

Include periodic checks on the pond's filter system.



often gets a head start on the growing season. As the water warms, floating plants and lily leaves compete with it for sunshine.

High levels of green water algae can cause oxygen problems in the pond. Plants release oxygen during photosynthesis, but they consume oxygen all the time through respiration. At night, they release carbon dioxide that becomes carbonic acid. The acid lowers the pH at night, causing low oxygen levels and health problems in the fish. Limit the addition of nutrients (fish food, leaves, grass clippings) to the water and add nutrient consumers such as plants to keep the pond water in balance.

Make sure filter systems are operating as spring gets underway. Check skimmers

often to remove debris. Consider cutting back on the addition of beneficial bacteria to the biological filter.

Ah summer, the pond is alive

Summer is the time when customers most enjoy their landscape water features. The water is above 70° F, water plants are in full bloom and songbirds visit it each morning and evening.

If the water becomes very warm (over 85° F), keep an eye on the fish. If they are gulping for air at the surface or near the waterfall, the water is low in oxygen. Warm water holds less oxygen than cold water. Consider adding a fountain or aerator to increase oxygen in the water.

Water quality during the summer tends

SAVE BIG \$\$\$

SAVE NOW! ***Biggest Selection** ***Highest Quality** ***Lowest Prices** **SAVE NOW!**

SUPER TURBO	SUPER SEG	SUPER T-SEG	WIDE SLOT	SILENT GRANITE	SEG SWIRL CUP																																																																										
 <table border="1"> <tr><td>4"</td><td>\$ 9.00</td></tr> <tr><td>4.5"</td><td>\$10.00</td></tr> <tr><td>5"</td><td>\$12.00</td></tr> <tr><td>7"</td><td>\$15.00</td></tr> <tr><td>8"</td><td>\$40.00</td></tr> <tr><td>10"</td><td>\$45.00</td></tr> <tr><td>12"</td><td>\$69.00</td></tr> <tr><td>14"</td><td>\$79.00</td></tr> </table>	4"	\$ 9.00	4.5"	\$10.00	5"	\$12.00	7"	\$15.00	8"	\$40.00	10"	\$45.00	12"	\$69.00	14"	\$79.00	 <table border="1"> <tr><td>4"</td><td>\$ 9.00</td></tr> <tr><td>4.5"</td><td>\$10.00</td></tr> <tr><td>5"</td><td>\$12.00</td></tr> <tr><td>7"</td><td>\$15.00</td></tr> <tr><td>8"</td><td>\$40.00</td></tr> <tr><td>10"</td><td>\$45.00</td></tr> <tr><td>12"</td><td>\$69.00</td></tr> <tr><td>14"</td><td>\$79.00</td></tr> </table>	4"	\$ 9.00	4.5"	\$10.00	5"	\$12.00	7"	\$15.00	8"	\$40.00	10"	\$45.00	12"	\$69.00	14"	\$79.00	 <table border="1"> <tr><td>4"</td><td>\$19.00</td></tr> <tr><td>4.5"</td><td>\$25.00</td></tr> <tr><td>5"</td><td>\$29.00</td></tr> <tr><td>7"</td><td>\$35.00</td></tr> <tr><td>8"</td><td>\$45.00</td></tr> <tr><td>10"</td><td>\$55.00</td></tr> <tr><td>12"</td><td>\$89.00</td></tr> <tr><td>14"</td><td>\$99.00</td></tr> </table>	4"	\$19.00	4.5"	\$25.00	5"	\$29.00	7"	\$35.00	8"	\$45.00	10"	\$55.00	12"	\$89.00	14"	\$99.00	 <table border="1"> <tr><td>4"</td><td>\$19.00</td></tr> <tr><td>4.5"</td><td>\$25.00</td></tr> <tr><td>5"</td><td>\$29.00</td></tr> <tr><td>7"</td><td>\$35.00</td></tr> <tr><td>8"</td><td>\$45.00</td></tr> <tr><td>10"</td><td>\$55.00</td></tr> <tr><td>12"</td><td>\$89.00</td></tr> <tr><td>14"</td><td>\$99.00</td></tr> </table>	4"	\$19.00	4.5"	\$25.00	5"	\$29.00	7"	\$35.00	8"	\$45.00	10"	\$55.00	12"	\$89.00	14"	\$99.00	 <table border="1"> <tr><td>12"</td><td>\$189.00</td></tr> <tr><td>14"</td><td>\$199.00</td></tr> </table>	12"	\$189.00	14"	\$199.00	 <table border="1"> <tr><td>4"</td><td>\$49.00</td></tr> <tr><td>4.5"</td><td>\$59.00</td></tr> <tr><td>7"</td><td>\$69.00</td></tr> </table>	4"	\$49.00	4.5"	\$59.00	7"	\$69.00
4"	\$ 9.00																																																																														
4.5"	\$10.00																																																																														
5"	\$12.00																																																																														
7"	\$15.00																																																																														
8"	\$40.00																																																																														
10"	\$45.00																																																																														
12"	\$69.00																																																																														
14"	\$79.00																																																																														
4"	\$ 9.00																																																																														
4.5"	\$10.00																																																																														
5"	\$12.00																																																																														
7"	\$15.00																																																																														
8"	\$40.00																																																																														
10"	\$45.00																																																																														
12"	\$69.00																																																																														
14"	\$79.00																																																																														
4"	\$19.00																																																																														
4.5"	\$25.00																																																																														
5"	\$29.00																																																																														
7"	\$35.00																																																																														
8"	\$45.00																																																																														
10"	\$55.00																																																																														
12"	\$89.00																																																																														
14"	\$99.00																																																																														
4"	\$19.00																																																																														
4.5"	\$25.00																																																																														
5"	\$29.00																																																																														
7"	\$35.00																																																																														
8"	\$45.00																																																																														
10"	\$55.00																																																																														
12"	\$89.00																																																																														
14"	\$99.00																																																																														
12"	\$189.00																																																																														
14"	\$199.00																																																																														
4"	\$49.00																																																																														
4.5"	\$59.00																																																																														
7"	\$69.00																																																																														

