reckless enthusiasm that has always made this particular dairy special.

The policy here has always been to keep piling on the ice cream, syrup and nuts until it starts tumbling off.

This time, though, she measured each scoop of ice cream, each dollop of strawberries. She even leveled off the spoonful of nuts, the excess falling back into a can, and not onto the top of my banana split.

Then, when she didn't crisply *rap, rap, rap* the bottom of the huge paper cup against the counter top so that everything would settle and she could pack even more bananas, ice cream and syrup into my banana split, that's when I wanted to reach over the counter and grab the cup out of her hands.

"Hey, this is how you do it!" I wanted to yell as I saw myself plunging the stainless steel ice cream scoop into the freezer. Again and again.

But, of course, I didn't.

Instead, I paid her the \$2.70, squeaked a feeble thanks and retreated toward a tiny booth along the wall.

No need to stick out my tongue anteater-style this time to lap up nuts and syrup so it wouldn't spill to the floor.

She had filled the banana split to the line on the paper cup indicating I'd received a full portion, never mind that the line is just two-thirds the way up the cup.

I don't know if this is a new company policy. I hope not. If it is, there's no reason for me to stop here anymore.

I can get *just* a banana split *just* about anywhere.



# LANDSCAPE MANAGEMENT

'WE KNOW YOUR TURF'

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This summer, at peak season, almost 200,000 people will be working in golf maintenance, which will also contribute about \$6 billion to the nation's economy.

*Jerry Roche*

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*Ron Hall*

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*Jerry Roche, Ron Hall*

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*Terry McIver*

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*Terry McIver*



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*Richard Moffitt*

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*Terry McIver*

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*Jerry Roche*

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*Terry McIver*

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*Joe Rimelspach*

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**ON THE COVER:** Makena Golf Resort in Maui, Hawaii. Shown is No.7 hole, South Course. Designed by Robert Trent Jones, Jr. Photo by Henebry Photography. Photo courtesy Robert Trent Jones II, Palo Alto, Calif.

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LANDSCAPE MANAGEMENT (ISSN 0894-1254) is published monthly by Advanstar Communications, Inc. Corporate and editorial offices: 7500 Old Oak Blvd., Cleveland, OH 44130. Advertising, accounting, advertising production and circulation offices: 131 West First St., Duluth, MN 55802; 1333 N.W. Norcross, Seattle, WA 98177.

Subscription rates: one year, \$39, two years \$58 in the U.S.; one year \$66, two years \$99 in Canada. All other countries: one year \$130, two years \$195. Current issue single copies (pre-paid only): \$4 in the U.S.; \$7 in Canada; \$12 elsewhere; add \$3.50 per order for shipping and handling. Back issues, if available, \$10; add \$3.50 per order for shipping and handling (pre-paid orders only).

Office of publication: Advanstar Communications, Inc., 131 W. First St., Duluth, MN 55802. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices.

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**POSTMASTER:** Send address changes to *Landscape Management*, P.O. Box 6198, Duluth, MN 55806.



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# ASK THE EXPERT

DR. BALAKRISHNA RAO



## Aphid damage resembles herbicide injury

**Problem:** One of our clients complained that their honeysuckle hedge plants were damaged by our lawn-applied herbicides. The symptoms did indeed look like a herbicide problem. However, upon close observation, we found small insects. The problem was mainly at the tip of the branches, with leaves showing a curling-up type of symptom. We tried to explain that it appeared to be an insect problem and not a herbicide injury. What do you think is the possible problem and solution? (Pennsylvania)

**Solution:** Based on your description of the symptom, the problem appears to be related to honeysuckle aphid injury. Honeysuckle aphid, *Hyadaphis tataricae*, is common in Eastern Europe and since 1976 has been found in many parts of North America, where bush honeysuckle plants are grown.

Due to extensive aphid feeding activity and the toxic effect of aphid saliva, affected leaves show growth distortion and mimicking symptoms of herbicides. Extensive feeding can cause the shoot to grow slow, resulting in a "witches" broom of terminal twigs and foliage. The leaves will be folded and may be slightly chlorotic (pale) due to the sucking, feeding activity of aphids.

Honeysuckle aphids overwinter on twigs and stems, and hatch into stem mothers in the spring during budbreak. These stem mothers produce many young aphids asexually. Stem mothers and newly-born aphids feed on the underside of leaves. In late summer, additional generations of aphids will be produced. They feed on the upper surface of leaves, causing them to fold upward. This upward folding can be mistaken for dicamba herbicide injury. These aphids have a whitish powdery wax over their bodies. In September, winged males and wingless females can be found.

Reportedly, species of honeysuckle such as *Lonicera tatarica*, *L. kovalkovi* and *L. microphylla* are susceptible to these aphid problems.

Consider treating with insecticides such as acephate, malathion or a horticultural oil in early spring. Reports indicate that in order to stop them during the "witches" broom growth, applications should be made before foliage appears. Repeat applications as needed, and read and follow label specifications for better results.

## To prevent run-off, spray only till wet

**Problem:** When we spray trees and shrubs with insecticides and fungicides, the excess pesticide mixture generally drops onto mulch underneath the plants. How can we avoid this? Can we use any sticker products to prevent this? And how long do we need to keep pets or the public away from the area? (Maryland)

**Solution:** Follow good application techniques to minimize drift and/or excess spray solution being deposited on understory plants or mulch.

Reports have indicated that it is sufficient to wet the foliage; there is no need to spray to the point of drip. In most cases where the problem is primarily foliar, spraying to the point of leaf wet-

ness is sufficient to manage pest problems.

Most pesticides contain a type of spreader/sticker material. Generally, there is no need to use a sticker-type material unless the label suggests to do so. Therefore, in my opinion, follow good application techniques and spray to the point of wetness.

For a reentry waiting period, as a general guideline, keep away from the treated area as per label restrictions. Since the mulch area is a non-target site, there should be very little spray deposit resulting from tree spraying.

Generally, keep away until the surface is dry. If someone is overly concerned, it would be better to avoid getting pesticide on the mulch by covering the area with a tarp.

## Strange growth caused by oak leaf blister

**Problem:** What would cause oak leaves to have risen and uneven growth? There is no evidence of any spots, insects or mites on the leaves. Based on pictures and descriptions in reference books, we believe the problem may be oak leaf blister disease. If you think this is the problem, how do you manage this disease? (Ohio)

**Solution:** Oak plants have many leaf problems that will cause the symptoms you described. For positive identification, consult your local cooperative extension personnel.

Based on your description of the symptoms, I believe that the problem could be related to frost injury, herbicide injury, anthracnose or most likely, oak leaf blister. If it is blister, normally you will see the raised area on the upper surface of the leaves.

Generally, in the early summer, local areas of leaf tissues grow faster than the rest of the leaf and cause the "blister" effect. The lower surface of the leaves will curve inward, without any fluids. These blisters are often lighter green than the normal leaf tissue. Generally, it is not a major threat to oaks. However, if the disease is severe, it could be aesthetically objectionable, and can often result in mid-summer defoliation.

Oak leaf blister, caused by the fungus *Taphrina caerulescens*, doesn't often become severe enough to require fungicide treatment. However, for aesthetic reasons and to minimize defoliation, if the disease potential becomes great, an application of fungicides such as zineb, captan, maneb or mancozeb should help manage the problem.

Reports suggest that one application of fungicide before bud break should help manage oak leaf blister; however, applications after bud break are usually not effective. Read and follow label specifications for better results.

---

*Dr. Balakrishna Rao is Manager of Research and Technical Development for the Davey Tree Co., Kent, Ohio.*

*Mail questions to "Ask the Expert," LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. Please allow two to three months for an answer to appear in the magazine.*



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# Golf maintenance:

a \$6 billion boost to the U.S. economy

**Superintendents  
looking — with  
much optimism —  
to increased  
activity in 1995.**

**D**URING THE HEIGHT of the growing season, almost 200,000 people are working on the nation's golf courses, according to an exclusive survey of the golf maintenance industry by *LANDSCAPE MANAGEMENT* magazine.

That statistic was determined by multiplying the mean peak-season employment (13.3 people, according to the survey) by the entire universe of U.S. golf facilities (14,648, according to the most recent National Golf Foundation report).

In addition, the golf maintenance industry pumped up to \$6.3 billion into our economy in 1994—an average maintenance budget of \$433,856 according to LM's survey, times the NGF's universe of U.S. courses.

These figures, and others from the survey, are indicative of the increasingly prominent role which the game plays in our society.

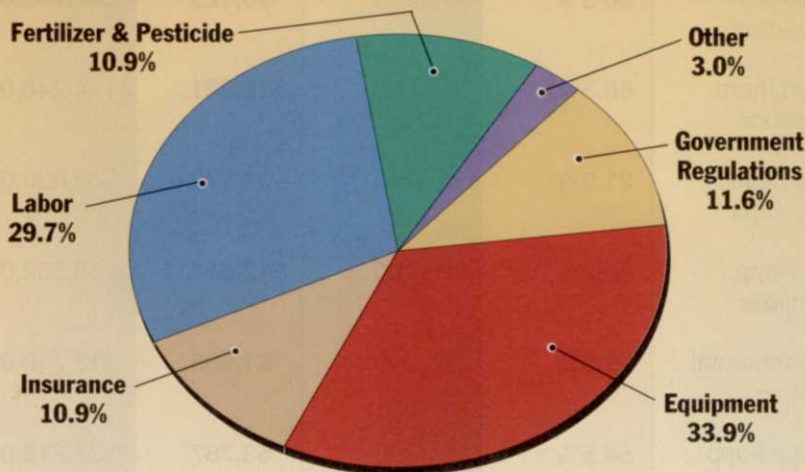
"In 1960," observes golf course archi-





## Fastest Growing Cost of Golf Course Maintenance

(by % of respondents)



## Annual Budgets for Golf Course Maintenance

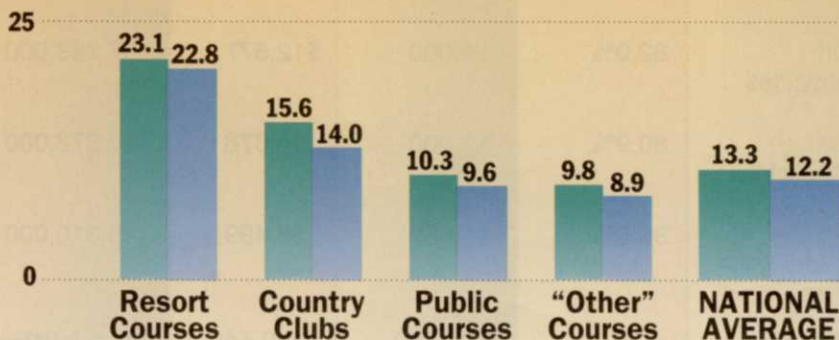
National Average=\$433,856

base:187



## Number of Maintenance Employees

base:94



text Jerry Matthews, "there were about 6,300 golf courses in the United States and about 4.4 million players. Since then, the number of courses has more than doubled, and the number of players has quadrupled."

Resort courses, obviously, continue to be at the high end of the spectrum. They employ about 23 maintenance people on the average, compared to 15 for private clubs and 10 for public courses. Resort courses also spend an average of more than \$900,000 on maintenance functions, almost double that of private clubs and nearly triple the amount of public courses.

**Good response rate**—Our survey was mailed to 991 superintendents in November, 1994. We received 194 completed questionnaires by Christmas, a response rate of 19.6 percent. Forty-four of the 50 states were accounted for, with the highest response from Florida, California and Midwestern states like Indiana, Pennsylvania, Michigan, Illinois and Wisconsin.

By all indications, the industry's growth has not yet started to slow down.

According to the NGF, 358 courses opened in 1993 (the last year complete figures are available) while 671 were under construction and 543 were in planning stages.

Currently-operating courses will see their budgets grow by an average of 4.4 percent in 1995, our survey notes, with public courses seeing the greatest increase, 5.1 percent. The maintenance budgets of private clubs are to grow 4.4 percent, resorts 3.4 percent.

Clearly, most of the growth is coming in the public sector. Of the 1,572 courses under development a year ago, the NGF says, 1,269 were planned to be either daily fee or municipal.

**High-ticket items**—Where are the nation's superintendents spending their money? According to LM's survey, about \$1.3 billion is used to purchase equipment, fertilizers and pesticides. Most of the rest—about \$5 billion—went toward paying the 200,000 workers (an average of \$20,000 per employee, after miscellaneous expenses).

High on the superintendents' list of "must-have" products are fertilizers, fungicides, turfseed and irrigation equipment.

The industry as a whole (extrapolating



survey averages to LM's total golf readership of 16,093) spent nearly a quarter of a billion dollars on dry-applied fertilizer in 1994, and an additional \$175 million on fertilizer/herbicide combination products. Superintendents also purchased \$118 million worth of turfseed and more than \$100 million worth of irrigation equipment.

It appears from the survey results that those are the very same products superintendents cite as becoming more expensive. When asked what one item's cost

**34 percent of superintendents surveyed say equipment costs are growing fastest.**

was growing fastest, 33.9 percent of our sample replied "equipment."

Other popular responses to that question were: "labor" (29 percent), "government regulations" (11.6 percent), "fertilizers and pesticides" (10.9 percent) and "insurance" (another 10.9 percent).

Another observation from the survey findings: with the recent emphasis on environmentally-friendly courses, "natural" control products are rapidly catching on. Eighty-two percent of our random sample said they are currently using organic fertilizers in their turf care program. An additional 48.4 percent report using biological controls like *Bacillus thuringiensis*, horticultural oils and soaps for pest control.

Despite the aforementioned increases in the cost of maintaining a well-groomed course, and despite criticism from the media and environmental groups, superintendents remain largely hopeful. When asked how they felt about their industry, 73.7 percent of our survey participants used the word "optimistic." Just 5.2 percent said "pessimistic" and the remaining 21.1 percent were neutral.

—Jerry Roche

## Purchasing Power of Golf course Superintendents

PRODUCT CATEGORY	% OF SAMPLE	MEDIAN DOLLARS	MEAN DOLLARS	PROJECTED TO CIRC.
Soil aerators	36.5%	\$5,000	\$8,129	\$47,749,000
Fert./herb. combos	66.3%	\$10,000	\$16,331	\$174,246,000
Domestic pick-ups	21.9%	\$12,100	\$9,372	\$33,030,000
Dry-app. fertilizer	88.2%	\$10,000	\$17,511	\$248,552,000
Ornamental fert.	53.9%	\$1,000	\$1,585	\$13,748,000
Liquid-app. fertilizer	54.5%	\$1,200	\$3,787	\$33,215,000
Post-emerg. herbicides	75.8%	\$2,000	\$3,184	\$38,840,000
Pre-emerg. herbicides	68.5%	\$3,000	\$4,854	\$53,509,000
Small mowers	24.2%	\$1,000	\$1,656	\$6,449,000
Mid-size mowers	11.2%	\$7,750	\$7,790	\$14,041,000
Large mowers	30.9%	\$13,000	\$14,200	\$70,613,000
Turfgrass sod	59.0%	\$2,200	\$4,949	\$46,990,000
Irrigation/sprinklers	78.7%	\$2,000	\$8,082	\$102,360,000
Compact tractors	33.7%	\$11,000	\$13,167	\$71,409,000
Turf fungicides	82.0%	\$6,000	\$12,677	\$167,289,000
Turf insecticides	80.9%	\$2,000	\$4,676	\$60,878,000
Turf-seed	86.5%	\$4,000	\$8,499	\$118,310,000
<b>TOTAL</b>		<b>\$93,250</b>	<b>\$140,449</b>	<b>\$1.3 billion</b>



# INVENTORY CONTROL.



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## LM REPORTS

# Maybe we should call them 'versatility' vehicles

Few product categories offer the green industry as much choice or selection as utility vehicles.

■ **Utility:** 1. The condition or quality of being useful; usefulness. 2. A useful article or device.

This American Heritage Dictionary definition perfectly describes the lightweight work-horse-type vehicles known in the green industry as "utility" vehicles. But perhaps a more descriptive phrase would be "versatility" vehicles; they're used in so many different ways.

Transportation is, obviously, their purpose, but their real worth is in moving materials. In fact, when it comes to getting a person or two and a limited amount of supplies or materials quickly to a job site, they're unbeatable. More often than not, in fact, a utility vehicle can be driven right to a job site because of its light weight and maneuverability.

Also, they're incredibly reliable, inexpensive to maintain and easy to operate.

Increasingly, some manufacturers are making their vehicles even more versatile and valuable by offering attachments de-

signed specifically for them. Depending on the manufacturer, you can add:

- cargo boxes
- topdressers
- sprayers
- spreaders
- core harvesters
- cabs and
- aerators

These "versatility" vehicles come in three-wheel or four-wheel models, two-wheel or four-wheel drives, electric or gasoline, "bare bones" or bristling with attachments.

The chart on the next page, because of space considerations, is not all-inclusive, but merely presents a quick look at what's in the marketplace. Please contact manufacturers or distributors (use "reader service numbers") for more information.