Guaranteed to be the **BEST BLADES** for all your cutting needs
Family Owned and Operated

1-800-285-0163 OPEN 7 DAYS A WEEK



to be stable, so you generally don't have to test it as often. However, it's always a good idea to keep records so you can accurately remember what the readings are at a later date or pick up on trends.

Watch out for neighbors spraying insecticides or runoff of fertilizer from lawns during a heavy rain. Also, check to see what product the community will be spraying for mosquito control. Most towns use sprays that aren't toxic to fish but some aren't as careful.

Use an automatic water fill valve to trickle water into the pond to replace evaporation. If you use a garden hose and tap water, don't leave it unattended. You might forget and replace all of the pond water with cold, chlorinated water.

A balanced diet

Instruct clients to feed the fish a balanced diet with a variety of fresh and pellet foods. Fish left to fend for themselves don't grow as much and may not put on enough fat stores to go into the next dormant season.

Healthy fish can grow rapidly and may grow too large for the pond. Too many fish babies may outgrow the filter system. Remember, fish grow and filters don't. It may become necessary to remove some of the fish or to enlarge the filter system to keep the pond in balance.

Frogs, toads and turtles will often leave the pond during the summer, and others may show up and become new members of the community. Watch out for turtles that eat fish or lilies. Also, keep an eye out

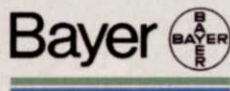


Now you have access to the industry's best research - FREE

TurfGrass Trends' award-winning content is organized by category in a completely searchable article database

Get your hands on the latest scientific solutions for the green industry in a snap

BROUGHT TO YOU BY:



Precision cut. Legendary performance.



www.TurfGrassTrends.com



A waterfall can increase oxygen in the water.

for herons or egrets. They can eat all the fish in a pond in a short time. You may need to cover the pond with a net or use a motion-activated water sprayer.

Get tropical

You can add tropical plants when the water temperature is in the 70s. This includes lotus, even though it can often survive being at the bottom of a frozen pond.

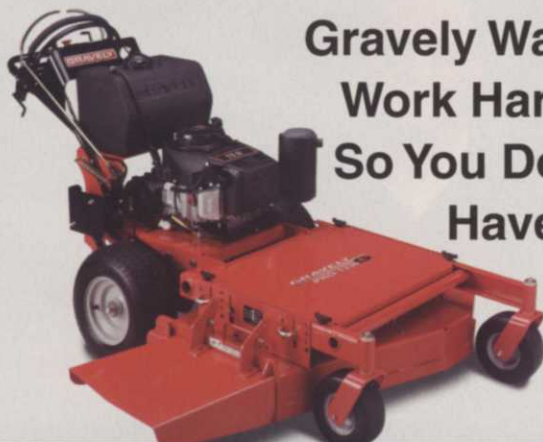
As plants blossom and shed leaves, remove the debris. If you remove the blossoms of some plants, you'll actually get more blooms. Some aquatic fertilizers need to be used monthly, while other products can be used seasonally. Fertilizing promotes more flowers in lilies and lotus plants, but follow manufacturers' directions.