—Ron Hall



Cushman Haulster is rugged machine



Jacobsen 810 has hydraulic shocks



Smithco Spirit PT, handy, maneuverable



Melex 252 with solid state speed control



Kawasaki Mule lives up to its name



John Deere 1800, many attachments



Toro Workman ready for attachments

CHART,  
MORE  
PHOTOS  
ON PAGE 16



Columbia's electric Utilitruck



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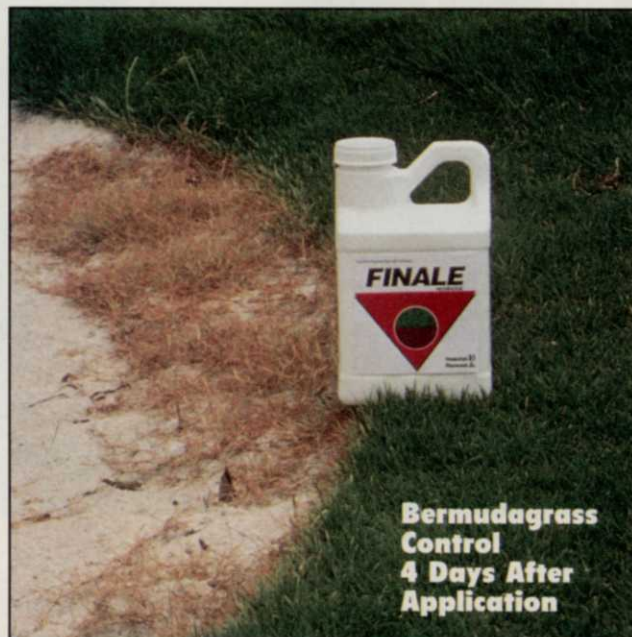
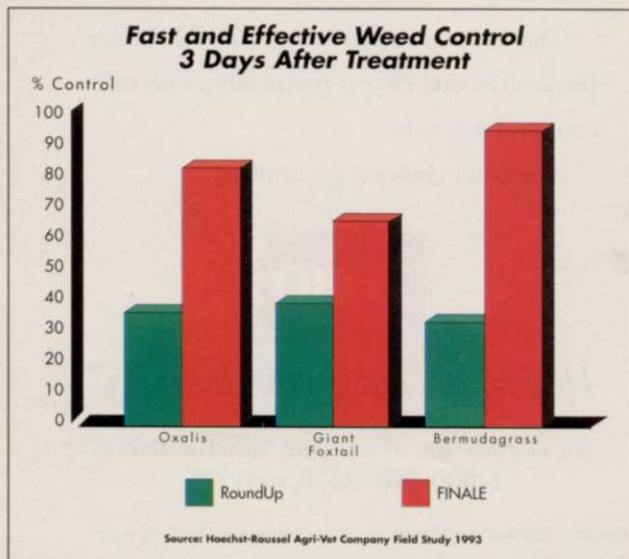
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## UTILITY VEHICLES FOR THE GREEN INDUSTRY

SUPPLIER	MODEL	SPECIFICATIONS	FEATURES
Club Car Circle No. 311	Carryall I, Carryall II, Carryall II Plus	<i>Carryall I</i> : weight (gas model) 658 lbs., width 49.25", turning radius 5'6", max payload 800 lbs.	9 hp, 286cc 4-cycle OHV or electric, twin I-beam welded aluminum chassis, self-adjusting rack & pinion steering, direct drive axle.
Columbia Circle No. 312	Utilitruck	Weight 687 lbs., width 44.25", turning radius 11'5", max payload 750 lbs. New <i>EU2400XB</i> 2,400-lb. capacity 20 cu.ft. of cargo space.	8 hp, 250cc 2-cycle gasoline engine or XP electric power system, optional cab.
Haul Master, Inc. Circle No. 313	HM 4016	Weight 825 lbs., wheel base 70", maximum payload 1,000 lbs.	16 hp, 480cc overhead valve V-twin, electronic ignition, truck style frame, tilting dump box with triple function tailgate.
Jacobsen Circle No. 314	810 Express, 2015/2315 utility trucks, SV-3422 and SV-2322	<i>810 Express</i> : weight 940 lbs., width 48", turning radius 3' 9"; max. payload 1,000 lbs.	4-cycle, twin cylinder, 8.5 hp, 295cc. Jake makes several other models with full line of accessories and add-on attachments.
Kawasaki Circle No. 315	Mules (5 models)	<i>Mule 2520</i> : weight 1,105 lbs., width 57.5", turning radius 11', cargo bed capacity 803 lbs.	4-stroke, liquid-cooled, 617 cc engine, towing capacity 1,202 lbs., pick-up style cargo bed, dual-mode differential.
John Deere Circle No. 316	1800, also Gator 4X2, Gator 6X4	<i>Model 1800</i> : weight 1,141 lbs., width 66", turning radius 10', cargo box capacity 15 cu. ft.	Liquid-cooled, 18 hp engine, power steering, dash-mounted instrument cluster, hydrostatic drive, walk-through operator's area; sprayer, spreader attachments available.
Melex Circle No. 317	152, 252 Utility Vehicles	<i>Model 252</i> : 687 lbs., 52" wide, 65" wheel base, clearance circle 18'5", bed payload 350 lbs.	Electric, 36-volt GE, 2 hp at 2800 rpm, solid-state speed control conserves energy, automotive-type steering, RIM plastic body.
Ransomes America Circle No. 318	Cushman UTV-Max, UTV-Maxim, Sprinter, 2 Haulster models	<i>UTV-Max gas</i> : 1110 lbs., 45.5" wide, 71" wheel base, 21' clearance circle; rated capacity 1200 lbs.	Vanguard V-Twin, 14 hp, 4-cycle gas engine or 5.3 hp, 48-volt electric motor, 4-wheel, white, unitized welded chassis, carbon steel channel frame.
Salsco Circle No. 319	Go-Fer	46" x 68" cargo area, 48" x 20" tailgate ramp, capacity 1,000 lbs., 8" ground clearance.	8 hp Honda engine, twist handle throttle grip, rear drum parking brake, hydrostatic drive (1 or 3 wheels).
Smithco Circle No. 320	Spirit PT	590 lbs., 57" wide, ground clearance 6", capacity 600 lbs., ground speed 10 mph.	5.5 hp Honda engine, recoil-type starter, double v-belt and chain drive, easy-loading ramp, foam-rubber cushioned seat.
Taylor-Dunn Circle No. 321	Electruck, Roadmaster (gas & electric), others	<i>Electruck</i> : 2,500 lbs. (with charger and batteries), 1,500 lb. capacity, 17' 6" turning radius.	72 & 48-volt models, 63 & 30 mile ranges respectively, all-steel tubular frame, solid-state speed control, light, horn, indicators, many optional features.
Toro Circle No. 322	Workman 3000 series (gas & diesel)	<i>Workman 3200</i> : 1,400 lbs., 58" wide, 70" wheel base, MGWV 4,000 lbs., clearance circle, 32" inside, 194" outside.	(3200) Mitsubishi 3-cylinder, in-line slant, 4-cycle, liquid-cooled engine; power-assist steering; welded steel frame, full line of attachments, options.
Yamaha Circle No. 323	Yamahauler	Weight 815 lbs., width 44.8"; turning radius 13' 1"; box load capacity, 500 lbs.	Yamaha 285cc low-emission, 4-stroke engine, continuously variable transmission, exclusive forward/reverse transaxle.



Haulmaster with 16 hp engine

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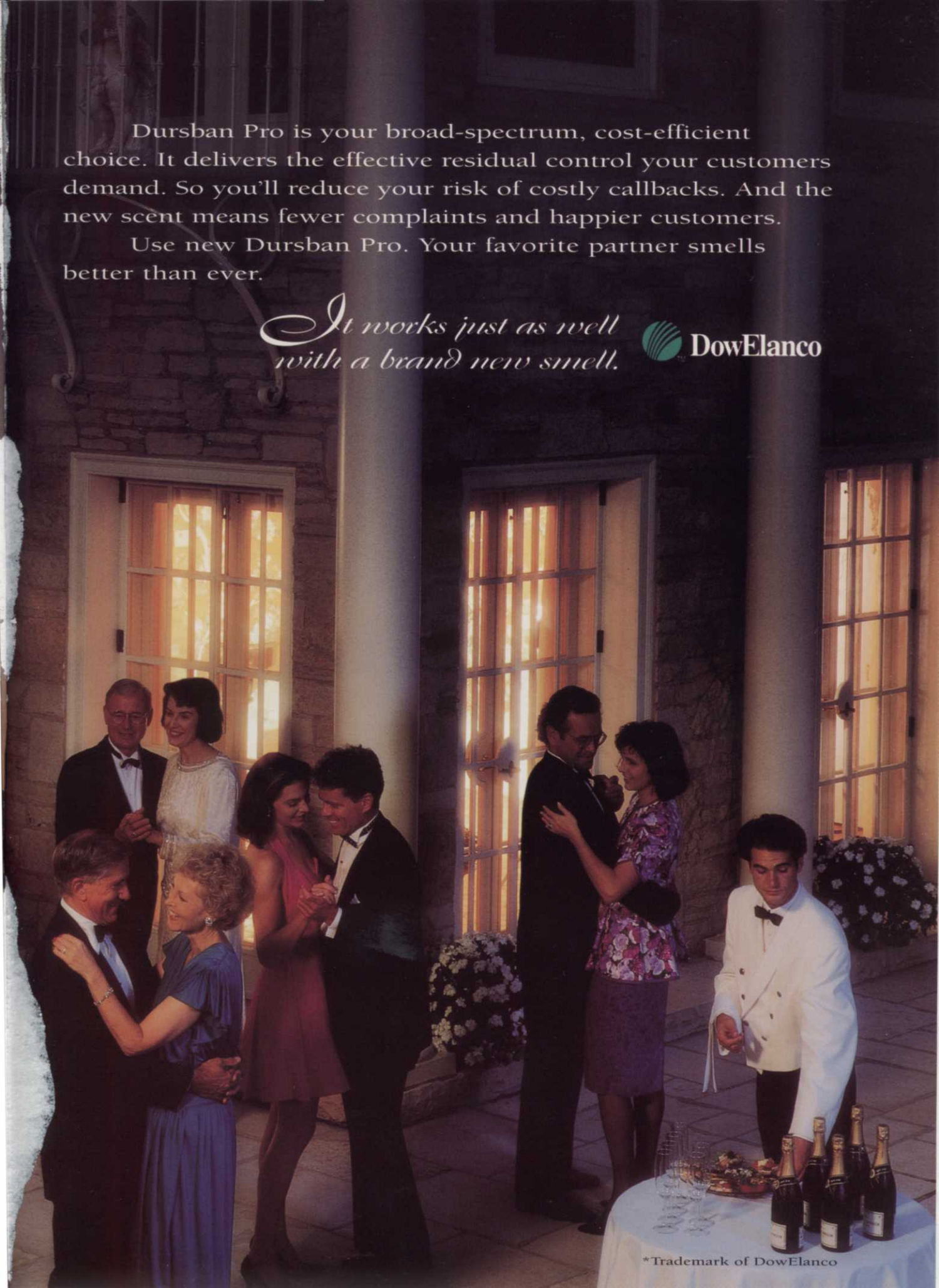
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# GOLF & ATHLETIC TURF

## COVER STORY, CONTINUED

# The future of golf: methane gas, competition?

**Here is how forward-thinking superintendents are solving these and other problems.**

■ According to the National Golf Foundation, many of the golf course projects now under development in the U.S. are for public/municipal courses (see cover story, page 8). This will undoubtedly create a big problem in the golf maintenance industry, according to **Ken Schwark**, superintendent at Tony Lema Golf Complex. The club is located in San Leandro, Calif., just minutes away from Moscone Center where the GCSAA is holding its annual conference and show later this month.

"There are going to be more munys (municipally-owned courses) built in the future, but they're going to be on landfills and there will be methane gas problems, I guarantee you," says Schwark. At the Tony Lema Complex, it's taking a rash of money to solve the problem: \$2 million is being dumped into retrofitting a methane gas mitigation system, along with installing new irrigation on 13 of the course's 18 regulation holes.

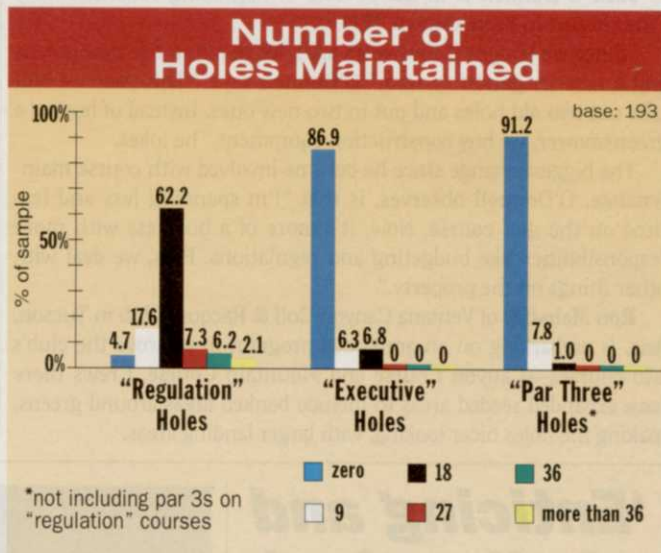
Because 85,000 people ran through Schwark's course last year, he needs to stay on the "cutting edge" of technology, he says. Most recent development is the use of microbes tailored to solve specific problems.

"We've got 700 parts per million of salt in the water coming out of our irrigation well, so our greens start 'tweaking' on us in August or September," Schwark observes. "But we've started sending out microbes through the sprinkler system every night, and our greens are now challenging Pebble Beach's greens."

Microbes are available, Schwark says, to help alleviate potential pythium and anthracnose disease pressure, to control thatch build-up, and to buffer the turf plants against salt damage.

"Our salt levels are still high, but the microbes make it so the plant can't take the salt up, and as a result our greens look great," Schwark notes.

Elsewhere across the U.S., golf courses both private and public are undergoing constant renovation. Like at Edelweiss Chalet Country Club in New Glarus, Wis.



### Most Common Maintenance Practices

(by % of respondents)

Mowing	.99.0%	Sodding	.89.0%
Turf fertilization	.99.0%	Tree pruning	.88.5%
Disease control	.98.4%	Dethatching	.86.9%
Aeration	.97.9%	Overseeding	.81.2%
Topdressing	.96.9%		
Seeding	.94.2%	Tree insect/disease control	.47.6%
Insect control	.94.2%	Pond/lake aeration	.44.0%
Bunker maintenance	.89.0%		

base: 191

• least common •

"I was hired to upgrade the condition of this course last June," superintendent **Richard Bentel** says. "I had a mandate to define the fairways and bring up the green speed."

The original problem? Competition for golfers, as many courses face. In Bentel's area south of Madison, many nine-hole courses are adding a second nine so that they will be able to compete for

## ELSEWHERE

**Growing in a new golf course,**  
page 26G

**Manage greens for pros, public play,**  
page 28G

**Working with greens chairmen,**  
page 36G

**Poa annua control strategies,**  
page 40G



the same clientele as Edelweiss Chalet.

"I've got the greens committee spending \$8,000 this season on our fairways, so I expect to see a big improvement," Bentel concludes.

**Chuck Colton** says that Belle Terre Country Club in Laplace, La., about 20 miles east of New Orleans got more play than ever last year—by design. The club is actively seeking more public play during the week, so it lowered its green fees. Also, the area had less rain (about 50 inches) than in the two previous years (about 100 inches each year), allowing people to get onto the course more often.

Like other courses in his area of the country, Colton is overseeding bermudagrass with *Poa trivialis*, "because the seeds are so small compared to ryegrass. And once it comes up, you can mow it a bit shorter, and it lays down better, allowing less resistance to the ball."

**Jack O'Donnell** is in the process of upgrading venerable Tory Pines Resort in Franconia, N.H.

"Since we bought it (five years ago), we've put in five new greens and a new irrigation system," O'Donnell says. "This year we will take out two old holes and put in two new ones. Instead of buying a greensmower, we buy construction equipment," he jokes.

The biggest change since he became involved with course maintenance, O'Donnell observes, is that "I'm spending less and less time on the golf course. Now, it's more of a business with more responsibilities like budgeting and regulations. Plus, we deal with other things on the property."

**Ron Mahaffey** of Ventana Canyon Golf & Racquet Club in Tucson, Ariz. is embarking on an ambitious program to improve the club's two courses—Canyon Course and Mountain Course. Crews there have expanded seeded areas to include banked areas around greens, making the holes nicer looking, with larger landing areas.

"Our biggest challenge was that we rebuilt two greens and resurfaced eight others on the Mountain Course," Mahaffey observes. "And this summer we're going to regrass 18 more greens."

Mahaffey is battling *Poa annua* with ProGrass and getting nice results. "If you can stop the poa from seeding on the fairways, it makes it easier to keep your greens poa-free, too," he says. "You don't have people tracking seed onto them."

**Kurt Kammann** of The Country Club Inc. says his is one of just a few courses in Tennessee that didn't suffer much winter kill last season. Some courses lost 50-80% of their bermudagrass, he says: "We had a lot of cold weather in Morristown, but there wasn't much snow coverage."

Kammann thinks that players are after high stimp meter ratings on greens, and The Country Club is known for its fast greens. But he's more interested in providing true putting surfaces. "You try to get the greens to where everybody likes them, but that's one of the hardest things to do," he notes.

**Sean O'Brian** of Alta Sierra Golf and Country Club in Grass Valley, Calif., also had problems with the weather. At his club, which is located one hour west of Lake Tahoe, they had 15½ inches of rain in 15 days in January.

"This has been a much wetter winter than we're used to," O'Brian notes. "We hadn't been able to mow the fairways for close to a month." January 19th was the first day they allowed play in that 15-day period.

Because the course contains a lot of *Poa annua* in the fairways and was hit hard by anthracnose, the crews finally drill-seeded a ryegrass blend and aerified the fairways. But the budget is tight, and "one pass with a drill seeder isn't going to solve all of the problems."

—*Jerry Roche, Ron Hall*

## 'Enticing and challenging'

**That's what it's like in California, on the cutting edge of environmental and legislative issues.**

■ David A. Bergstrom, superintendent at two high-profile California golf courses, says his colleagues must continue to get "picky" on little maintenance details like edging on bunkers and cart paths, and sprucing up plant beds.

"Though my staff and I appreciate compliments, it's the suggestions—especially those about how we can improve—that matter most," Bergstrom says.

He oversees maintenance of the TPC Stadium Course and the Jack Nicklaus Resort Course at PGA West in La Quinta, Calif. In December, the Nicklaus course was site of the John Deere Team Championship Tournament (at which 30 other superintendents got an "up close



**David Bergstrom is using IPM techniques to adjust practices to avoid problems on the course.**

and personal" look at the course) and the Wendy's Three Tour Challenge and Diners Club Matches (with live television coverage of both).

"TV coverage allows us to showcase the course to the general public and to thousands of potential players," says Bergstrom. "People watch the pros play a hole and want to see how well they can

play it. The course has to look both enticing and challenging.