Large koi can damage plants by constantly nibbling on the leaves and soil. Large gravel should be used to cover the soil in pots and be placed around the base of plants that are planted directly into the gravel.

Bacteria may not need to be added to the filters the rest of the summer because it should be growing on the surfaces of rocks in the pond. If the filter material is cleaned off, especially by chlorinated water or by drying, add new beneficial bacteria. **LM**

— The author is an employee of Pond Supplies of America with degrees in science, zoology, horticulture and landscape architecture. His weekly newspaper column, "A Greener View," is syndicated and appears in 400 newspapers.

Gravely Walks Work Harder So You Don't Have To.



Redesigned from the ground up, the new Gravely Pro Walks feature the following:

- New Pro G with adjustable single-tube handlebar and ergonomic ground-drive controls.
- 5.4" deep Air-Flo Deck—an innovative cutting chamber with a super wide discharge tunnel.
- Zero-maintenance Gravely XL spindles.
- Tool-free deck height adjustment.
- 7-mph top speed.

From the 32" Gravely Pro G gear drive walk-behind to our top-of-the line 52" Pro H hydro walk, there's a Gravely walk-behind for every mowing need. To find your nearest Gravely dealer, call 1-800-472-8359 or visit www.gravely.com.

GRAVELY™

WE KEEP YOU CUTTING™

AN ARIENS COMPANY

www.gravely.com

800.GRAVELY

Circle 125

LEIT Light Energized Irrigation Technology

From coast to coast, installed by cities, municipalities, transit authorities and environmental agencies, DIG LEIT features the only ambient light powered irrigation controller capable of operating in a low light environment without direct sunlight. The LEIT harnesses the energy of ambient light to power the unit day or night in any weather condition, any place in the world. LEIT delivers the latest in controller technology without the hassle with electric power, resulting in a better performance in a user-friendly irrigation controller.

- Available in four to twenty-eight stations
- Built to the highest quality control standards (ISO 9002)
- Controller function and operation are 100% tested
- Four programs with three start times per program
- Bilingual software in English and Spanish
- Status report, custom grouping and more

For more information or a catalog:
1-800-322-9146
www.digcorp.com

DIG
IRRIGATION PRODUCTS

1210 Activity Drive • Vista, CA 92083, USA
Phone 760-727-0914 • Fax 760-727-0282



Circle 126

Property at a glance

Location: Allendale, MI
 Grounds Supervisor: Ken Stanton
 Category: School or University Grounds
 Total budget: \$522,000
 Year site built: 1963
 Acres of turf: 90
 Acres of woody ornamentals: 3.75
 Acres of display beds: 3,000 sq. ft.
 Total paved area: 54 acres
 Total man-hours/week: 1,120 in summer

Maintenance challenges

- ▶ Snow removal
- ▶ Keeping campus litter free
- ▶ Alumni House gardens/grounds

Project checklist

Completed in last two years:

- ▶ Transplanted 80 shade trees with tree spade
- ▶ Re-sodded football field
- ▶ Installed eight display gardens at Alumni House

On the job

- ▶ 9 full-time staff, 4 seasonal employees, 4 licensed pesticide applicators

Grand Valley State University

2002 PGMS Grand Award Winner for School or University Grounds

Taking care of the grounds at Grand Valley State University in Allendale, MI, is a big job. Just look at these numbers: 90 acres of turf, 3,000 sq. ft. of display beds, 54 acres of parking lots. And 19,000 students to make sure the trash pickup crew is always busy.

Ken Stanton's just the man for that type of job. A Certified Grounds Manager, Stanton uses all the skills and experience accumulated over 25 years in the grounds business to supervise 13 full-time groundskeepers in the summer. With three degrees, including a bachelor's degree in human resource management from Lake Superior State University, it's not surprising that Stanton's big on continuing education.

"I think that's important, keeping up with industry trends and changes," Stanton says. "I know it's increased my learning capacity and helped me deal with



Ken Stanton, CGM, left, supervises a staff of 9 full-time and 4 seasonal employees at GVSU.



the challenges that arise in my current position."

Eight individual garden spaces at the Alumni House and Visitors' Center must always be in tip-top shape as many parties, wedding receptions and other special events are held there. The GVSU must also look after the clubhouse grounds of the school's 18-hole public golf course.

PGMS
Landscape
 MANAGEMENT

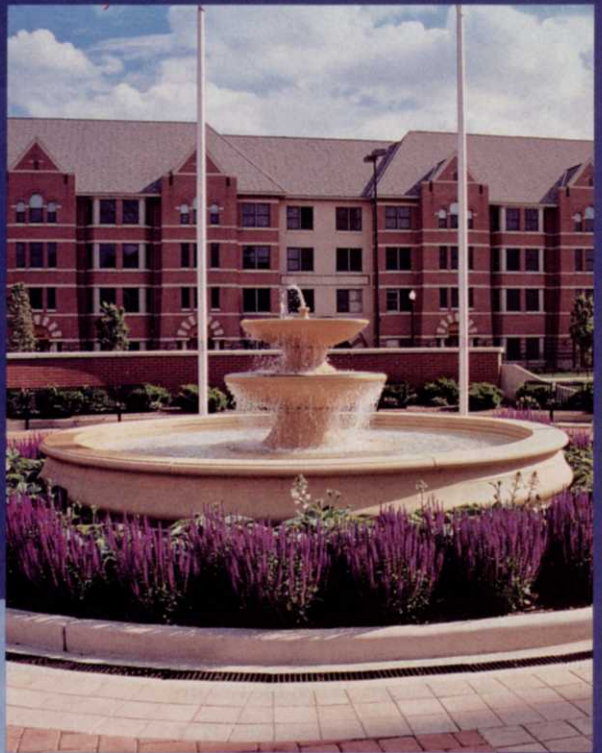
Editors' note: *Landscape Management* is the exclusive sponsor of the Green Star Professional Grounds Management Awards for outstanding management of residential, commercial and institutional landscapes. The 2003 winners will be named at the annual meeting of the Professional Grounds Management Society in November. For more information on the 2002 Awards, contact PGMS at:

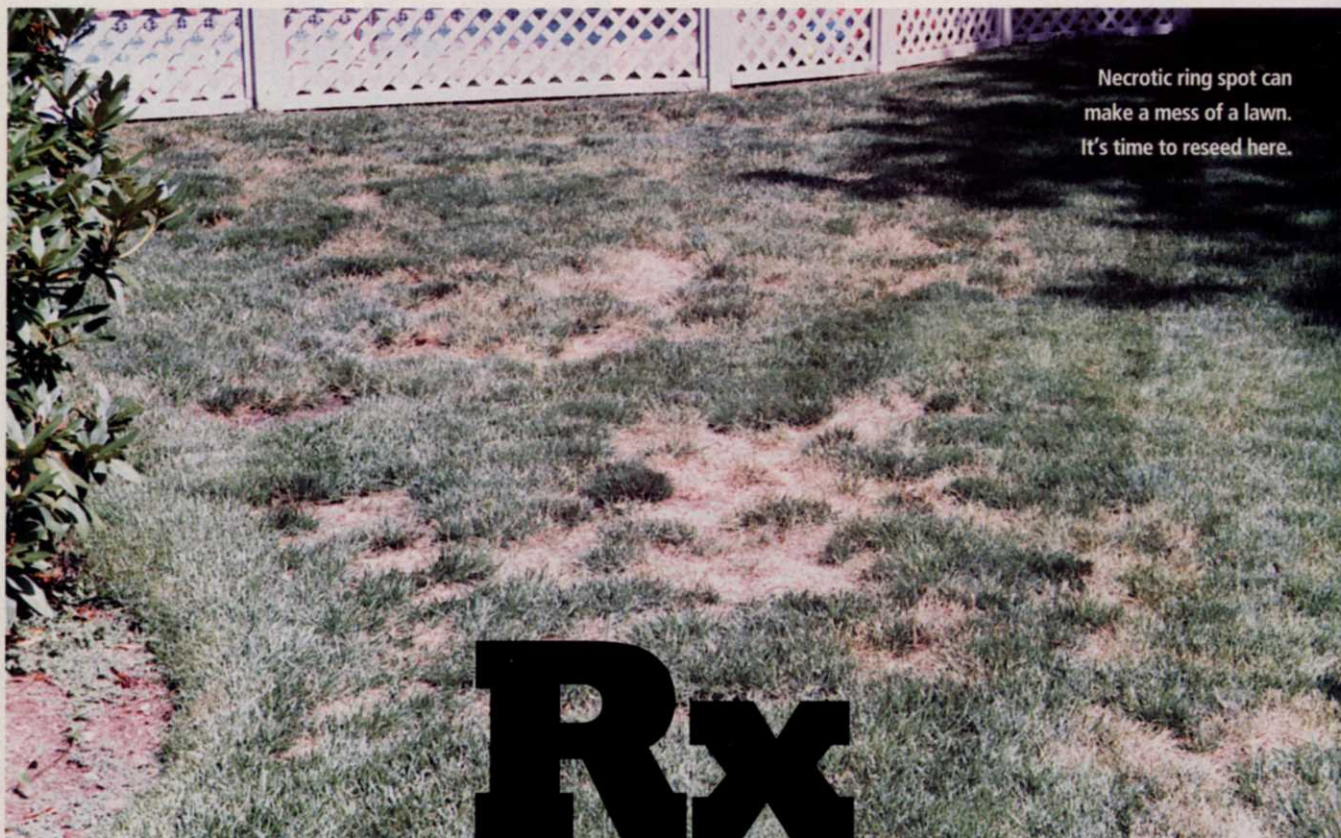
720 Light St. • Baltimore, MD 21230 • Phone: 410/223-2861. Web site: www.pgms.org