"All golf courses are under scrutiny these days, and California is on the cutting edge of environmental and legislative issues. Our regulations are the toughest in the country, and probably the forecast of things to come for other states."

During the seven years Bergstrom been with the two courses, restrictions on water and chemical use have become more stringent, and paperwork requirements have increased enormously.

"Our well system is tapped into underground aquifers and we have access to a canal system that draws water from the Colorado River," he notes. "Because the water district has expressed concern about the aquifer recharge rate here in the lower end of the valley, we're decreasing our well

*continued on page 40G*



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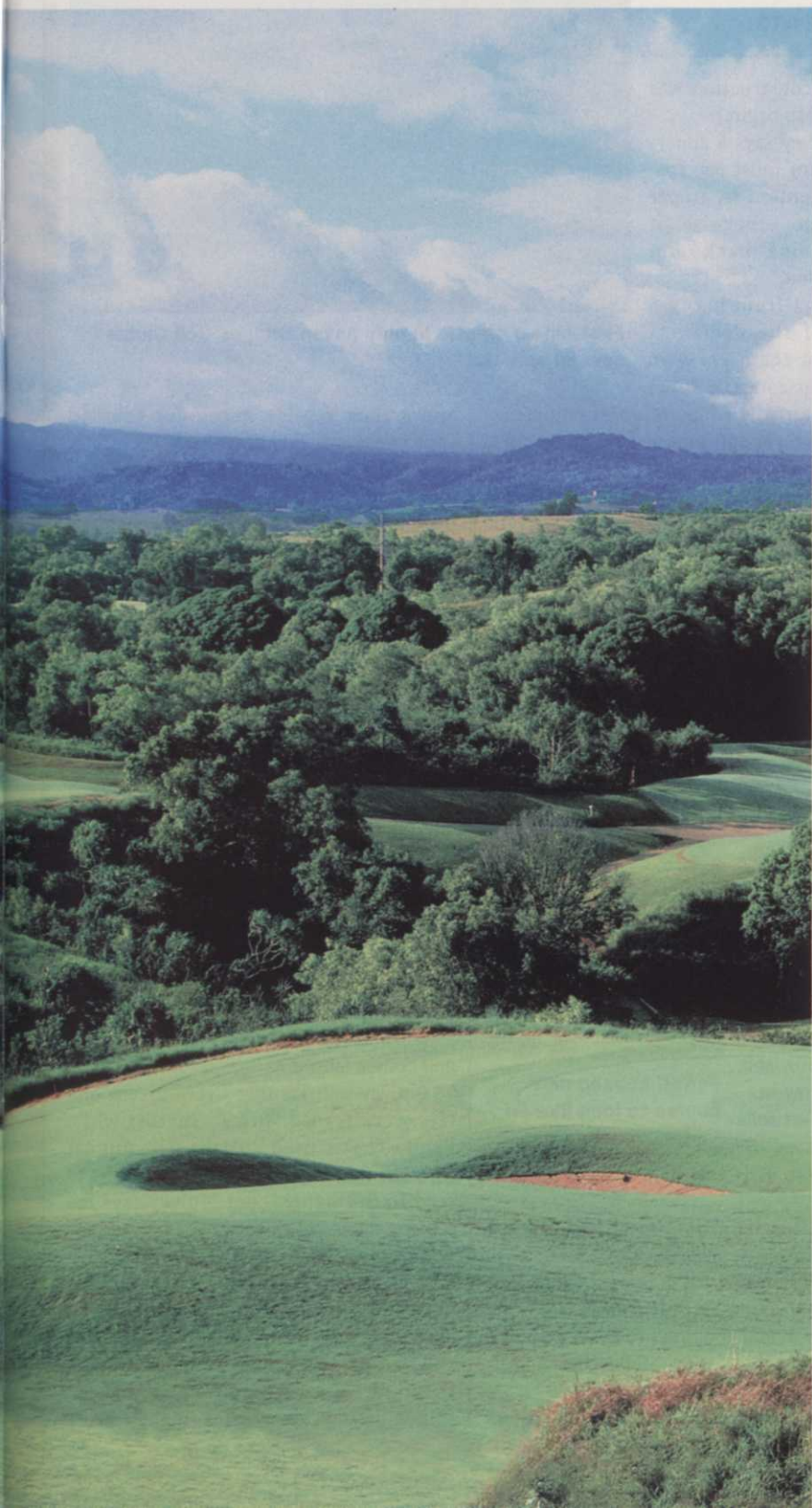
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# A survival guide to golf course 'grow-in'

**Early involvement heads off big problems later, say two Illinois superintendents.**

■ Establishing turf on a new golf course causes superintendents to question the wisdom of their career choice. But superintendents Donald Ferreri and Steve Mulvey survived the process, and offer some tips, hoping that their experiences shed some light to help others through construction and grow-in.

Getting the turfgrass up and playable is what rings the cash register for course owners and developers.



**Mulvey says slopes can be hard to establish.**

Ferreri heads maintenance of Seven Bridges Golf Club, a high-end public course, in Woodridge, near Chicago. Mulvey is superintendent at Panther Creek

Country Club down state in Springfield. Both supervised grow-ins at their courses.

That they're both gainfully employed and—judging from the presentations they gave at the North Central Turf Expo—reasonably happy is proof that their efforts were satisfactory.

To that, Ferreri and Mulvey give equal credit to unusually fine fall Illinois weather back several seasons ago when they supervised the grow-ins, and to being a part of decision-making teams at their courses before bulldozers started snorting.

"Getting a superintendent on the site as early as possible, before the heavy equipment arrives, allows the superintendent to see everything when it goes in the ground, to know what's there," says Ferreri. It also gives the super a better understanding—and, often, input—concerning such matters as drainage, shade and air circulation.

(Actually, because of political and jurisdictional squabbles, Ferreri was on the Seven Bridges project almost two years

before construction was allowed to begin.)

Mulvey says a superintendent must pay special attention to proper drainage, otherwise "it will come back and haunt you."

Apart from being a part of the decision-making team early in construction, the super must earn the cooperation of engineers, contractors, equipment operators, and, particularly, his own staff.

Says Mulvey, "Everybody has to get along. It's critical." He praises assistant Bill Smith. "I really appreciate him. A good assistant is vital in any project."

Here are some other tips the two supers offered:

✓ **Don't allow** equipment operators to drive over and compact the same areas continuously. Or to pile gravel, rip rap or other debris by the fairways, tees or greens.

✓ **Complete all** work requiring the use of heavy equipment before seeding.

✓ **Make sure** the contours built into the course are easily mowable after grow-in.

✓ **Test soils** during construction. This will help build a fertility program.

✓ **Have irrigation** installed and functioning prior to seeding.

✓ **Install cart paths** prior to seeding. It saves disruption to your course later, and allows you and your staff to get around the course and check your satellite boxes, etc.

✓ **Consider laying** sod "runways" from the cart path the shortest distance to tees



**First hole a classic in only Seven Bridges Golf Club's second season.**

and greens to allow access for you and your mowers during grow-in.

✓ **Check nearby** universities, seed suppliers, and even fellow superintendents for insights on grasses best for your course.

✓ **Seed greens, tees and fairways** at half rates, then seed again with another half rate criss-crossing the first seeding. This allows for more even and thorough establishment.

✓ **Add quick couplers** to the irrigation system while it's accessible, while trenches are open. About 65 were installed at Seven Bridges during construction.

✓ **Have a plan** to protect all trees that you want to save.

✓ **Budget adequate labor.** A mechanical rock remover gets the larger rocks, but the smaller ones will have to be collected from the fairways by hand. Seven Bridges used maybe a dozen laborers for about a week. Mulvey says greens may need some hand weeding, too.

✓ **To avoid vandalism,** try to have the golf course fenced.

Mulvey says Panther Creek greens and tees were seeded with Penncross while Pennway was used on fairways. August through mid-September is a good time to seed in Springfield, but Mulvey says his seeding dates got pushed back later in the season.

Ferreri seeded roughs at Seven Bridges with a Brillion seeder and a mixture of perennial ryegrass, Kentucky bluegrasses and fescues. The Manhattan II and Citation II ryegrasses came up first and held the soil, while the bluegrasses finally started



**Ferreri coaxed new course to look like an 'established' course.**



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## 'Get on site, before the heavy equipment arrives, to know what's there.'

—Donald Ferreri  
Seven Bridges G.C.

taking over with the fescues doing better on the slopes. Tees got Penncross seed with Pennlinks for the greens, both applied with a Milorganite carrier. The fairways are Penneagle.

At the time of seeding, he reports that he also used a starter fertilizer and a granular fungicide to control damping off. "I think that was very worthwhile," says Ferreri.

—Ron Hall



Aerial view shows that holes 2, 3 and 5 are challenging and green at Seven Bridges.

## Height of cut, turf accessories keys to greens management

### These experienced greens experts use turf rollers, groomers and specially-blended topdressing mixes.

■ Whether you're managing greens for tournament play, the daily club membership or the general public, the goal is the same: a quality putting surface, as free as possible of disease and other turf maladies.

Here are some tips on greens care, from leading superintendents, as presented at the last Ohio Turf Conference.

#### Bob Brame, USGA agronomist and ex-superintendent:

"Successful greens management depends on the quality of the turf foundation you've established in preparation for day-to-day maintenance."

Brame believes a good turf foundation includes:

- a suitable growing environment;
- height of cut;
- fertility programs; and
- water management.

"With mowing height, you've got to draw the line.  $\frac{3}{8}$  or  $\frac{1}{2}$  of an inch or higher is a better growing environment," says Brame. "The shorter the turfgrass, the more likely it is that *Poa annua* will become a problem."

Brame also believes that fans are valuable for lowering leaf blade temperature.

Brame is in step with the recent trend to walking mowers. "They require more time," he admits, "but result in better playability."

Rollers? Don't push it, he says. You don't have to cut the greens as close when using rollers, but some superintendents do both. Know the limitations of the specific green.

When it comes to fertility programs, remember, says Brame, that a well fed turf system will be more resistant to disease.

#### Tom Walker, superintendent at the Inverness Club, Toledo, Ohio:

Walker manages 62,000 sq. ft. of putting surfaces. His greens endure more than 28,000 rounds every season, so Walker has learned to treat each green individually.

The maintenance season begins in late August. Soluble forms of nitrogen are used to get the turf ready for fall and winter.

Aerification is done in the fall, and crews Verti-Drain two or three times each year, usually in mid-late October and mid-late November. A Toro Hydroject water aerator is used at one- to three-week intervals.

Walker goes easy on spring fertilization. In summer, a slow-release product is applied to avoid burning and flush growth.

Walker uses a special 80-20 topdressing mix that's blended off-site.

"We try to apply topdressing on

Monday, at a rate of one to three cubic feet per 1000 sq. ft. Once we've applied it, we sweep it with tennis court brooms, to get it into the aeration holes."

Traffic management is conducted at three to four prime pin spots on each green, and Walker picks the location each day. To keep green speed consistent, he makes sure it stimps between 10.3 and 10.6—11 for tournaments.

"We mow 7 to 10 times a week, roll the greens four times each week," he notes. "We try to balance the fertility program, and try not to focus on one element."

#### Randy Boudinot, superintendent at Country Club of the North, Dayton, Ohio:

He applies topdressing twice each month during summer. In spring, it's three times each month.

In the summer, an 80/20 topdressing mix is applied at a rate of 2 cu. ft. per 1000 sq. ft.

"We walk the greens when we mow, and five of the mowers have turf groomers, which we use two to three times a week. The groomers are usually set at half the mowing height. They add a nice touch, and turf groomers make it easier to increase green speed."

Brushes are used once, sometimes twice a week.

Boudinot plans ahead, and works out weekly and monthly maintenance programs. And get your staff involved as much as possible, Boudinot says.

"They do a better job when I get them involved. Let them know what you want to accomplish."

—Terry McIver



# Set priorities when planning budgets

**At any budget level, there's always more you'd like to do. But put safety first, aesthetics second.**

by Richard Moffitt

■ Budgeting is a year-round process. Accurate records of expenditures, labor hours and equipment used provide the building blocks on which future budgets are prepared. The upcoming season's preliminary budget actually is being planned during the two years preceding it.

Landscape and turf care budgets often are split into two main categories: the operational budget and the capital improvement budget.

The capital improvement budget is developed from ever-evolving short- and long-range planning. At Saint Louis University, each department or budgeting entity may submit a request for funds for capital improvements. Such requests may be for extensive renovation on existing facilities, major purchases of equipment, the addition of a full-time person to the staff, or similar needs. Generally, a dollar plateau is set. Spending for specific items above this dollar level require approval as capital improvements. All capital improvement budget funds are allocated for specific uses and must be applied as allocated.

Saint Louis University has opted to extend and define the boundaries of our urban campus, and a separate construction division budget has been established to cover this major step. We've acquired new land; upgraded existing buildings and added new ones; and incorporated softscape and hardscape features to enhance and unify the setting.

Turf and landscape features that are incorporated into these expansion or major development projects are specifically designated items, included in the master budget for that project and earmarked for that use. The Grounds Department provides cost recommendations for the project budgets of the construction division, and designs and expedites most of the landscaping portions of these projects, but does not administer that budget.

The Grounds Department's operational

budget covers overall operations and all related costs, including general maintenance, replacement and repair; minor improvements; small equipment replacement; employee salaries and benefits; and contract labor and services. Our budget is divided into general categories and by line items under those categories. Every commodity line item is figured out and the totals tallied under a general category. For example, lines items such as fertilizer, seed and sod would be listed under the routine maintenance materials category.

We keep accurate, year-long major maintenance lists, checking the University computerized records monthly. These lists show not only expenditures and where these expenditures are allocated, but also what percentage of the funds have been used from the total budgeted for those items. This information is available to each budgeting entity at any time from the budget office computer system.

**Safety first**—Our fiscal year begins July 1st. The budget cycle starts in early December. Drafts of both the operational budget and capital improvement budgets are submitted in January or February, depending on the department. Final drafts are submitted in March. Each department has a general idea of the status of budget requests as final drafts are submitted, but actual budget approval is not received until July 1st.

Setting priorities is essential in preparing both the capital improvement and the operational budgets. No matter what the budget level, there's always more you'd like to be able to do. Basically, in planning, and in actual use of funds, we put safety first; aesthetics second.

Prior to submitting the first drafts of the budgets, we talk with facilities users—coaches of sports teams, heads of individual

campus facilities, buildings and residence halls, and with the president's office—to get their input on needs and on their priorities. We incorporate as much of this input as possible, but it's up to us to rank the priorities and make the final call on what we submit.

The university administration is supportive of the Grounds department and fully aware of the benefits of a well-landscaped and well-maintained campus in attracting students and drawing alumni backing. Part of the capital improvement program includes raising the current irrigation level of 95 percent to a totally-irrigated campus. Because of the urban setting, the majority of the campus is high-impact, high-visibility. We put great effort into turf and landscape quality and into creating effective color with annuals, perennials and bulbs.

**Anything can happen**—The budget is a tool, a basic guideline for planned expenditures. But "budget busters" can occur. The operational budget gives us some flexibility within line item allocations.

Because of our geographic location, snow removal costs can make an impact on the entire operational budget. We allocate an "average" amount for snow removal, based on past records and updated to reflect current costs, but Midwest snowfall is seldom average. If snows are light, we can allocate unused funds to other needs in the spring and early summer. If snows are heavy, we may have to

*continued on page 32G*



**Moffitt: Capital improvements around the St. Louis University campus to include total irrigation system.**



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**BUDGETS** from page 29G

"borrow" from other line item accounts to cover the costs.

We may use this fund-shifting technique within the operational budget for other reasons, too. For example, additional funds to replace concrete damaged during a car accident or to cover repairs of unexpected equipment breakdowns may be diverted from the landscape renovation category. We do stick to the budgeted line item figures as closely as possible, and must stay within the constraints of the overall operational budget.

We divide the grounds operational budget into three defined seasonal areas: July through fall; winter; and spring through June. Major capital improvement projects and renovation work are accomplished most easily from the third week of May to the second week of August, when fewer people are on campus. But because the "budget year" starts July first, we currently have a tight window in which to get major work done.

Those planning and administering budgets are always looking for ways to cut costs and increase operating efficiency.

In some cases, pre-committing funds to specific uses can be beneficial. We pre-contract with greenhouse growers for production of the specific varieties and quantities of annuals and perennials for campus needs so we're assured of getting what we want, when we need it, at a predetermined price.

We also make pre-season purchases of certain turf and landscape maintenance products. To keep the overall budget in perspective, we note these pre-committed line items as "encumbered" on the budget printout until the funds are actually spent.

We compare the costs and efficiencies of performing various services in-house with the costs of hiring contract labor for those services. For example, we currently use in-house crews for sidewalk snow removal, and contract for the parking lot snow removal which requires a fleet of heavy equipment.

We analyze equipment use, down-time records and maintenance and repair costs. Equipment replacement is scheduled into the appropriate budget as effective usage time drops and cost of use escalates. Despite a good preventive maintenance program, we always include a line item figure for unexpected repairs.

We keep records of all outside expenditures that were not included in the original budget to determine if they merit a line item budget allocation for the next year.

Budgeting takes commitment. It's a matter of weighing the effect of defined needs and fund requests for their impact on the overall short-term and long term goals. It is essential; an effective program requires solid guidelines.

—Richard Moffitt is Superintendent of Grounds for Saint Louis University, St. Louis, Mo., and a board member of the national Sports Turf Managers Association.

# 10 top turf tips

■ David Oatis of the USGA Green Section looks at

all the "turf tips" his organization has produced in the past 12 years.

"We're not playing the same game on golf courses we played 10 to 15 years ago," he says, speaking to the New Jersey Turfgrass Expo. "Championship conditions of 20 years ago we surpass on a daily basis now. Plant material is superior, we have faster greens, wonderful research, genetic engineering on the horizon, and weed-resistant varieties.

"The best ideas come from everyday superintendents who are just trying to do their job better."

He picks his top 10, pointed at the northeast sector that he serves. Here are his choices, in decreasing importance:

**#10** - Using grooming and rolling—with "good common sense and moderation"—to produce a smoother, faster putting surface.