A blend of trees, turf, beds and containers provide GVSU's 19,000 students with a pleasant learning environment.



The 3,000 sq. ft. of display beds get special attention from Stanton's well-trained crew.





Necrotic ring spot can make a mess of a lawn. It's time to reseed here.

Rx for sick turf

Spring is upon on us and disease pathogens are on the prowl, attacking new roots, crowns and leaves of turfgrass plants.

Most turfgrass managers dread the thought of diseases. Controlling them can be difficult because it involves not just one living organism, turfgrass, but a second living organism, the pathogen. When the two interact, it gets complicated and usually results with the turfgrass dying.

Some simple strategies can help you cope with most disease problems. The good news is that almost all turfgrass managers can learn them.

The "big picture"

Not all turfgrass problems are caused by pathogens. A pathogen is a microscopic living organism that interacts with a grass plant, one cell at a time. If the pathogen is allowed to kill enough cells, you'll see

Practical guidelines to diagnose and alleviate the effects of diseases that damage and destroy turfgrass

BY HANK WILKINSON, PH.D.

the dead cells, and that's the symptom of one plant's disease. If the pathogen is allowed to spread from one plant to the next, it becomes an epidemic. Typically, we don't recognize turf diseases until they approach the epidemic stage; that's the "big picture."

Be aware that nearly all pathogens that cause epidemics in turf are fungi. Bacteria have also caused epidemics in turf, but this is rare. Other microbes including viruses, nematodes, mycoplasmas

and viroids also attack turfgrasses, but so far we have no clue how much damage they're doing.

One of our challenges as turfgrass managers is to stop a pathogen from killing too many grass cells and causing an epidemic. This sounds simple, but the pathogens that attack grass plants have been doing it for thousands of years and are good at it. In addition, many of the cultural practices that we use to grow turf predispose it to attack by pathogens.

Plan for prevention

Turfgrass disease management can be divided into two phases: prevention and recovery. But since complete prevention isn't always possible, the best we can do is to minimize the severity of disease epidemics. Once an epidemic gets going, we have to do something to slow down the pathogen and also speed up grass growth.

It's unlikely that you can eliminate all disease-causing fungi, and you wouldn't want to if you could. Many of the fungi that cause turfgrass diseases are also important in nutrient cycling, especially in breaking down thatch.

Here are some useful actions that will help you reduce the severity of damage caused by turfgrass diseases:

► **Plant the best grass genetic material you can for your area.** Study the NTEP results (www.ntep.org) for grasses with resistance to pathogens that are active in your area and also grasses best adapted for summer and winter survival.

► **Develop a history of climatic and edaphic (soil) conditions.** Temperature is the most important piece of information you need for predicting disease development, both in verdure and about two inches deep in the soil. Pathogens become active at specific temperatures, which can be used to predict their development and



Look for brown patch at the base of the leaves of turfgrass plants.