**#9** - Using a high-tech camera to find out what's inside drain pipes if you have a high sand green and aren't getting good drainage.

**#8** - Using 2x4 wood to level new greens (like you would concrete), or rent-

ing high-tech laser equipment.

**#7** - Separating the layers of soil, for courses with non-homogenous soil profiles, to get tested. Don't mix the layers.

**#6** - Deep aerify greens with Floyd McKay or Verti-Drain or Hydroject machines. "This isn't a panacea, but a good idea if done properly," Oatis says. First, though, check for proper soil moisture so the aerification process is successful.

**#5** - "Hire someone with a computer to accurately diagnose irrigation coverage problems. You can use it to simulate what effect changes would have in coverage without ever going out in the field and trying them," Oatis notes.

**#4** - Using burlap bags filled with soil as edging when rebuilding sand bunkers. You can sod right over the bags, which decompose with time.

**#3** - Installing supplemental irrigation systems for the banks around greens.

**#2** - Using asphalt or clay tampers to make sand bunkers playable almost immediately. "But do it before you open the hole for play," Oatis says, "because you don't want to get a reputation for having soft sand."

**#1** - Using time-lapse photos (one hour apart) to chart the path of shade across any greens at which you need to take down



**Oatis: Time-lapse photography can help superintendents.**

trees. These photos will prove to members that the trees were doing more harm than good.

"At clubs with members with a sense of humor," he suggests using chain saws with the names "Thunder" and "Lightning." "You can safely and honestly say," he notes, "in response to members with questions about tree removal that 'thunder and lightning got it.'"

—Jerry Roche





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# Communicate with your course officials!

■ A superintendent's job is hard enough without having to worry about clashes with greens committees.

So Robert Stubbe, grounds committee chairman at Oak Hill Country Club in Fairport, N.Y., wants superintendents to do themselves a favor by telling greens committees as much as possible about the super's job, and how members can better cooperate.

"For 40 years, I played golf with no comprehension of the work required," says Stubbe, who's learned about the conflicts that can arise between superintendents and club officials.

It was shortly after he was named grounds chairman in 1991, says Stubbe, that he realized the superintendent must provide the golfer with a better understanding of what it takes to manage a golf course landscape.

"With the growth of golf, supers need to find ways to educate the new golfers

about how to treat the playing surface," he notes.

**Spell out policy**—Stubbe says the superintendent and his staff must establish a dialogue with the membership to explain the concepts and timetables involved with topdressing, aeration, and other turf management practices, and policies for special situations.

"If you have a 'frost delay' policy or policy about not running golf carts in wet weather, spell it out." Other tips:

- Invite the greens chairman to attend a Golf Course Superintendent's Association show, or state association show.

- Consider holding a "club official's forum" on a state or local basis.

- Invite your club officials or club president to visit a cooperative extension site or university research department.

- Invite one or more club officers to join monthly crew/committee meetings.

**Environmental awareness**—With

continued interest in reducing the amount or frequency of control products used to maintain golf courses, Stubbe suggests that players might have to settle for a playing surface that's firmer and more natural looking, and not as green as what they're used to.

More trees are becoming important in some parts of the course, and not so important in others, usually around greens that are less shade-tolerant. Explain the reasoning behind this and other turf care practices.

"We are part of a growing industry and game," says Stubbe, who believes that club officials must in turn make the superintendents aware of all they can about club management which may have a bearing on the super's job.

Stubbe spoke during the latest New York State State Turfgrass Association meeting in Rochester, N.Y.

—Terry McIver

## Color, groundcovers work wonders in small spaces

■ Flower color, colorful buds, fragrance and attractive foliage are the key elements in making small landscaped areas look larger, according to Craig Stock of Stock Landscaping & Design, Westfield, N.J.

Stock, speaking at the New Jersey Turf Expo, said that flower color "is the most obvious thing people look at." He suggests you stagger the flowers so they bloom throughout the year.

"One of the great things about using perennials is that you can divide them and use them in different places and save yourself a lot of money," he says. And don't forget about bulbs.

"Bulbs can do a lot in the early spring. They don't cost much, are easy to do, and you get that good early spring jolt," Stock observes. "It's good to mix bulbs in with other plantings. If you have problems with animals, rats and deer, daffodils are better than tulips. I like to see bulbs in masses—not too sterile or too varied. Annuals and bulbs are good complements."

He says that buds are also attractive on a lot of plants, and any fragrances are a plus because "fragrance brings back good memories to people and most fragrant

plants are at least semi-resistant to deer."

Foliage is also important to consider. It's there, in full view, year-round, and "plants can look decent when they're not flowering."

- To give the illusion that small areas are larger, don't cut them up with landscaping.

- Flowering bedlines give an illusion of a larger area and direct your eyes to a focal point, (but) try to stay away from areas with sharp angles to minimize trimming.

- Plantings around decks and fences can soften them. Think about vines around fences, because you don't lose horizontal space.

- When planting, stagger plants to give more depth and natural feeling. Don't plant them in rows.

- Generally, groundcovers should be used more often, sometimes in place of mulch. "I recommend using groundcovers rather than mulch. Finer textured materials make small areas look larger."

- "I use ornamental grasses a lot for texture, vertical height and movement." They are very economical and many have good fall colors.

- Berries help attract wildlife and are good display.

- Plan for fall color.

- In shady areas, use light-colored plants because they show up better. Stick with needle- or deciduous-type plants in the sun because they hold up better. Consult a guide or text.



**Stock: stagger plants to give more depth and natural feeling.**

- Arbor vitae can be used to separate properties rather than a fence.

- If planting bulbs in annuals, plant in groups and masses.

- If you use smaller material, you can save money and it will fill in, as long as you don't overplant.

—Jerry Roche



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# Consider safety and purpose before you build a pond

■ Ponds add much to the beauty, value and enjoyment of a landscape. But they're not easy to install. They have to be well-planned and properly installed to save yourself problems later.

"Most ponds take a lot of time and money to build," says Dennis Ferraro, of the Douglas County Extension Office, Omaha, Neb., so you don't want to have to add even more investment due to poor planning.

Ferraro says proper planning includes:

- the size and shape of the pond;
- purpose behind the pond; do you want to attract wildlife, or solve a watershed problem;
- the type of plants do you want around or in the pond;
- type of materials on the floor of the pond; and
- safety and liability considerations.

"You have to plan, exactly, the shape of the pond, where it's going to go, everything about it," insists Ferraro.

Plants should be included as part of the pond design. "You do not want invasive plants growing across the entire pond," warns Ferraro.

Nor do you want to worry about tree roots invading the masonry around the pond. Maples or oaks are especially troublesome due to their long root systems.

**Point of focus**—You want the pond to fit well into the surrounding landscape, not overpower the view, so pond shape and size are important. Types of surroundings can be a golf course, residential areas or office buildings.

**'An attractive nuisance'**—Ponds increase liability concerns.

Ferraro says to learn what rules and regulations the city or county has on the books for pond construction.

"In many cities," says Ferraro, if the pond is more than two feet deep, you must have a locked fence around the property."

**Design considerations**—"My theory is to make the pond as large as you can for the area," advises Ferraro. "I haven't had anybody tell me, 'I wish I had made that pond smaller.'"

For protection against heavy rain, the pond should be able to hold an additional 6.5 inches of water in a 24-hour period.

"You need to calculate where the overflow and drainage are going to go. You

can't have everything going into a spillway," says Ferraro, "because a spillway goes into a neighbors property or street."

Ferraro says that in the heaviest storm conditions, the pond has to be able to divert a foot of rain in 24-hours.

**Run-off**—"What's in the run-off?" asks Ferraro.

"Is it from a sewage lagoon, or an area with a lot of chemicals, or is it run-off from an area where a lot of lawn insecticides are used?"

"Many of our new insecticides [pyrethroids] have very low toxicity to mammals," says Ferraro, but are highly toxic to cold-blooded animals.

"In those cases, you have to have a very well-documented IPM—Integrated Pest Management program—with low pesticide usage, or use non-pyrethroid pesticides, or find a way to divert the watershed and have an area where you have drainage, so the water drains around the pond."

Ferraro adds that many water plants are "super sensitive" to herbicides, especially broadleaf herbicides.

**Ratios**—The bigger the pond, the easier it is to take care of, says Ferraro.

"A big pond can make it's own ecosystem and it almost takes care of itself. If it's bigger than 50 ft. in diameter, there's very little maintenance," except in run-off situations.

Smaller ponds heat up quickly, which can harm plants and animals.

"You always want more deep area than shallow area," says Ferraro. "If you're

going to use [the pond] for irrigation, it should be 7 to 8 feet deep. If it's just for aesthetics, and you want native plant materials, and native animals, to be able to withstand the winter without having to take them out, it should be 3 to 4 feet deep.

The depth ratio between the uppermost portion of the bank to the pond floor should always be 3:1. For example, if the water is 1 foot deep at the top edge, the intermediate depth should be between one-and-a-half feet deep, and the depth at the floor should be 3 feet deep.

**Materials.** The pond floor must be coated with the proper material, or problems will occur almost immediately.

One of the best materials, according to Ferraro, is called bentonite. A volcanic clay, bentonite swells up in water, and seals the natural spaces in the soil. When a root tries to breach the surface, the bentonite closes around it.

Bentonite is mixed into the soil before being put on the floor of the pond, at a rate of 20 lb./sq. yd.

Bentonite, however, will kill fish by lodging in their gills and expanding. So do not stock the pond for at least two days after filling it with water.

It's also important that the workers wear dust masks when using bentonite. If inhaled, bentonite will expand in the lungs.

Ferraro doesn't recommend concrete, due to cracking. But some concrete contain elasticizers which allow the concrete to expand. And if you do use concrete, Ferraro recommends that you first put down 6 inches of sand.

Fiberglass is "great for small ponds," says Ferraro.

—Terry McIver

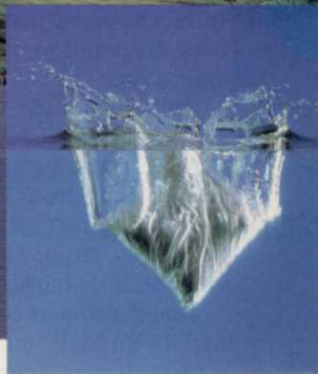


This pond, at Ohio's Westfield Country Club, was built between two 18-hole courses. Trees are placed farther back so that falling leaves are not a problem.





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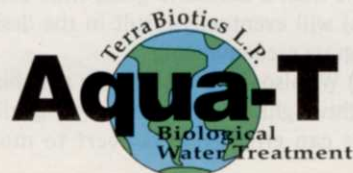
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# Managing *Poa annua* easier

**Significant advances in managing out *Poa annua* in golf course turf have been made in recent years.**

by Norman Hummel, Ph.D.

■ Whether you're trying to manage or eliminate it, annual bluegrass (*Poa annua*) should be dealt with in the spring.

Poa is a prolific pest infesting golf courses, lawns and most mown turf areas. In recent years, many techniques have been developed to manage both for and against poa.

Those who prefer to live with it know its spring seed production is most objectionable. On golf courses, the abundance of seedheads detracts from the appearance, and may affect playability as well. Seedheads can be suppressed by using materials that regulate plant growth.

One of the most commonly-used products is Embark (mefluidide). On golf courses, it is recommended for fairways only. Properly timed, low rates of Embark will suppress the formation of poa seedheads.

Embark should be applied at labeled rates (for seedhead suppression) to actively growing turf, but before seedhead emergence. Examine poa sheaths on a regular basis for the presence of developing seedheads to ensure proper timing. Use a spray marker to avoid spray overlap or skips.

On greens, the wetting agent Aqua-Gro can be used for suppressing seedheads. Studies at Cornell several years ago found Aqua-Gro applied at 4 oz./1000 sq. ft. in 10 gallon of water resulted in a 65-70 percent reduction in seedheads. Apply Aqua-Gro about 10 days before seedhead emergence, repeating again two weeks later.

Some significant advances in managing out *Poa annua* in golf course turf have been made in recent years:

1) Using growth regulators can accelerate these conversions. Growth regulators that suppress *Poa annua* to a greater extent than a desirable grass (like bentgrass) will eventually result in the desirable grass predominating.

2) We also know that merely switching to lightweight mowers and removing clippings can effectively convert to more

desirable grasses.

One growth regulator that can be applied in the spring is paclobutrazol (Scotts TGR). Applications should be made to actively-growing turf, but before seedheads emerge. Cornell studies indicate the lower label application rate may be best for spring application on greens to minimize discoloration.

If you have less than 30 percent desirable grasses in your fairways, consider a total renovation program, followed by TGR applications to keep the poa out.

A spring insect problem exclusive to *Poa annua* is the hyperodes or annual bluegrass weevil. Adult weevils overwinter in leaf debris and emerge in April and May to feed, mate and lay their eggs. Young, legless larvae feed within annual bluegrass stems through May and June.



**Hummel: If you have less than 30 percent desirable grasses in your fairways, consider total renovation.**

Hyperodes weevil is best controlled when in the adult stage; that is, late April or May. One recommendation is to apply an insecticide when the flowering dogwood is in full bloom. Materials recommended (at least in New York state) include Dursban and Oftanol.

—The author is in the Department of Floriculture and Ornamental Horticulture at Cornell University, Ithaca, N.Y. This article originally appeared in the "Cornell University Turfgrass Times"

**BERGSTROM** from page 22G

water use and increasing the percentage of water drawn from the canal. This requires more testing to ensure that we balance maintenance procedures to compensate for the higher salt levels in the canal water."

Many of the chemicals available in California seven years ago have been taken away, and others are in jeopardy, Bergstrom says. "We've always practiced IPM, and now are doing more to adjust practices to avoid problems, and to use natural and biological controls when treatments are needed. I think chemical restrictions will tighten even more in the future."

**By law, Bergstrom holds weekly 'tailgate safety meetings' that focus on a specific issue, or open up the floor to suggestions.**

By law, Bergstrom holds weekly "tailgate safety meetings" that focus on a specific issue, or open up the floor to suggestions. It's also essential, Bergstrom says, to document everything.

"We keep an on-site file for each maintenance employee, including pesticide applicator training, weekly safety training sessions, and equipment training. These files verify the employee's training in specific areas, record our compliance with government regulations, and support the company's position if liability becomes an issue."

Most of Bergstrom's crew members have been on board for five or six years. He feels comfortable that "they've been 'through the hoops' before, they need less supervision, and they understand the demands of Mother Nature and special events can make on the work load.

Recent improvements:

● All supervisors, the office, pro shop and club manager all have two-way radios.

● An agronomist, Virgil Robinson, has joined the staff.

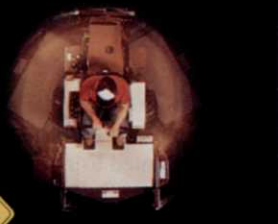
● Full computerization of Bergstrom's department is to come in 1995.

"We're excited about the progress we're making," Bergstrom says. "As individuals and as an industry, we have to keep moving ahead."

—Steve Trusty



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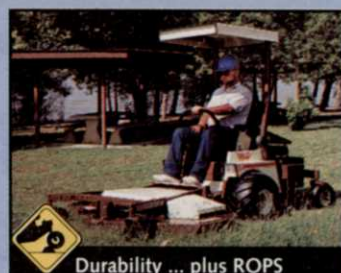
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Circle No. 114 on Reader Inquiry Card



# Define fairways with a little bit of 'color'

**When fairways and roughs are both Penncross, you have to take unusual measures to separate them visually.**

■ Vince Bracken has fairways to die for. The golf course superintendent at Fairmount Country Club in Chatham, N.J. maintains a 95 percent Penncross bentgrass course, including roughs and intermediate areas. He finds the turf is relatively low maintenance and extremely pleasing to look at.



Vince Bracken with one of his newly-defined fairways in the background. Note distinct color difference between fairway and cut rough.

"Our fairways are some of the best in the state," says Bracken, who became superintendent at Fairmount in 1989. "Penncross has very few problems with insects and diseases and offers the best playing surface you can find. Golfers just love hitting the ball of it."

Hal Purdy designed the north-central New Jersey course in 1960 to incorporate moderate undulations and "fall-away" greens. Cupping areas comprise only about 40 percent of the 6,000-sq. ft. greens, with the remaining area gently sloping down into the fairways. "It's a difficult but fair course," notes Bracken.

Except for the lack of definition between fairways and roughs, Bracken had no major complaints about the course when he took the job. Contour effects remain defined between fairways, greens and tees because of the different cutting heights. But Penncross appears "puffy and uneven" when grown at higher cuts, says Bracken. "Early in the spring, we lost the contour between our fairways and roughs," he adds. "Golfers couldn't tell where the fairway left off and the rough began."

**Dramatic distinctions**—In 1990, Bracken

started correcting the problem. He decided to convert his roughs to an 80/20 bluegrass/rye mixture, but wanted to start with a dramatic distinction in the intermediate areas. He chose to chemically burn off a 20-foot collar around the fairways before seeding with his 80/20 mixture. Then he planned to overseed on the remaining rough.

"I was looking for a product that would give me a quick kill and quick seeding time. I knew Roundup would take too long to show results, and I couldn't get back in to seed right away. My distributor recommended a new herbicide that was still under an Experimental Use Permit."

Bracken sprayed what has become known as Finale (EPA registration came in late 1993) at 4 quarts in 60 gallons of water per acre. Applications were made on the fifth, sixth and eighth roughs in 1990. Twenty-four hours after the application, he aerated, verticutted and seeded. He also applied 1½ lb. N/1,000 sq. ft. Within 48 hours, the turf was yellowing; within three days, it was dead. Within 10 days, Bracken saw germination. He then cut in the blue-rye mixture on the outer rough areas.

**No wait**—"Those roughs look terrific now, and the membership loves looking down from an elevated tee and seeing the nice, dark green color against the lighter-colored fairway," Bracken says. "Seeing the results so fast helped the membership grasp what we were trying to do. Using Finale let us get the project completed quickly, which is very important in today's golf industry. Golfers don't like to hear that they have to wait."

In five years, Bracken has converted four other roughs to the blue-rye mixture. He expects to complete all rough conversions by 1996.

## On the border

■ "We have the distinction of bordering, on two sides of the course, a 6,000-acre National Wildlife Refuge called the Great Swamp," says Vince Bracken. "Because the five ponds on our course drain into the swamp, I don't treat them at all. I have a company that comes in strictly to maintain the ponds. But we have to be extra careful about pesticide applications."

Fairmount's Penncross turf allows Bracken to reduce pesticide use. He remains on a preventive disease program. He makes one pre-emergence weed control application and has isolated insect problems. He feeds the turf throughout the season.

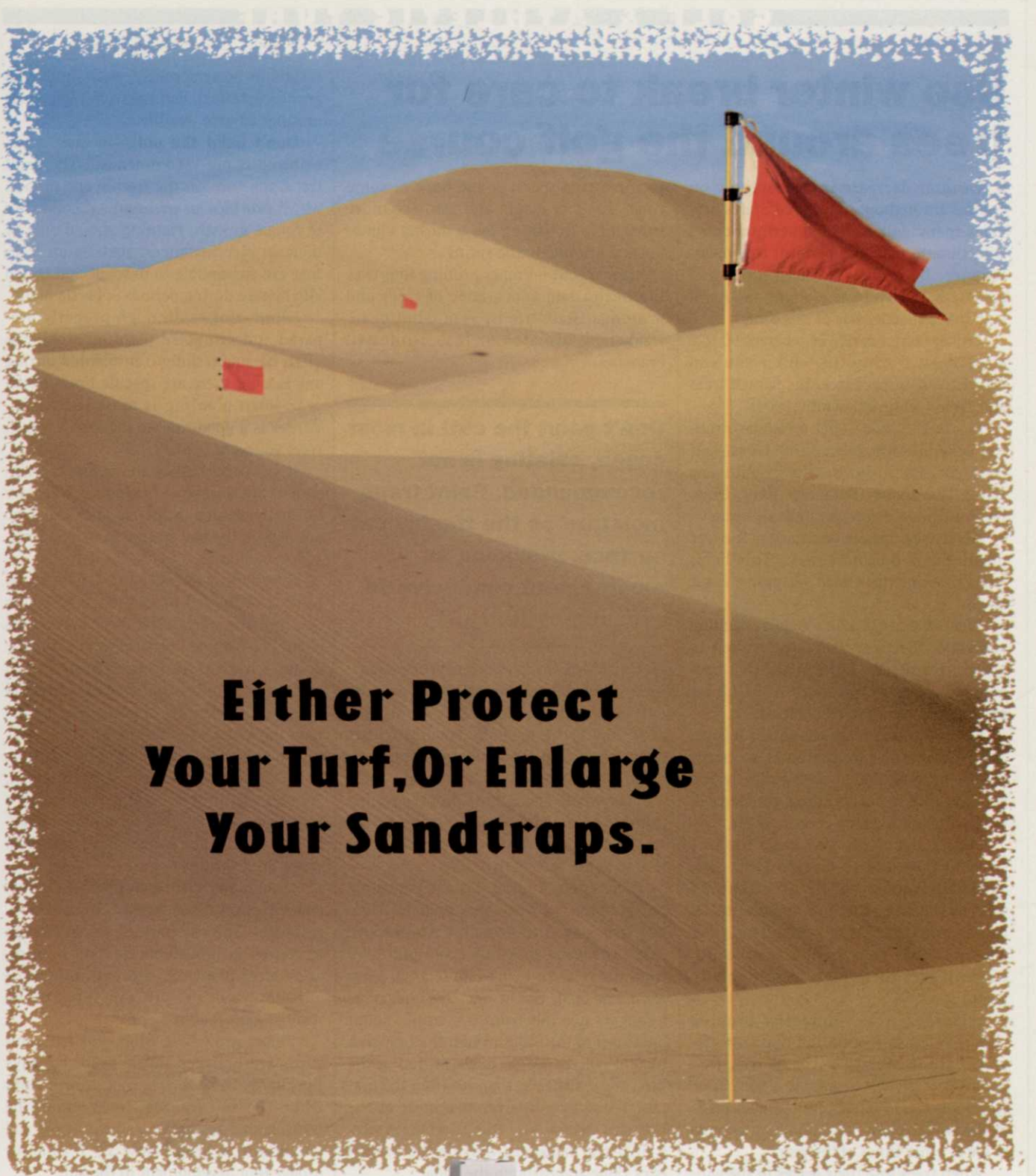
Bracken applies a blend including Nutralene controlled-release nitrogen every four weeks on fairways, and every two weeks on greens. "We don't like to see spurts of growth, so I like the sus-

tained-release products," he says.

To keep thatch low, Bracken aerates fairways and greens once or twice a year and verticuts in the fall before winter sets in. After aerifying greens, he drags the material back into the holes, blows off excess thatch, applies seed, drags it in, and fertilizes with 1 1/2 lb. N/1,000 sq. ft.

In extreme heat and exceptionally cold weather in 1993 and 1994, the Penncross fared extremely well. "We hand-watered greens during hot weather, but did not have to syringe," explains Bracken. "Our well water stays at 52 degrees, so that helps cool things down. But during the bad winter last year, I didn't even take the ice off our greens. They were healthy, elevated and well-drained, so I didn't worry about them."





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## Use winter break to care for trees around the golf course

■ A winter decrease in golf activity on courses throughout the United States provides many golf course superintendents with time to plan and perform tree maintenance. If you have limited funds and resources, pruning and planting tasks will help make effective use of this time.

Proper winter care will get trees off to a good start. During the winter you can prune trees, inspect recently planted trees and decide on spring planting sites.

**Prune regularly**—Set a regular pruning schedule for golf course trees. Len Burkhart, Ph.D., horticulturist with The Davey Tree Expert Company, Kent, Ohio, recommends a three-year pruning cycle.

"Every year, prune one-third of the tree population," Burkhart says. "This helps keep trees healthy while keeping costs down."

Trees that are not on a regular pruning schedule often are radically pruned to achieve the desired form. When that happens, workers overprune to make up for pruning they don't schedule later.

Thus, the tree loses too much foliage, and is unable to produce enough energy for the pruning cut to close properly and quickly. With radical pruning, the tree will slowly decline and may eventually die.

Larger, open cuts also make the tree more susceptible to disease problems, especially canker rot fungi. The fungi weaken the tree structure and eventually causes breakage. Large pruning cuts can also indirectly compromise tree health, which makes them more susceptible to pests.

**When to prune**—Intensive pruning should be performed in the dormant season. Late winter to early spring, just before new growth begins, is a good time to prune trees. Proper pruning cuts made in the winter close more rapidly than cuts made at other times of the year.

When trees lose their leaves in the winter, it is easier to spot problem areas and place pruning cuts, says Richard Rathjens, a Davey technical advisor.

"The new leaves that emerge the following spring will help hide cuts made in the winter," Rathjens says. "Also, pruning in late fall and early winter minimizes sap flow from pruning cuts on trees such as conifers, maple, birch and walnut."

Winter pruning also minimizes damage

to some tree species. The bark of some trees, such as maple and ash, are more susceptible to tearing loose during climbing and pruning in the spring.

**How to cut**—Proper pruning improves the health and appearance of trees and prolongs their life by removing dead, weakened, diseased or insect-infested branches.

**Don't paint the cut! In most cases, painting is not recommended. Paint traps moisture on the freshly cut surface, providing an environment conducive to fungal growth.**

Untrained workers often prune incorrectly. Professional arborists place pruning cuts outside the branch collar, the swollen area where the branch attaches to the main trunk. You can easily see the branch collar on many trees.

"The whole idea behind proper pruning is to avoid injuring the trunk," Rathjens says. "Once the trunk is damaged, it can lead to decay and death of the tree."

A common pruning mistake is making one straight cut through a branch. When cut this way, the branch's weight can cause the wood to splinter and pull bark from the tree. To help avoid tearing, a cut should be made on the branch's underside, a foot or two out from the trunk, about one-third of the way through the branch. A second cut should be made on top of the limb a few inches farther out from the first cut. These two cuts remove most of the branch's weight. The stub is removed with a final cut made just outside the branch bark ridge and through the collar.

Wound closure begins from the edge of the pruning cut. This produces a roll of tissue called callus. The callus that develops from a correct cut resembles a round doughnut.

"Topping" is another pruning mistake. This occurs with the indiscriminate removal of a tree's main leader and branches, resulting in unsightly stubs. Topping severely disfigures trees and

results in "watersprouts," weak limbs that are susceptible to damage from high winds or other adverse weather.

**Don't paint the cut!**—In most cases, painting is not recommended. The paint traps moisture on the freshly cut surface, which provides an environment conducive to fungal growth. Painting should only be done in rare instances, such as on trees that are susceptible to oak wilt and Dutch elm disease during periods of beetle flight.

**'Plan'-ting**—Although properly prepared and protected planting stock can often be successfully transplanted during any season, there are specific times of the year when planting is most successful. Winter is a good time to determine which trees you want to plant.

It's usually best to move plants when shoots are dormant. Deciduous trees are normally planted in the fall after leaf drop and before the soil freeze. In early spring, before bud break.

Narrowleaf evergreens also may be planted in the fall or in the spring before new growth starts. Broadleaf evergreens should be planted in the spring in climatic zones where soils freeze. In northern regions, where the soil freezes early and deep, spring planting of evergreens is perhaps the safest, says Burkhart.

"In the South, with its mild winters, fall planting is preferred," says Burkhart. "Winter planting is fine for plants with a root ball large enough to contain undisturbed roots that supply branches with water until spring."

**Transplant into warm soil**—Correct transplanting often depends on soil temperatures. The soil must be warm enough to permit the growth of new roots immediately after planting, and continue until adequate root growth can support the plant's water requirements.

"Roots grow best when soil temperatures are between 60° and 80° F," says Burkhart. "Because tree root growth stops when the soil freezes, trees should be transplanted at least four weeks before soil temperatures drop below 32° F to allow proper root development in the fall."

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## Spring fertilization 'jump starts' turf

**Spring fertility programs are needed for vigorous turf root growth. But go easy on the nitrogen.**

by John Roberts, Ph.D.

■ Spring represents a season to initiate new growth for turfgrass, and often signals a time for turf managers to fertilize.

Following winter dormancy, both warm- and cool-season turf begins an important period of growth. For northern turf, spring and fall represent the peak seasons for shoot and root development when temperatures range between 50 degrees and 75 degrees Fahrenheit.

Root initiation occurs first in early spring when soils begin to thaw. Active shoot development follows, as temperatures climb between 60 and 75 degrees Fahrenheit.

For warm season turf, late spring through summer represents the optimum time for development as temperatures reach between 75 and 90 degrees. Fertilization programs often coincide with these peaks.

While "Mother Nature" alone helps stimulate spring green-up, most turfgrasses need additional fertilization to achieve their maximum growth potential. Spring fertilization is especially critical on recreational turf areas, such as soccer fields, which receive intense traffic. Without additional fertilization, they often become severely worn and weed-infested.

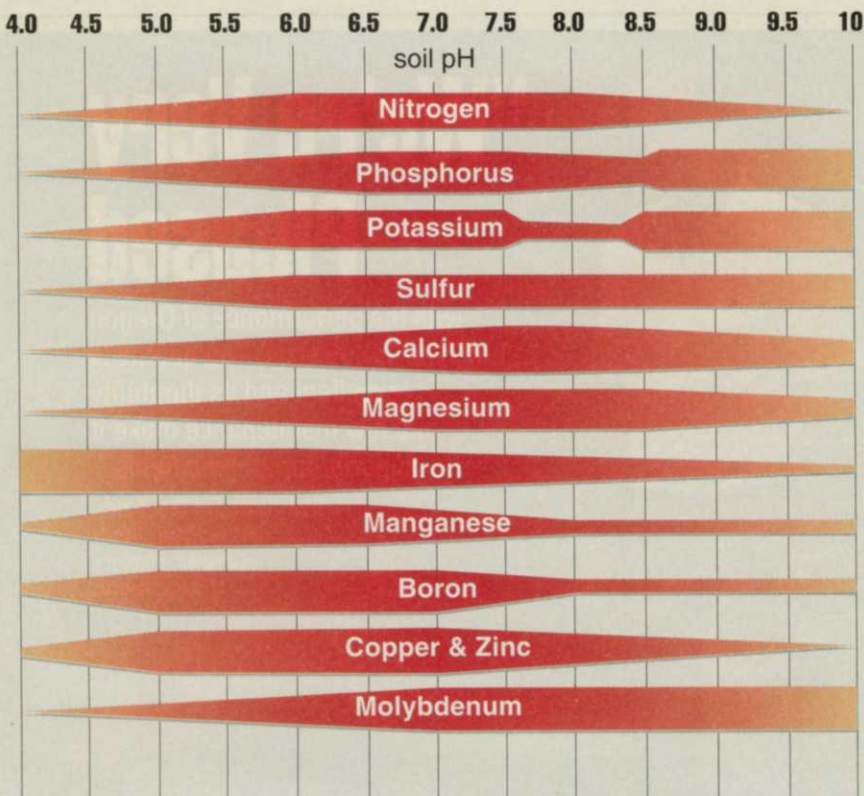
**'Starter' formulations**—For cool-season turf, 'starter type' formulations are popular. These products supply nitrogen, phosphorous and potassium in ratios which are desirable for spring shoot and root growth. Unlike high nitrogen formulations which promote mostly topgrowth, starter types contain higher proportions of phosphorous (i.e., a 1:2:1 ratio).

The additional phosphorous helps initiate root development and early turf establishment of new seedlings.

**Nitrogen in moderation**—Nitrogen is

FIGURE 1

Availability of Nutrients with Varying Soil pH



the most important element in a turfgrass fertilization program. However, there are limits to its use. In fact, there are advantages of having the grass greener on the other side of the fence!

When turfgrasses are over-fertilized with spring nitrogen, excessive top-growth—which requires extra mowing—and shallow rooting result. (See photographs). There is also a greater threat of nitrate leaching, a higher incidence of disease, and reduced environmental stress tolerance—including summer drought—is more likely.

In most situations, avoid applications of more than one pound of N/1000 sq. ft. when using "fast release" or highly water soluble nitrogen.

When using only fast release nitrogen sources, light applications—1/8- to 1/2 lbs. of N/1000 sq. ft.—are more desirable, and

should be applied more frequently.

This "spoon-feeding" approach has become increasingly popular on golf course putting greens.

**Fast- vs. slow-release**—A widely-used strategy in the spring is to fertilize with products having a combination of fast- and slow-release nitrogen sources. Fast-release nitrogen stimulates earlier green-up and growth which is often sought in recreational and landscaped settings. Slow-release nitrogen sources, whether synthetic or natural organic, last eight to 15 weeks, are less likely to burn the turf and release nitrogen more uniformly than inorganic N sources.

Turf managers often must strike a balance between which combinations to use in each situation.

Sometimes this requires supplementing small amounts of fast-release nitrogen



into the spring feeding.

**Late fall substitute**—A late fall or dormant fertilization can provide a successful alternative to an early spring application. This strategy is primarily used by athletic field managers to:

- accelerate spring green-up and growth;
  - help distribute the workload more evenly over the year;
  - avoid traffic damage to soft wet turf.
- One major concern with late fall fertil-

ization is the increased potential of nitrate leaching during the winter. Using lighter rates of slow-release nitrogen will help minimize this threat. However, this strategy will generally be slower to stimulate growth in cold spring soils.

**Soil pH and nutrients**—The soil pH has a considerable influence on the nutrient availability of most nutrients (See Fig. 1).

Phosphorous is an example of a nutrient that is most available when the soil pH



**Turfgrass in the top photo received high nitrogen without potassium and phosphorous. Topgrowth is more vigorous, but root development is poorer than turf in the bottom photo, which received lower N levels.**

is between 6.0 and 7.0. However, in highly acidic soils with pH of less than 5.0, phosphorous gets "tied up" with iron and aluminum to form complexes which are unavailable to turfgrasses.

Maintaining near neutral soil pH values also favors the activity of beneficial soil microorganisms, the release of nitrate from nitrogen fertilizers and more vigorous growth of most turfgrasses.

In highly acidic soils, toxic concentrations of aluminum, iron and manganese may develop and cause impaired rooting—roots are short, brown and spindly—a decrease in overall turf vigor, shoot growth, drought tolerance and recuperative potential.

**Potassium for all seasons—**

*continued on page 52*

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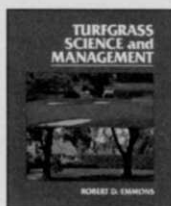
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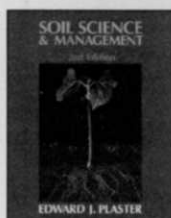
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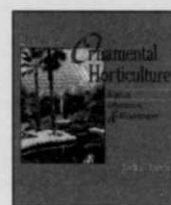


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## The best thing to do is have the soil analyzed.

Potassium plays a vital role in plant nutrition, and deserves more attention in many fertility programs.

Research continues to demonstrate the importance of maintaining high potassium levels throughout the growing season. Potassium is recognized for enhancing turf tolerance to various environmental and biological stresses, including cold, traffic, disease and drought tolerance.

A nitrogen to potassium ratio of 3:2 has generally been considered desirable. However, higher potassium ratios to nitrogen, such as 1:1 or 1:2 have improved stress tolerance in some investigations, even when soil tests indicate potassium levels are adequate.

**Watch for rapid change.** Potassium is highly water soluble and subject to rapid leaching both within the leaf tissues and

in soils with low cation exchange capacities. Potassium deficiencies can occur just a few days following a fertilization especially on intensely-managed, irrigated turf growing in sandy soils.

Light, frequent potassium applications with slow-release carriers helps to reduce potassium leaching in these situations.

**Soil tests revealing** The best way to know a soil pH, overall nutrient status and soluble salt content is to have the soil analyzed. Most state universities have soil testing laboratories and provide this service at a reasonable cost. Commercial testing labs are also available. Several soil pH and leaf tissue test kits can be purchased for immediate on-site readings.