Dollar spot usually occurs as the result of infection in the leaves of turfgrass.

to initiate management practices to control them. Moisture is also important, but it's more difficult to measure and interpret. Moisture can exist as humidity (vapor) or as free water, but nearly all pathogens need it. The most important factor for disease is the length of time plant surfaces are wet.

► **Keep a record of disease epidemics in your area.** Know which, when and where diseases develop each year in your area. A given disease often develops in the same area of the same turf, year after year. However, you may only see it during years when conditions are favorable for pathogen development.

► **Know and watch disease "hot spots."** Whether you manage lawns or sports fields, specific locations will always develop disease epidemics first. Monitor them during the part of the year when the temperature and moisture are favorable for disease.

► **Communicate.** Thousands of eyes are better than your two. Call, visit, e-mail or read, but learn what others are seeing. Don't restrict your reconnaissance to your area. Know where diseases come from, and get information for areas up to 100 miles away from you.

► **Know your diseases.** Generally, only a handful of

Killers vs. non-killers

Is that turfgrass disease you're looking at a "killer" or a "non-killer?" By this, I mean what part of the grass plant is the pathogen attacking? You won't know until you get down on your hands and knees and take a hard look. A hand lens will be a big help.

The killers are going to cause the big turfgrass problems. Non-killers can generally be managed with mowing, fertilization and time.

Here are some general rules for assessing the threat from a turf disease:

- If it's attacking the crown of turfgrass plants, it's serious.
- If it's attacking the lower, older leaves, it isn't as serious.
- If it's attacking the new leaves or tips of grass leaves, it's going to get worse.
- If it's attacking the roots, it will predispose the turf to heat and drought, and could be serious.

pathogens routinely cause problems in an area. The "old-timers" and local plant pathologists will know which ones these are. It's a good idea to be able to recognize pathogens that show up occasionally, too.

Road to recovery

Maybe you got there too late or maybe you didn't see it on a previous visit, but you notice that a small disease epidemic is under way on the turfgrass you're maintaining. You have two options — reduce pathogen activity and/or grow new grass. Your course of action will depend on which disease you're dealing with and what part of the turfgrass plant is being attacked. (See "Killer" sidebar above.)

Useful disease references

Illinois Pocket ID Series: "Cool-Season Turfgrass Diseases," H.T. Wilkinson and D. Pedersen. ISBN: 0-9722902-0-6 (English); 0-9722902-1-4 (Spanish). Visit the Web site www.summitseed.com.

"Controlling Turfgrass Pests," T.W. Fermanian, M.C. Shurtleff, R. Randell, H.T. Wilkinson and P.L. Nixon. Third Ed. Prentice Hall, Upper Saddle River, NJ. ISBN: 0-13-098143-5.

► **Diagnose the turfgrass disease.** With a bit of experience, you can combine your knowledge from scouting, temperature recording and handy reference materials to make a solid diagnosis. But why guess? Take some pictures of the disease with a digital camera and e-mail them to a local plant pathology lab to help you confirm the diagnosis.

► **Reduce or manage pathogen activity with cultural and chemical practices.** Even



When signs of stress appear, you can reduce pathogen activity or grow new grass.

though an epidemic is under way, you're not beat. To slow the disease's progress, consider both your cultural and chemical choices. This is where your knowledge and experience as a turf manager comes in. Determine the severity and speed of the epidemic and put together a program of cultural practices, fungicides, biological treatments or a combination of these.

► **Grow new turfgrass tissue.** Once a pathogen has attacked a turfgrass plant, there's no recovery. The cells have died, and they aren't coming back. However, that's where turf offers you a special advantage as a manager. Turfgrasses are vegetative and perennial, which means they'll grow new tissue as long as they have enough heat, water and nutrients. Unfortunately, some of the tougher diseases attack turf when the grass isn't growing, such as in the summer and winter. In the summer, it's possible but tough to push a diseased turf to grow; during winter in the north, there's no chance. All you can do is wait until the turf starts growing again, whether it's in spring or fall.

► **Remove diseased tissue from the turf.** Once you've reduced the pathogen's activity and started to grow new tissue, remove the diseased (dead) tissue from the turf. Turf recovery following an epidemic is dependent on growth. If heat and moisture conditions won't permit grass to grow, the turf will look like it still has an epidemic,

even though the pathogen isn't active. However, once the grass is growing, simple procedures like mowing, raking and top-dressing will remove the disease symptoms and restore the turf to health.