There are many choices for the turf manager developing a spring fertility strategy. The challenge is to select one that best suits the turf's needs in your management program.

—Dr. Roberts is an extension specialist in turf science at the University of New Hampshire.

## Learn to identify snow molds

by Joe Rimelspach

■ As snow and ice melt away and spring weather arrives, home owners will have many questions about the condition of their lawns and how to help them recover from the harsh winter weather. Many lawns will see symptoms of snow mold.

These fungi commonly grow where there is snow cover or during cool, wet periods of winter and spring. All cool-season grasses are susceptible, and many bentgrasses are highly susceptible. The two diseases may occur together or individually, usually extensively on lush turf with wet, unfrozen soil and snow cover.

**Symptoms**—Patches (more or less circular) may be a whitish-tan straw color from 1 inch to 3 feet in diameter, though they are usually 3 to 12 inches in diameter. Leaves are matted together and the patch appears sunken. When the patches are wet, they appear slimy; when dry, the texture is more like a crust of dead leaves.

During some periods, pink snow mold may have a slight pinkish color on the outer edge of the patch. Gray snow mold can be positively identified by the presence of sclerotia (small seed-like structures)  $\frac{1}{16}$  to  $\frac{1}{8}$  inch in diameter. Sclerotia are dark reddish-brown to black and found on leaves of diseased plants.

**Management**—To minimize damage:

1) Rake damaged turfgrass to let light and air into the crowns to encourage growth and recovery.

2) If the lawn is tall and has a lot of dead leaves, mow it short one time to remove dead grass and rake it away.

If areas are dead, renovation will be needed. Check the crowns or plants for life. Living crowns will be white and have a moist, healthy appearance. If you don't know about possible re-growth, take a section of damaged turf and try to grow it indoors to see if new leaves develop.

Spring applications may accelerate turf recovery. Follow all label instructions.

**For gray snow molds**—pentachloronitrobenzen (PCNB) or iprodione + chlorothalonil;

**For pink snow molds**—PCNB, iprodione, vinclozolin or thiophanate-methyl.

—The author is turfgrass extension pathologist at Ohio State University. He has more than 20 years experience with the lawn and landscape industry in the Midwest.

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 Team



# HOT TOPICS

## Weeds in hot water with new control technique

**MINNEAPOLIS**—Vigorous weed populations once resistant to traditional herbicide applications are in hot water because of a new control technology that uses a 900,000-BTU spray system fired by a 9 hp gasoline engine.

Weeds are doused with water heated to 210° F. This temperature destroys the plant's waxy coating, thus rendering it unable to retain moisture. The plant dehydrates and dies within one to two days.

Aquaheat Technology, Inc. markets the new weed control spray system, which weighs about 550 pounds and spits out 10 gpm of super-heated water. "It's something that can easily be put into a pickup truck or four-wheel drive vehicle," says operations manager Chapman Mayo. The product holds several patents and others are pending.

A larger, 4 billion BTU version of the device was originally designed for wide-scale vegetation control in Florida citrus groves, but railroad officials were attracted to the smaller system for its ability to eliminate weeds along track rights-of-way.

Others then took interest when it became apparent that the technology can be suitable for other landscape management applications.

Superintendents responsible for golf courses, parks, housing developments, schools and other institutions, local and state highways, military bases and irrigation districts wanted to know if the concept could be applied to their needs,

according to Mayo.

"The interest was so great for a smaller system that we developed one," says Mayo. "We feel that this product can be used in a cost-effective manner in a number of areas."

Mayo feels that the Aquaheat machine can be particularly effective in situations

toward lawns. "Steam is not as effective. We feel the hot water does a better job of effectively contacting the plant," says Mayo.

Mayo adds that in the Southwest, the machine is being used on a limited basis for dousing fire ant mounds, and to control aquatic weeds. "If [the weeds] stick

above water, we can burn them down to the water level," Mayo reports.

Tests are focusing on golf courses—using the device (with water heated to a cooler 150° F) to control surface insects. "We're watering the grass with hot water, basically," Mayo explains. Bugs near the surface are getting their gooses cooked, while the turf itself is not harmed. "We're not using a tremendous amount of water, so we're not soaking the lawn," he points out.

The New Jersey Department of Environmental Protection tentative-

ly has a positive review of the introduction of the device, according to the agency's Carmen V. Valentin.

"Hot water technology to control weeds is an effective tool that can be used as part of an integrated pest management approach," Valentin notes.

"In New Jersey, this technology has the potential for use in sensitive areas such as schools and parks, and areas where the application of herbicides can jeopardize the environment such as barrier islands or the shore areas," she adds.

The Garden State was introduced to the



**Smaller system allows turf managers to kill weeds with a totally new environmentally-friendly hot water bath.**

where the public is concerned about traditional pesticides. "Parks and schools are begging for alternatives to calm people down," he reports, stressing that the technology provides excellent weed control in addition to its ecological features.

A study conducted in New Zealand comparing the effects of hot water versus glyphosate showed that weeds treated with hot water were dead within two days, while those treated with glyphosate took 7 to 10 days for yellowing symptoms to appear.

The technology differs considerably from simply directing a steam cleaner

### ELSEWHERE

**Letters from sad, happy readers, page 56**

**Next generation of bio control?, page 58**

**Books, videos for green industry, page 60**



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concept when Asplundh's Railroad Division tested the larger unit. Officials were impressed, according to Valentin.

"The treatment, which is the first of its kind for right-of-way weed control in New Jersey, showed immediate results as once vigorous weeds started to droop and wilt minutes after being sprayed with the hot water," she recounts.

"What made the demonstration even more dramatic is that the rail track had not been used in 13 years and was so overgrown with weeds that it was not visible at all before the treatment," according to Valentin.

Mayo holds high hopes the the technology will be a financial success: "There's a lot of interest from tons of markets."

—James E. Guyette

## GREEN INDUSTRY EVENTS

What's going on in the industry

### MARCH

**1: New Jersey Landscape '95,** Meadowlands Convention Center, Secaucus, N.J. Phone: (201) 664-6310.

**1-4: Outdoor Power Equipment Dealers Assn. annual meeting,** Sheraton Grand Torrey Pines, La Jolla, Calif. Phone: OPEDA, (215) 564-3484.

**2: Midwest Sports Turf Managers Association annual meeting,** Schaumburg (Ill.) Golf Club. Phone: 708) 439-4727.

**2-3: CalScape Expo 95,** Irvine (Calif.) Marriott Hotel. Phone: Mary Golden, (619) 723-9910.

**5: Tampa Bay Horticultural Trade Show,** Tampa (Fla.) Convention Center. Phone: Tampa Bay Wholesale Growers, (813) 960-1457.

**6-8: Massachusetts Turf Conference,** Springfield, Mass. Phone: (413) 549-5295.

**8: Professional Plant and Turf Conference,** sponsored by Nassau/Suffolk Landscape Gardeners Assn., Huntington (N.Y.) Townhouse. Phone: (516) 665-2250.

**11-14: Canadian Turfgrass Conference & Trade Show,** Ottawa Congress Center, Ottawa, Ontario, Canada. Phone: Canadian Golf Course Superintendents Assn., (905) 602-8873.

**14: Minnesota Sports Turf Managers Association meeting.** Phone: Mike McDonald, (612) 828-6525.

**15-16: Integrated Pest Management**

## Taking issue with editor's environmental perspective

To the editor:

With deference to your editorial piece in the December 1994 issue (p.1, "As We See It"), I am moved to respond as follows:

**1)** Contrary to your opinion regarding "oppressive government," laws governing the manufacture, sale and use of pesticides were in direct concern for an environment polluted with man-made toxic chemicals.

**2)** Thanks to EPA, FIFRA and OSHA, this country is on its way to protect us humans and the rest of God's creatures from being poisoned by our own hands.

**3)** The real entrepreneurs in this world are those individuals who accept our mistakes and strive to find remedies for our problems.

**4)** You must certainly believe in Santa Clause [sic.] if you think that the "market will regulate itself." If that were true, we wouldn't need half the laws on the books to protect the public from greedy individuals.

**5)** I do not want to renew my subscription.

Richard C. Fry  
Transylvania County  
(N.C.) Parks & Recreation

## Correcting reference to his company name

To the editor:

I enjoyed your article on Tom Delaney, "Lawn Care Industry Person of the Year." I have worked with Tom concerning lawn care issues and he is very deserving of the award.

I would have liked to frame the list of past recipients since our past owner/president, the late Jim Marria, was a past winner. I can't do this, though, because you have our company wrong. We are Perma-Green Lawn Care Co., one of the 15

in Landscapes Conference, Lolowna Lodge Hotel, British Columbia, Canada. Phone: Georgena Good, (604) 980-9735.

**15-16: Reinders Turf Conference,** Waukesha (Wis.) Expo Center. Phone: Ed Devinger, (414) 786-3301.

**17: Turf Management Seminar,** El Cajon Community Center. Phone: (619)

largest lawn care companies in the U.S. We are a 10-year-plus member of the PLCAA, but we do not build and sell spray equipment. Perma-Green Supreme is a completely different company.

Jim Marria needs to be remembered as the founder of our company.

Ben Miller  
Perma-Green  
Boise, Ida.

(We stand corrected.—Ed.)

## Says watch out for invasive perennials

To the editor:

This note is in reference to an article that appeared in your magazine in August 1994 on perennial plants. The information appeared on page 35 and apparently was taken from a book called Garden Design Ideas.

Under a listing for summer perennial favorites tolerating wet soil, purple losses-trife (*Lythrum salicaria*) is mentioned. Although there is a notation that plant is invasive, there is no mention of the fact that it is banned or about to be banned in 13 states due to the fact that it crowds out all other plants when it becomes established in wetlands.

Some plant varieties are currently being sold that are supposed to be sterile, but trials with these plants have shown that, in fact, very few of them are sterile. Thus, it is best not to promote or sell this invasive, non-native perennial.

It would be educational for your readers if your magazine could present an article about this plant and other plants that have "escaped" the yard to become a problem in the wild.

Catherine A. Bergens  
Indiana Dept. Natural Resources  
Indianapolis, Ind.

670-1980 x262.

**24-26: Student Career Days,** sponsored by Associated Landscape Contractors of America, North Metro Technical Institute, Acworth, Ga. Phone: (404) 975-4030.



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## Cornell prof sees 'hybrid fungus' as next generation of bio-control

■ A new biological fungicide is expected to receive EPA registration this month, according to Dr. Eric Nelson of Cornell University.

The new strain—*Trichoderma harzianum*—is a product of protoplast fusion, a process analogous to plant breeding. In the process, different genetic material is combined to form what Nelson—speaking at the New York State Turfgrass Association Turf and Grounds Exposition—described as a "hybrid fungus."

The new product will control Dollar spot, brown patch and pythium blight. Nelson described the product as, "A highly effective biological agent," which can be applied with conventional equipment.

A new company called TGT—whose founders include Cornell researchers—will manufacture the product.

Initial product distribution will be limited to west of the Mississippi. The Wilbur Ellis Co., of Fresno, Calif. will distribute the product.

Nelson said the product is not without drawbacks: it's sensitive to Banner, Rubigan and the triazole fungicides, and is most effective when soil temperatures are above 55-60° Fahrenheit.

Additionally, Nelson said researchers do

## CHEMICAL VS. BIOLOGICAL PRODUCTS

	CHEMICAL	BIOLOGICAL
	<u>PRODUCT DEVELOPMENT</u>	
Research/develop.	\$20 million	\$0.8-\$1.6 million
Toxicology testing	\$10 million	\$0.5 million
Patentability	straightforward	risky
Discovery	undirected screens	directed screens
	large numbers	low numbers
	high success	success questionable
Profitable market	\$40 million/yr.	\$1.5-\$10 million/yr.
	<u>PRODUCT USE</u>	
Efficacy	high	moderate
Control spectrum	broad	narrow
Speed of action	typically fast	typically slow
Health/environmental effects	well-established adverse	unknown

Source: Dr. Eric Nelson

not know how the product will react to herbicides or insecticides.

The product is expected to be formulated as a wettable powder, a granule and emulsifiable concentrate.

Nelson said the product has a shelf life of 1-2 years.

In tests conducted on dollar spot from August to October, the product was most effective when applied as a granular in conjunction with a foliar spray.

"There is a delay in the progress of the disease, then it peters out," says Nelson.

Nelson says that unlike the performance of some chemical fungicides, the new biological product can reduce the populations of pathogens in the soil.

Nelson says the product "worked well"

in spray applications to plots infected with Pythium and Rhizoctonia.

"One of the keys will be various additives—such as surfactants—that give the product better coverage," says Nelson.

In the area of compost research, Nelson says it has been more difficult to predict how a compost mix will react against diseases in turfgrass.

"There's no good way of knowing that," says Nelson, who says it's difficult to screen compost mixes for their disease suppression properties.

"We're trying to relate microbial properties (of compost) with disease suppression properties," says Nelson. "Compost use will improve as we can manipulate the composts more."

## DowElanco responds to 'Eye to Eye' criticism

**INDIANAPOLIS**—DowElanco took quick issue with points made in the Jan. 12th installment of the CBS television show "Eye to Eye with Connie Chung."

"Nothing depicted on 'Eye to Eye with Connie Chung' should undermine the public confidence in DowElanco and its products," the company stated in a press release the next day.

The show highlighted several people with health problems that they contend stem from the use of Dursban.

DowElanco makes clarifications in the cases of Jack Kahn, the residents of Building 8 (an office building in Albany, N.Y.), and Tri-County North School District in Ohio.

About Kahn, who claimed he was put out of a pest control job and out of the

workforce because of health problems stemming from his experiences applying Dursban:

"Mr. Kahn's medical records document that he was diagnosed—as early as...1984—as having neurological and immune disorders very similar to those which he now attributes to our product. His first exposure to Dursban was in 1989."

About Building 8, whose residents claim adverse health effects from Dursban:

"According to the state Department of Health report, the highest levels of Dursban measured in Building 8 were 10,000 times lower than those needed to cause any effect in humans."

And about the Ohio school children who complained of nausea and other negative reactions from the spraying of

Dursban in their school, DowElanco says this:

"DowElanco has not been named as a party in this suit. A health hazard evaluation by the National Institute of Occupational Safety and Health found that the complaints were likely related to carbon dioxide buildup...in combination with the presence of volatile organic compounds derived from liquid toner used in photocopiers."

DowElanco concluded:

"We are cooperating fully with the U.S. EPA. We are confident that the Agency's review will reaffirm the wide margin of safety of Dursban products. DowElanco hopes to see the issues raised in the 'Eye to Eye' segment resolved by the EPA review."

—Jerry Roche



# POWER UP FOR PEAK PERFORMANCE

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## NOW AVAILABLE Bobcat "High Flow" Skid-Steer Loaders in Two Sizes...



Choose from two Bobcat models – the 753H, with 1400 lb. rated capacity, and its bigger brother, the 1700 lb. rated 853H – both with high flow auxiliary hydraulics installed right from the Melroe factory. They are specifically designed as high-flow machines for maximum performance and durability. In the high-flow operating mode the 753H produces up to 21 gpm of auxiliary flow and the 853H produces 24 gpm.

**Bobcat Trenchers.** Two trencher attachments are now available for a variety of landscape applications. The LT204 (pictured), is designed for standard flow hydraulics and features 2' to 3' trench depth, with 4' to 12" width. The new LT405 is designed for high-flow use and features 3' to 5' trench depth, 5' to 12" width. Both offer hydraulic sideshift, optional trench cleaner.

**Bobcat Auger.** Dig 6"-36" holes with speed and plumb-line accuracy. Utilizing Bobcat auxiliary hydraulics, the heavy-duty auger bites in with high torque power. Because of its unique knuckle-joint design, the auger will dig vertical holes even on uneven terrain.



**Bobcat Tiller.** A great landscaper's attachment. The hydraulically-powered Bobcat Tiller is perfect for breaking up clumps and mixing compost or other materials into existing soil. Features bi-directional rotation, a six-inch maximum depth, offset mounting and replaceable, hardened steel tines.



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# INFO CENTER

**TORELLO'S TEXT...**The "Journal of Turfgrass Management" is now available from the Haworth Press. Written by Dr. William Torello of the University of Massachusetts, the quarterly publication costs \$36-\$60, depending on your classification, for four issues. To order, call (800) 342-9678 or fax (607) 722-6362.

**WRONGFUL TERMINATION...**A new book from Nolo Press reveals the strategies you can use for legally hiring and firing in the lawsuit-happy '90s. The 362-page paperback, called "Rightful Termination," costs \$29.95. To order, call (800) 992-6656.

**CHEMICAL REFERENCES...**Updated versions to two popular chemical references are now available to the green industry. "Turf & Ornamental Chemicals Reference" from C&P Press includes the EPA's official version of the Worker Protection Standard how-to-comply guide, along with 321 product labels and MSDSs. To order either the hardbound book (\$69) or 3½-inch diskettes, phone (800) 544-7377. From Meister Publishing comes the new "Farm Chemicals Handbook '95," featuring 17,000 pesticides and fertilizers, plus pesticide and fertilizer dictionaries. Price is \$79. To order, phone (800) 572-7740.

**FIRST AID...**The Bureau of Business Practice has a new "Medical Emergencies First Aid Pocket Guide" that covers assessing emergency situations, setting priorities, keeping victims alive until help arrives, and administering first aid. Guides can be customized with your company imprint. For more information, phone (800) 916-9000.

**COMPLIANCE POSTERS...**State and federal laws require that employers post specific employee labor law notices. G-Neil Companies now has posters that will put you in compliance. You can order the federal posters, the state posters or a complete labor law compliance kit in English, Spanish (some states) or both. All prices under \$100. For more information, phone (800) 999-9111.

**FIELD ESPAÑOL...**The Landscape Horticulture Center for Personnel Development is selling "Conversational Field Spanish" to the green industry. With the manual, you will learn pronunciation and vocabulary, learn the names of tools and materials, and become familiar with everyday phrases for planting, irrigation and maintenance. Cost is \$29.95 including shipping and sales tax. Send to LHCPD, 3124 Gray Fox Land, Paso Robles, CA 93446 or phone (805) 238-7921.