— *The author is a professor in the Department of Natural Resources and Environmental Sciences within the College of Agricultural, Consumer and Environmental Sciences at the University of Illinois at Urbana-Champaign. He can be reached at hwilkins@uiuc.edu.*

TURFGRASS DISEASE ACTIVATION TEMPERATURES AND INFECTION SITES

Disease name	Activation temperature (°F)	Infection site
Anthracnose	46-61°	base of leaves
Brown patch	80-95°	base of leaves
C-15 decline	61-77°	leaves
Dollar spot	61-77°	leaves
Fairy rings	61-87°	thatch layer
Gray snow mold	32-55°	lower leaves
Leaf blights	61-77°	leaves
Necrotic ring spot	45-61°	roots
Nigrospora blight	61-77°	leaves
Pink snow mold	55-68°	lower leaves
Powdery mildew	61-77°	leaves
Pythium foliar blight	86-100°	leaves
Pythium root & crown rot	50-60°	crowns and roots
Red thread	61-77°	leaves
Rusts	61-95°	leaves
Smut	50-75°	leaves
Summer patch	68-70°	roots
Take-all patch	55-60°	roots
Yellow patch	46-61°	crowns and lower leaves
Yellow ring	61-77°	thatch
Yellow tuft	46-61°	crowns and leaves

New Fall Dates

**EXPO is changing dates so
your suppliers can show you
their entire new product lines!**

**You and your colleagues
wanted the opportunity to
bring more people.
Now you can!**

**EXPO and Louisville in
October – It's ALL New.**

EXPO 2003

INTERNATIONAL LAWN, GARDEN & POWER EQUIPMENT EXPOSITION

**Saturday – Monday
October 18 – 20, 2003
Kentucky Exposition Center
800-558-8767 or 812-949-9200**

Pre-register at www.expo.mow.org

Spreaders and sprayers that last

BY CURT HARLER

“It’s got to last.” That’s the first thing Jack Robertson, owner of Jack Robertson Lawn Care, Inc., Springfield, IL, has on his mind when he goes shopping for a spreader.

“Stainless steel components are a must,” he continues. He knows stainless is a mixed blessing — while it extends the life of the equipment, it adds cost.

The next thing Robertson looks at is ergonomics. “A spreader has to have good balance and be comfortable to use,” he says. “Height makes a big difference.” Not only does it make a difference whether the worker using a spreader is 6-foot-4 or 5-foot-4 in. tall, but even the handlebar height of individual units can change the “feel” of a spreader. While Robertson Lawn Care has about 20 spreaders — all LESCO models — Jack has learned that different models have different ergono-

mics. Today, most of his units are the same.

“Another key point is positive shutoff and start,” Robertson adds. This is vital. Applications must begin and end at the right place.

Spread and aerate

“Combine a good top-dressing program with aerification and you’ll tighten your turf carpet,” says George Kinkead, President of Turfco, Minneapolis, MN.

This rule of thumb holds especially true on high school and community sports fields. Like everything else, football fields are being asked to do more. There are few special-purpose “varsity” fields left. Instead, most fields are used for football, track and field, soccer and other events both by the school and the larger community.

One way to do the job more effectively, Kinkead says, is to buy a spreader that will do an even number of passes up and down a field. If a machine will hold enough fertilizer to do four passes (up, down, up,



Spreadex’s LG-375 spreader holds 275 lbs. of material.

down), it can be loaded at the same end of the field every time. That way, there’s no need to bring an empty unit across a field or, worse yet, bring a truckload of fertilizer over the grass to the spreader.

Look for a spreader that will apply both heavy and light applications — down to 1/32nd or 1/64th of an inch — on a field. “A good spreader will spread as light as a dry martini,” Kinkead says.

TY-CROP
800/845-7249

SUMAS, WA
www.tycrop.com

■ ProPass 180 ultra low impact

broadcast topdresser

- Apply a variety of materials
 - Apply 12 to 35 ft. wide
 - Comes as a tow-behind or truck mount
- Circle #257

SPREADEX
800/725-8377

WARREN, MI
■ LG-375 commercial-duty granular spreader
■ Standard with 10-ft. control cable
■ 12-volt DC direct-drive system
■ Holds 3.25 cu. ft. or 275 lbs. of material

Circle #258

continued on page 73