**ENVIRONMENTAL RELATIONS...**The Monsanto Company is offering a free kit to help LCOs and landscapers convey facts about pesticide use from an environmental perspective. "Weeds Are No Longer Your Only Concern" is a kit that contains product-specific and non-commercial information for you to distribute to the public. To request a kit, phone (800) 332-3111.

**WATER FEATURES...**A new book from Garden Way Publishing features complete descriptions of more than 300 grasses, flowering plants, shrubs, trees, aquatic and floating plants that can be used in waterscaping features. "Waterscaping: Plants and Ideas for Natural and Created Water Gardens" costs \$27.95 for the

hardcover and \$18.95 for the paperback (Canada slightly higher). To order, call (800) 441-5700.

**TREE STUFF...**Two new publications are applicable to tree care. The "Handbook of Landscape Tree Cultivars," lists 1700 cultivars. In looseleaf notebook form, it costs "29.95 plus \$3.50 shipping and handling. To order, phone (800) 928-5887. Also, the ACRT Institute of Arboriculture and Urban Forestry has published a 234-page safety and training manual for utilities and line clearance contractors. It contains 14 chapters and 257 illustrations that enables you to meet all OSHA and ANSI requirements. The "Line Clearance Tree Trimmer Certification Manual" costs \$115. To place your order, phone (800) 622-2562.

**FOR GREEN GREENS...**Noted turfgrass manager Tom Mascaro has written a 397-page text entitled "Diagnostic Turfgrass Management for Golf Greens." The book contains more than 100 color photographs and a complete workbook with all necessary monitoring charts and instructions. To order, call Turfgrass Products Publications at (800) 258-7477.

**ENVIRONMENTAL CONSIDERATIONS...**RGF Environmental Systems is offering a free booklet titled "Environmental Guidelines for Golf Course Maintenance Facilities." Subjects include EPA laws, maintenance shop housekeeping, mix & load operations, storm water run-off and more. To order, phone RGF at (800) 842-7771.

**VIDEO TRAINING...**"Creating the Knowledgeable Operator" is one of a series of video-based training workshops covering the basics of ride-on golf course maintenance equipment. The 30-minute video includes step-by-step instructions, an instructor guide, training handbooks and assessment worksheets. For more information and a free preview tape, call (800) 938-4330.

**FIELD MAINTENANCE...**Renowned groundskeeper Floyd Perry now has a book titled the "Pictorial Guide to Quality Groundskeeping" for rec facility managers and maintenance supervisors. Perry calls it the most comprehensive grounds maintenance text available. Cost is \$32.60 plus \$3 shipping and handling (Fla. residents \$1.95 sales tax). To order, call (800) 809-3952.

**FOR LANDSCAPERS...**"Landscape Construction Procedures, Techniques and Design" by horticulture professor Floyd Giles includes more than 450 pictures. The third edition, which retails for \$28.80, includes new sections on gazebos, irrigation, fences, decks, boat docks and other topics. Send your order to Stipes Publishing, 10-12 Chester St., Champaign, IL 61820.

**COST DATA...**The new "1995 Means Site Work & Landscape Cost Data" offers new prices that landscapers should use in compiling bids on projects. Included are more than 17,000 product lines and systems for site work and landscaping with the current prices for material, labor and equipment—nationally and regionally. Price is \$86.95 for the 500-page illustrated book. To order, call (800) 334-3509.





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Comprehensive manuals and on-screen help and telephone support are also available.

The "Lawn Genius" will help customize services for individual customers, print invoices, statements, work schedules and more than 100 reports.

A built-in mail merge function is included for making selective mailings.

Complete pesticide tracking and reporting is included, and the program will handle any method of billing.

Three versions are available, for trial runs, small business and networks.

**Circle No. 192 on Reader Inquiry Card**



## Software package includes accounts receivable

Dilloware, Inc. has written a software program to eliminate billing by hand.

The Billing Clerk does it in less than half the time and automatically keeps up with receivables. The software simplifies billing, tracks which customers owe, and for how long, and produces professional invoices and statements.

The Billing Clerk includes a regular billing option for special jobs, such as tree trimming and tree removal.

**Circle No. 191 on Reader Inquiry Card**

## Software designed with help of landscape pros

The TRIMS Grounds Management Software provides landscape managers with instant access to information, and lets them make better management decisions.

TRIMS Grounds Management Software is a simple solution to the paperwork and record keeping required for today's landscape management professional.

Features include:

- ease of use;
- "point & shoot" mouse operation;
- integrated operation;
- informative graphics;
- modular construction.

Prior computer experience is not required.

Scrolling, mouse operation and function keys make TRIMS easy to use for both the beginner and advanced user.

Simple prompts and help screens guide the user through the necessary steps for data entry and reporting.

**Circle No. 193 on Reader Inquiry Card**

## Solar-powered trim mower needs little care

Solar Power International, Inc. has introduced what it calls the world's first solar-powered lawn mower for the consumer market.

The result of extensive research and development, as well as on-site testing, the Solar Mower uses the same solar cell technology that drives NASA's space program.

Three state-of-the-art solar panels, comprised of 72 highly efficient, individual silicon solar cells, charge the all-weather Solar Mower, even as you mow.

The company says the mower is patented in 26 countries.

The mower is UL approved and exceeds all OPEI and ANSI safety standards.

The mower carries a four-year warranty against manufacturer's defects.

The mower has a 21-inch cutting radius.

Maximum decibel level is 72.

The mower will run for 1.5 hours on a charge.

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## Reel mower features on-demand four-wheel drive

The Toro Company's Reelmaster 3500-D is designed for a broad range of mowing applications over smooth and rolling terrain.

The versatile triplex mower features on-demand four-wheel drive and a 36-hp diesel engine for optimum traction and power. Variable reel speed control allows for precision cutting.

Toro's optional, on-demand, four-wheel drive means an over-running clutch activates the system when operators need extra traction most. A Peugeot 36-hp engine provides greater reliability and longevity, as well as the muscle to climb and cut simultaneously. The Reelmaster 3500-D incorporates Toro's exclusive reel speed adjustment knob that lets the operator infinitely adjust reel.

**Circle No. 195 on Reader Inquiry Card**

## 'Mini-prill' formulation new to fertilizer product line

Vicksburg Chemical Company has developed 12-0-42 K-Power controlled-release mini-prill blend fertilizer with controlled-release nutrients for use on greens and close-cut turf.

This product provides 50 percent controlled-release nitrogen and potassium from polymer-coated potassium nitrate.

According to national sales manager Michael Larisey, the easy-to use mini-prill formulation combines a desirable nitrogen-to-potassium ratio with the benefits of slow-release nutrients.

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## Mulcher used for controlling erosion at smaller job sites

The Reingo Power Mulcher Model TM-JR is a compact machine to cover straw or hay over residential or hard-to-reach sites.

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Circle No. 135 on Reader Inquiry Card



# PRODUCT REVIEW

## Front mower available with 4WD

Kubota Tractor Corp. has introduced the GF1800 front mower with 4-wheel drive, designed for enhanced maneuverability in a variety of mowing conditions.

Featuring a unique Foot Control 4WD and an independent hydraulic PTO, the 18-hp GF1800 changes easily between two and four-wheel drive, and offers increased mobility on slopes and in soft ground conditions.

The 4WD GF1800's unique two-pedal design allows the operator to switch easily between drives by simply stepping on either the 4WD Lock Pedal or 4WD Release Pedal. This Foot Control 4WD can be activated "on the go," permitting quick response to changing ground conditions.

**Circle No. 198 on Reader Inquiry Card**



## Weather satellite service keeps watch for lightning

Golf Communications, Inc. has offered GolfLink—called the first complete golf weather and information satellite service—to the green industry.

GolfLink is designed to keep golf professionals, superintendents and players informed of the latest information in the golf industry.

GolfLink provides news from national and local golf and superintendent associations, tips from the pros, new product information and much more.

The most exciting feature about GolfLink, according to the company, is the weather and lightning information provided to all subscribers. GolfLink has the most complete weather and lightning package that is offered to anyone in the golf industry.

This system offers 12 different maps from national and regional radar maps; jet stream, temperature and soil temperature maps; action radar maps showing the movement of weather front; high and low forecasts and any other type of information that relates to weather.

All of this information is updated several times an hour.

The Lightning Strike maps can help warn golfers of any lightning strikes in the area.

All information is available 24 hours each day, seven days a week.

Cost is a \$250 one-time fee, plus \$58.25 per month. A two-month trial offer costs \$159.

**Circle No. 201 on Reader Inquiry Card**

## Root feeder ideal for shallow surface situations

The Green Garde division of H.D. Hudson Manufacturing Company has added a heavy-duty surface root feeder to its line.

The Green Garde HD-8 is ideal for shallow surface feeding with liquids and is ruggedly designed and built with fully replaceable parts for long, professional use. For greater in-field convenience, the feeder fits Green Garde JD9-C and JD-9CT spray guns.

**Circle No. 202 on Reader Inquiry Card**

## New, nimble gloves cover worker protection standard

Covering hands with chemical-resistant gloves when working with pesticides is the law under the EPA's Worker Protection Standard. The problem is, the gloves can make it difficult to change sprayer tips and nozzles.

Gempler's new, 100 percent Nitrile gloves provide protection without sacrificing dexterity.

The Nitrile gloves are recommended over rubber for chemical work, says the company, and resist damage from acids, caustics, solvents, grease, punctures and tears.

The embossed, anti-slip grip holds tips and nozzles tightly without impeding finger movement. Unlined and flock-lined pairs come individually packaged.

**Circle No. 199 on Reader Inquiry Card**



## Apply fungicide to trees with injection system

Chipco's Aliette Injectable brand fungicide is available for use in trees through an innovative micro-injection system from the Arborx company.

The technology lets the operator inject the material directly into the tree.

Consequently, those who provide pro-

fessional tree care can deliver an immediate self-contained dose of the fungicide's disease-control properties.

According to Chipco, the technology addresses the issue of potential applicator exposure to chemicals and can also be useful in saving urban trees in situations where high pressure spraying is not a practical option.

**Circle No. 200 on Reader Inquiry Card**





# KUBOTA RUNS CIRCLES AROUND THE COMPETITION

Kubota's FZ2100 and FZ2400 with Zero Diameter Turn (ZDT) run circles around the competition.

The power in the innovative FZ front mowers starts with 20 or 24 horsepower Kubota liquid cooled diesel engines and continues with the Auto Assist Differential (AAD) drive system that automatically switches between 2WD and 4WD to match operating conditions. With AAD, you get extra power to maneuver easily in wet grass and muddy conditions with the front wheels rotating freely through the tightest turns. The FZ can turn completely around in one spot without damage to the turf, cutting way down the time spent on labor-intensive hand trimming jobs.

For productivity and versatility, Kubota's F-Series front mowers can't be beat. The F2400 is 4WD and 24 horsepower, while the F2100 is available in 2WD or 4WD, and has 20 horsepower. Both have Kubota diesel engines, and are equipped with hydrostatic rear-wheel power steering for easy handling. A wide selection of Performance Matched Implements provide the versatility. They include triplex reel, rotary, flail and mulching rear discharge mowers, rotary broom, leaf blower, snowblower, and front blade. Roomy operator's deck, tilt steering wheel, and excellent visibility increase comfort and productivity.

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## Kubota®

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**P.O. Box 2992, Dept. LM, Torrance CA 90509-2992**

Financing available through Kubota Credit Corporation.



# PRODUCT REVIEW

## Roll-type aerator added to product line

Classen adds the new model TA-19 self-propelled, roll-type core aerator to its line of turf equipment.

The TA-19 is powered by a 4-hp Honda engine and covers up to 24,000 sq. ft. per hour.

Other features include:

- a rugged, one-piece frame with a removable weight bar;
- user-friendly handle and controls.

The TA-19 will easily fit through a 30-inch wide area.

**Circle No. 203 on Reader Inquiry Card**



## Marker dye helps improve spray accuracy, visibility

Three new marker dye products to help applicators improve the visibility and accuracy of their agrichemical applications have been marketed by Loveland Industries.

Marker Dye WSP is a water-soluble packet of blue dye added to the mixing tank water for agricultural, horticultural, forestry and roadside applications of pesticides and liquid fertilizers.

With Marker Dye WSP, the applicator sees exactly what areas have been treated, thereby avoiding costly overlaps as well as skips and off-target applications.

Marker Dye WSP dissolves quickly and completely and leaves no residue to clog nozzles.

**Circle No. 207 on Reader Inquiry Card**

## Foliar fertilizer improves turf color, spreads nutrients

Terra International introduces the foliar fertilizer Six Iron to its line of professional turf products.

Six Iron is a ferrous sulfate, urea and sulfur combination that improves the color of turfgrass.

Terra reports that foliar applications of Six Iron distribute iron and nitrogen more rapidly to the turf than do soil applications.

Six Iron is available in 2.5-gallon jugs and 55-gallon drums.

**Circle No. 204 on Reader Inquiry Card**

## Self-propelled field striper has a 3-year warranty

The Brite Striper 2000 now carries what Pioneer Manufacturing says is the longest warranty in the industry: three years.

Three large, 13-inch wheels provide smooth rolling on rough surfaces.

An extra-large, 12-gallon, stainless steel tank reduces the number of delays for refilling. A Thomas-diaphragm-type compressor prevents costly and time-consuming problems associated with oil mixing and marking paint.

**Circle No. 206 on Reader Inquiry Card**

## New sliding topper for specific cargo vehicle

Reading Body Works has added a new optional feature, the Sliding Top, to the line of accessories available for the off-road Mitsubishi Mighty Mits vehicles.

The Sliding Top is a 14½-inch high rear taligate, and weathertight protection to the cargo bay. The Sliding Top is easy to open and close.

**Circle No. 208 on Reader Inquiry Card**

## Broader label designation for ornamental herbicide

The Environmental Protection Agency has approved an expanded label for Pendulum WDG herbicide from American Cyanamid Company.

The new label enables landscapers, nursery growers, lawn care operators and golf course superintendents to use the product over the top of an additional 70 species of ornamental plants.

With the new label, Pendulum WDG herbicide may be used to control grasses and broadleaf weeds in more than 260 species of trees, shrubs, flowering beds and ground covers.

The product contains pendimethalin, a leading pre-emergence turf herbicide.

**Circle No. 205 on Reader Inquiry Card**

## Company makes vertical shaft engine

Briggs & Stratton Corporation's new Quattro engine provides economical and dependable power and low-cost differentiation in price-sensitive markets.

The powerful, 4-hp, 10 cubic inch engine offers a distinctive, contemporary-styled appearance. Features include a large rewind and mechanical compression release for easier starting.

Other features include Magnetron electronic ignition, foam element air cleaner, and a two-year consumer warranty.

An extended oil fill and automotive type dipstick makes it easy to accurately check and service engine oil.

**Circle No. 209 on Reader Inquiry Card**





# PRODUCT REVIEW

## New line of stone seats, tables, benches for outdoors

An expanded line of cast stone site tables and benches has been introduced by Dura Art Stone, bringing to 15 the number of standard tables it makes for picnic, game, recreational and general outdoor use, including a variety of shapes in traditional and art deco styles.

All tables have matching seats or benches that are either freestanding or an integral part of the design, as with picnic tables.

All styles of table offer the beauty and permanence of top quality cast stone in a choice of 18 standard colors and six finishes.

Most designs include wheelchair access by modifying the table height in compliance with Americans with Disabilities Act standards.

Other standard options include umbrella holes for tables and a variety of installation mounts to meet different application needs.

**Circle No. 210 on Reader Inquiry Card**

## Fertilizer spreaders have many options, sizes

Precision cam gauge metering on Gandy 10 Series spreaders give accuracy and simplicity in gravity flow application of fertilizer, granular material and seeds.

Standard powder angles can be installed on the internal rotors for added agitation when applying granulated lime.

Each spreader has a cold-roll steel bottom with stainless steel slide which are precision mated at the factory for accuracy.

Hopper capacity is approximately 100 lbs./linear ft., with hoppers available in six-, eight- and 12-foot sizes in four models—trailer model, 3 pt. hitch end-wheel drive model and 3-pt. hitch or implement-mounted with 12-volt motor or hydraulic motor drive.

**Circle No. 211 on Reader Inquiry Card**

## Stump grinder lightweight, with anti-vibration feature

A portable new lightweight stump grinder with the latest in anti-vibration and decompression valve technology is available from Husqvarna.

The Model 272S uses an 8-inch steel blade with tungsten carbide tips. According to the company, the grinder is ideal for tree services, landscape contractors and companies that offer stump grinding services.

**Circle No. 212 on Reader Inquiry Card**

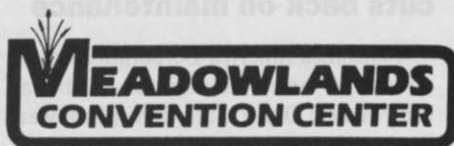
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**NEXT MONTH:**

**LM Reports on rotary mowers**



# PRODUCT REVIEW

## 'Boom' applicator greatly reduces spray product drift

Environmental Technologies has introduced the "ultimate" walking boom spray applicator that virtually eliminates spray drift to ensure the spray goes and stays where you want it. The enclosed design also improves operator and environmental safety while reducing public complaints.

The Drift Guard WB70 is a 3-section boom that follows ground contours to ensure accurate spray application.

The wings fold for easy transport and storage. The walking boom also comes standard with a nozzle flow monitor, pressure gauge and digital speedometer.

An optional "chariot" unit lets you load and transport the sprayer.

**Circle No. 214 on Reader Inquiry Card**

## W-2 form report generator available for tax needs

Armor Systems has the Report Generator W-2 Form Format software.

The format, which requires the use of the Premier Report Generator and Payroll modules, is perfect for large and small operations that incorporate Advance EIC Payments, have employees in multiple states or have special W-2 printing needs.

By using the new format, companies with employees in two states and localities, or those who have special printing needs can eliminate multiple print runs.

In addition, this format package reports Advance EIC Payments amounts in a separate box on W-2 forms, so employees will no longer have to fill in the Advance EOC Payments by hand.

**Circle No. 215 on Reader Inquiry Card**

## New container reduces exposure to products

Monsanto Company is coming out with a new 2-1/2 gallon herbicide container that it says eliminates the foil seal, and features an innovative no-glug, no-drip design.

The patented container reduces user exposure to herbicides and makes herbicide handling easier and faster.

The no-glug pouring effect is achieved with a large, "air-flow" handle designed with a special split inner opening, which

lets air flow back into the container at the same rate the liquid empties, to create a smooth, fast-pouring action.

A special no-drip lip keeps contents from running down the container's exterior while pouring, and a large handle makes for easy carrying and lifting.

**Circle No. 216 on Reader Inquiry Card.**

## New sprayer/foamer line features high flow rate

Eagle Power Products announces its new line of portable, heavy-duty sprayers and foamers. All units have a steel tank construction ranging in size from 2.6 to 13.2 gallons.

The sprayers are quickly charged and capable of 170 psi of pressure, with high flow rate.

Individual replacement parts are also available.

**Circle No. 217 on Reader Inquiry Card**

## New hydrostatic mower cuts back on maintenance

Ransomes America Corporation introduces a new, Ransomes Bob-Cat Hydrostatic Drive walk-behind mower. Designed to cut up to 24.6 acres in an eight-hour day, the mower features an infinitely variable number of ground speeds for optimum productivity.

The hydrostatic drive's transmission features dual Sunstrand/Hydrogear pumps and Ross wheel motors. Fingertip levers control independent power to each wheel for moving, stopping, power turning and reverse. The result is exceptional maneuverability in confined areas. Controls for blade engagement, throttle and wheel tracking are conveniently located on the panel and handlebars.

Kohler, Kawasaki and Vanguard air-cooled engines are available.

**Circle No. 218 on Reader Inquiry Card**

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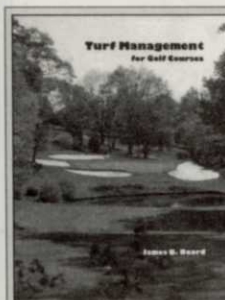
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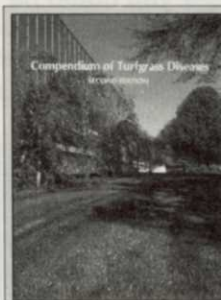
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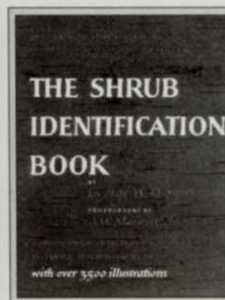
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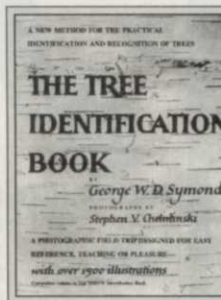
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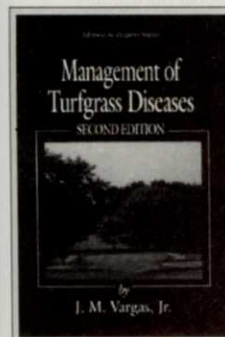
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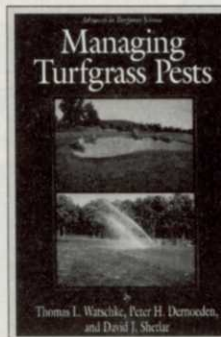
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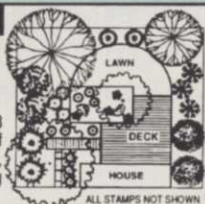
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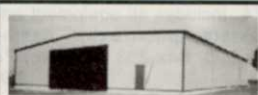
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### LANDSCAPE CREW LEADER WANTED:

Crew leader with minimum 3 years experience specializing in general cleanups (i.e. pruning, spade edging, mulching, etc.) ONLA certification a plus. Salary/benefit package commensurate with experience. 614-389-1587 to arrange interview. 2/95

Key positions available with an expanding full-service award winning landscape operation in Cleveland, Ohio. Designer, Salesperson, Supervisor and Branch Manager opportunities. Send resume to: Yardmaster, Inc., Landscape Architects & Contractors, 1447 North Ridge Road, Painesville, Ohio 44077, Phone (216)951-9100, Fax (216)357-1624. 2/95

### LAWN CARE APPLICATOR

Position available for experienced applicator with background in sales/service and supervision. Custom applicator license and excellent diagnostic knowledge a must. Salary/benefit package commensurate with experience. 614-389-1587 to arrange interview. 2/95

### LANDSCAPE DESIGN/SALES

Position available immediately for designer with B.S. in landscape architecture or ornamental horticulture and a minimum of 3 years experience in design/sales. Good graphics a must. ONLA certification and field experience a plus. Salary/benefit package commensurate with experience. 614-389-1587 to arrange interview. 2/95

### Excellent Career Opportunity!

One of **Dallas/Ft. Worth's** largest and fastest growing full service landscape companies has an immediate need for experienced sales personnel and superintendents as well as entry level maintenance positions. The company seeks energetic, career minded individuals with proven leadership, communications, and excellent customer service skills. College degree in horticulture or related fields a plus. Please send or fax your resume to: (214-247-0246) Maintain Services, Inc., 2549 Southwell, Dallas, TX 75229. 2/95



## HELP WANTED

**Salesperson and Asst. Manager Positions.** Sunbelt Trees, Inc., a Houston, Texas leader in high quality specimen container grown trees has two immediate openings: **Asst. Manager** with experience in all aspects of container grown plant production. Also an aggressive, knowledgeable, **Salesperson**, expected to generate sales, provide excellent customer service, and assist in shipping. College degree in horticulture or related fields a plus. Please send or fax your resume to: (214-247-0426) Sunbelt Trees, Inc., 2565 Southwell, Dallas, TX 75529. 2/95

**LANDSCAPE MAINTENANCE SUPERVISORS AND CONSTRUCTION FOREMEN** needed with established background in commercial landscape and irrigation. We are looking for quality conscientious, energetic, team oriented industry professionals. Must be able to make decisions and be creative, self-motivated with strong organizational skills. We provide continuous training and offer competitive salary/benefits. Good driving record and pre-employment drug test required. EOE. Send resume to Northwest Landscape Industries, 16075 S.W. Upper Boones Ferry Rd., Tigard, OR 97224. 2/95

**SALES POSITION** Increased demands and sales require expansion of our sales force. Unique opportunity to work with a multi-faceted, rapidly expanding pest control company currently operating in the Western and Southeastern United States. Successful candidate will coordinate sales efforts on behalf of Pestmaster Services operations, both company owned and franchise operations. Minimum five years experience in sales. BS in Agricultural or Entomology fields desired. Masters a plus. Must have or obtain PCA licensing (CA) and possibly other licenses. Attractive comprehensive benefit package commensurate with experience/credentials. If you're looking for a career (and not just a job), we invite you to submit your resume to the attention of: Jeffrey M. Van Diepen, President, Pestmaster Franchise Network, Inc., 137 E. South Street, Bishop, CA 93514. 2/95

**CERTIFIED APPLICATORS-** Seeking independent, self-starting people who are willing to set the standards for the industry. Send work history to: PRO-X LawnCare, Box 566, Appleton, WI 54912. 2/95

## RECRUITMENT

Key positions now available with expanding full service Lawn Maintenance, Fence & Landscape Co. Designer, Fence & Landscaping Salesperson, & Lawn technician, and asst. mgr. Sorry, experience only please. We provide competitive pay, benefits, and co. stock ownership. Send resume to Sunburst, 21134 Lorain Road, Fairview Park, OH 44126 or call for interview 216-331-1260. Ask for Dan.

## WANTED

**WANTED:** Old SPYDER forklifts and/or forklift frames. Mobile Lift Parts, Inc., 5402 Edgewood Rd., Crystal Lake, IL 60012. (800)397-7509. 2/95

Mail Blind Box Replies to:  
**LANDSCAPE MANAGEMENT**  
131 W. First St., Duluth, MN 55802  
Please include box number in address!

## BUSINESS FOR SALE

**BUSINESS FOR SALE** Complete landscape design, construction & maintenance business in beautiful, central PA. Includes all equipment and accounts. Real estate option extra. Asking \$225,000.00. Reply P.O. Box 263, McClure, PA 17841. 2/95

**COMPLETE NURSERY, RETAIL SALES and MAINTENANCE BUSINESS** in PIEDMONT, NORTH CAROLINA... HIGH GROWTH RETIREMENT and RESORT AREA. On busy highway. Thriving and growing. Owner will stay for transition. Call John McKeithen, Gouger, O'Neal & Saunders, Inc., 800-672-2228 or 910-692-2635. 2/95

Very profitable, complete landscape business including greenhouses, nursery stock, sprinkler systems and sod farm in upper Northwestern North Dakota. 42 years in business, retiring and ill health. Contact Handy Andy's Nursery, Highway 2 & 85 West, Williston, North Dakota 58801. Phone 701-275-6083. 3/95

## BUSINESS WANTED

**Are you interested in selling your small to medium sized Lawn Care company?** We can probably help!! We are currently searching for lawn spraying companies throughout the United States and Canada. If you wish to discuss this possibility further please contact: **John Kloosterhuis - President**, Green Lawn Care Ltd., 476 Evans Avenue, Etobicoke, Ontario Canada M9W2T7. Phone: (416)253-6540 or Fax: (416)253-6891. 2/95

## EQUIPMENT FOR SALE

**USED:** 4 Spyder Forklifts \$7500.00 ea.; 1 Brouwer 18" Rollup Sod Harvester \$15,000.00, 719-683-2599. 2/95

**PIPE LOCATOR INEXPENSIVE!** Locates, traces underground drain, water pipe lines of clay, PVC, ABS, steel, cement. Finds sprinklers, valves, clogs. Bloch and Company, Box 18058, Cleveland, Ohio 44118. (216)371-0979. TF

**SPYDERS-** New/Used/Rebuilt. Full line of replacement parts and update kits. Kubota, Ruggerini, and Kohler engines & parts. Nichols-Fairfield torque hubs. We repair and rebuild Spyder hydraulic pumps and motors. **FAST SERVICE.** Call or write: Mobile Lift Parts Inc., 5402 Edgewood Rd., Crystal Lake, IL 60012. (800)397-7509, FAX (815)455-7366. 2/95

**REINCO HYDROGRASSERS** and power mulchers in stock. Opdyke Inc., (Philadelphia Area) 215-721-4444. 2/95

**BUCKET TRUCKS:** Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers: New Morbark Disc and Drum Style. New Rayco Stump grinders. Best prices anywhere. Used Chippers: Asplundh, Morbark, etc. 2 to 8 usually in stock. Sprayers, Dumps, Stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as-is or reconditioned. We also buy your surplus equipment. Opdyke's, Hatfield (Philadelphia Area). 215-721-4444. 2/95

## FOR SALE

**BUCKET TRUCK:** Hi Ranger 65', 57', 50'. Skyworkers with chip boxes. Asplundh bucket trucks with chip boxes. Asplundh brush chippers. Bean 55 gal. sprayers. Pete Mainka Enterprises, 633 Cecilia Drive, Pewaukee, WI 53072. 800-597-8283. 12/95

# LANDSCAPE MANAGEMENT

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June	5-9
July	6-9
August	7-11
September	8-9
October	9-11
November	10-10
December	11-10

(Call rep for date confirmation.)

**SEND AD COPY WITH PREPAYMENT TO:**  
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Landscape Management  
7500 Old Oak Blvd.  
Cleveland, OH 44310

for more information,  
call Stephanie:  
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Fax: 216-826-2865

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CITY \_\_\_\_\_  
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TELEPHONE ( \_\_\_\_\_ ) \_\_\_\_\_  
FAX NUMBER ( \_\_\_\_\_ ) \_\_\_\_\_

HAVE A SALES REP CALL ME 18  (A)

101	118	135	152	169	186	203	220	237	254	271	288	305	322
102	119	136	153	170	187	204	221	238	255	272	289	306	323
103	120	137	154	171	188	205	222	239	256	273	290	307	324
104	121	138	155	172	189	206	223	240	257	274	291	308	325
105	122	139	156	173	190	207	224	241	258	275	292	309	326
106	123	140	157	174	191	208	225	242	259	276	293	310	327
107	124	141	158	175	192	209	226	243	260	277	294	311	328
108	125	142	159	176	193	210	227	244	261	278	295	312	329
109	126	143	160	177	194	211	228	245	262	279	296	313	330
110	127	144	161	178	195	212	229	246	263	280	297	314	331
111	128	145	162	179	196	213	230	247	264	281	298	315	332
112	129	146	163	180	197	214	231	248	265	282	299	316	333
113	130	147	164	181	198	215	232	249	266	283	300	317	334
114	131	148	165	182	199	216	233	250	267	284	301	318	335
115	132	149	166	183	200	217	234	251	268	285	302	319	336
116	133	150	167	184	201	218	235	252	269	286	303	320	337
117	134	151	168	185	202	219	236	253	270	287	304	321	338

## LANDSCAPE MANAGEMENT

FEBRUARY 1995  
This card is void  
after April 15, 1995

### 1. BUSINESS & INDUSTRY

MY PRIMARY BUSINESS AT THIS LOCATION IS:  
(PLEASE MARK ONLY ONE IN EITHER A, B OR C)

#### A. Landscaping/Ground Care at one of the following types of facilities:

- 01  0005 Golf courses  
02  0010 Sports Complexes  
03  0015 Parks  
04  0025 Schools, colleges, & universities  
05  Other type of facility (please specify) \_\_\_\_\_

#### B. Contractors/Service Companies/Consultants:

- 06  0105 Landscape contractors (installation & maintenance)  
07  0110 Lawn care service companies  
08  0112 Custom chemical applicators  
09  0135 Extension agents/consultants for horticulture  
10  Other contractor or service (please specify) \_\_\_\_\_

#### C. Suppliers:

- 11  0205 Sod growers  
12  Other supplier (specify) \_\_\_\_\_

Which of the following best describes your title:  
(mark only one)

- 13  10 EXECUTIVE/ADMINISTRATOR  
14  20 MANAGER/SUPERINTENDENT  
15  30 GOVERNMENT OFFICIAL  
16  40 SPECIALIST  
17  50 OTHER TITLED AND NON-TITLED PERSONNEL (specify) \_\_\_\_\_

I would like to receive (continue receiving)

LANDSCAPE MANAGEMENT each month: YES  NO

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_  
STATE \_\_\_\_\_ ZIP \_\_\_\_\_

TELEPHONE ( \_\_\_\_\_ ) \_\_\_\_\_  
FAX NUMBER ( \_\_\_\_\_ ) \_\_\_\_\_

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107	124	141	158	175	192	209	226	243	260	277	294	311	328
108	125	142	159	176	193	210	227	244	261	278	295	312	329
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111	128	145	162	179	196	213	230	247	264	281	298	315	332
112	129	146	163	180	197	214	231	248	265	282	299	316	333
113	130	147	164	181	198	215	232	249	266	283	300	317	334
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I would like to receive (continue receiving)

LANDSCAPE MANAGEMENT each month: YES  NO

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



NAME \_\_\_\_\_  
 TITLE \_\_\_\_\_  
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HAVE A SALES REP CALL ME  (A)

- |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 101 | 118 | 135 | 152 | 169 | 186 | 203 | 220 | 237 | 254 | 271 | 288 | 305 | 322 |
| 102 | 119 | 136 | 153 | 170 | 187 | 204 | 221 | 238 | 255 | 272 | 289 | 306 | 323 |
| 103 | 120 | 137 | 154 | 171 | 188 | 205 | 222 | 239 | 256 | 273 | 290 | 307 | 324 |
| 104 | 121 | 138 | 155 | 172 | 189 | 206 | 223 | 240 | 257 | 274 | 291 | 308 | 325 |
| 105 | 122 | 139 | 156 | 173 | 190 | 207 | 224 | 241 | 258 | 275 | 292 | 309 | 326 |
| 106 | 123 | 140 | 157 | 174 | 191 | 208 | 225 | 242 | 259 | 276 | 293 | 310 | 327 |
| 107 | 124 | 141 | 158 | 175 | 192 | 209 | 226 | 243 | 260 | 277 | 294 | 311 | 328 |
| 108 | 125 | 142 | 159 | 176 | 193 | 210 | 227 | 244 | 261 | 278 | 295 | 312 | 329 |
| 109 | 126 | 143 | 160 | 177 | 194 | 211 | 228 | 245 | 262 | 279 | 296 | 313 | 330 |
| 110 | 127 | 144 | 161 | 178 | 195 | 212 | 229 | 246 | 263 | 280 | 297 | 314 | 331 |
| 111 | 128 | 145 | 162 | 179 | 196 | 213 | 230 | 247 | 264 | 281 | 298 | 315 | 332 |
| 112 | 129 | 146 | 163 | 180 | 197 | 214 | 231 | 248 | 265 | 282 | 299 | 316 | 333 |
| 113 | 130 | 147 | 164 | 181 | 198 | 215 | 232 | 249 | 266 | 283 | 300 | 317 | 334 |
| 114 | 131 | 148 | 165 | 182 | 199 | 216 | 233 | 250 | 267 | 284 | 301 | 318 | 335 |
| 115 | 132 | 149 | 166 | 183 | 200 | 217 | 234 | 251 | 268 | 285 | 302 | 319 | 336 |
| 116 | 133 | 150 | 167 | 184 | 201 | 218 | 235 | 252 | 269 | 286 | 303 | 320 | 337 |
| 117 | 134 | 151 | 168 | 185 | 202 | 219 | 236 | 253 | 270 | 287 | 304 | 321 | 338 |

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 17  50 OTHER TITLED AND NON-TITLED PERSONNEL (specify) \_\_\_\_\_

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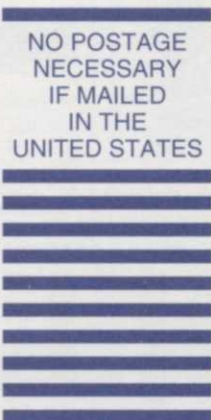


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