in daily, the problem is compounding.

Use pesticides that are available in dissolvable pouches, returnable containers, paper or cardboard boxes and bags. Encourage manufacturers to help, not hinder, legislation aimed at solving the container crises.

Storage

Storing pesticides properly will save you money in the long run. The shelf life of pesticides can be extended by tightly sealing the pesticide container after use.

All pesticides should be stored in a locked enclosure, such as a shed or building. The enclosure should be lighted inside, with adequate ventilation. Signs should be placed on all sides showing *DANGER: PESTICIDE STORAGE* in large enough print to be readable from 25 feet.

Pesticides should be kept at an even temperature. Extreme cold or heat may shorten the shelf life of most pesticides, and destroy others.

You should develop an emergency response plan for your storage area, in the event of fire or other disaster. The plans for this will need to be filed with your local government agencies, such as the agriculture department, EPA, and Department of Health Services. For more information regarding your business emergency plans, contact the agencies listed above.

Pesticide storage in a vehicle should also be locked, signed and secured. Never transport pesticides in the open bed of a truck, or in the same compartment as passengers.

Pesticide storage in a vehicle should also be locked, signed and secured. Never transport pesticides in the open bed of a truck, or in the same compartment as passengers. It is wise to separate your pesticides in storage so that herbicides are away from other products and plant seed. Category 1 and 2 pesticides must always be kept out of reach from small children, and volatile pesticides should be kept away from ignition sources.

Just a last reminder to *read the label* of the pesticide you are about to use. Check it for use, rate, mixing, storing, disposal, and safety equipment instructions. Check with your local EPA, health and agriculture department regarding state and federal laws concerning the use, waste, and disposal of pesticides and their containers. Train your applicators yearly on these and other mandatory rules and regulations.

Finally, take a pro-active stand on the proper control of pesticides so that you can continue to have a safe and effective pest control service. ❑

Editor's Note: Cynthia Drake is the statewide training coordinator for the California Pesticide Applicators Professional Association and a Certified Arborist in San Diego, CA.

FIGHTING SNOW MOLD:

Prevention is the best shield

Snow mold damage to turf has long been a threat in northern climates and in high altitude conditions. Whether on athletic fields, golf course greens, or fairways, cool temperatures and moisture signal trouble to lush turf. And reseeding or sod replacement is costly, especially on susceptible bentgrass greens.

Dr. Lee Burpee, who spent many years studying snow mold fungi at the University of Guelph in Ontario, Canada, offers insight into these problem diseases:

Fusarium patch or pink snow mold, caused by *Microdochium nivalis*, first takes hold in fall under cool, wet conditions even before the snow falls. Optimum conditions for disease development are periods of relatively high humidity with air temperatures of 32 to 60 degrees F. Severity increases during periods when snow covers unfrozen soil, before turf reaches the dormant stage. In areas where turf doesn't go truly dormant, such as the coastal region of the Pacific Northwest, the disease can remain active during the fall, most of the winter, and early spring.

Before snowfall, turf managers should examine turf, especially in shaded areas or on golf greens, for circular copper-colored spots one to three inches in diameter. These patches may then turn tan or white with a reddish-brown border as the leaves die. Under snow, infected spots can become a few inches to several feet in diameter, and can coalesce into large infected areas.

Gray snow mold or *Typhula* blight, caused by *Typhula incarnata*, requires snow cover for development. Optimum infection occurs during snow cover over unfrozen ground containing high soil moisture, with greatest fungus development occurring at temperatures of 32 to 40 degrees F. As infected areas are exposed by melting snow, two-inch to two-foot circles of mold appear, exhibiting a light-gray mycelial growth on infected grass blades.

A careful examination of infected plants shows presence of small sclerotia embedded in the leaves and possibly the crowns. These sclerotia are ovoid to spherical in shape and are small as a pinhead to 3/16-inch in size. They range in color from pink to light-brown in moist leaves, turn amber to reddish-brown at maturity and become dark-brown to black in dry leaves.

Both *Fusarium* patch and gray snow mold can infect most northern cool-season grasses, especially bentgrass on greens. Other grasses that can be infected include annual, Kentucky and rough bluegrass, Colonial, velvet, and creeping bentgrass, Italian and perennial ryegrass, red and tall fescue, and others. Damage caused by *Fusarium* patch (pink snow mold) is often more serious than gray snow mold because the fungus does not need snow cover to infect turf plants.

"Extreme damage can also occur, however, with gray snow mold if snow accumulates for 100 days or more on turf, allowing the disease to injure or kill the crown," Burpee says.

"Extreme damage can also occur, however, with gray snow mold if snow accumulates for 100 days or more on turf, allowing the disease to injure or kill the crown," Burpee says. "If snow cover lasts 90 days or less, the fungus usually infects the blade only," adds the plant pathologist, who currently is the turfgrass specialist at the University of Georgia.

Another problem caused by snow mold, besides the potential need for reseeding, is weed growth. "We see the invasion of broadleaf and grassy weeds as a major problem in turf areas weakened or killed by *Fusarium* patch," says Ralph Byther, extension plant pathologist, Washington State University.

Prevention Is Key

Turf managers and golf course superintendents understand the need for preventative measures in the fall against snow mold fungus to maintain turf health going into and coming out of dormancy. "There aren't many good cultural controls against either snow mold fungus, and curative control is virtually impossible, so preventative chemical control is necessary," Burpee says.

To further compound the problem, the common practice of fall fertilization with nitrogen to stimulate root growth

Gray and pink snow on the edge of a tee where treatment missed.

also stimulates an increased risk of snow mold. The best advice, according to a number of extension plant pathologists is to make sure this application is made early, not late, fall, including an equal rate of potash with the nitrogen. "You don't want lush turf growth going into winter," says Burpee. "It's best if the grass goes dormant naturally."

A chemical fungicide application, timed just before first snowfall provides the best protection. Unfortunately, if rain occurs after application and before snow cover—or if winter thaw periods occur—some fungicides must be reapplied to ensure continued effectiveness.

"For consistent, acceptable control during the entire season, it's my opinion that you can't beat inorganic mercury, or Turfcide or Terraclor fungicides (PCNB)," Burpee says. "These products, although mercury use may not be allowed much longer, are more persistent fungicides that control disease under snow cover for 120 days and prevent the need for a second application if rains or thawing occur."

Byther agrees. "Most turf managers here in western Washington where we don't usually have snow cover apply a longer lasting fungicide in the fall, such as Terraclor (which gives three to four weeks protection), and then make additional applications of another fungicide if needed," he says. "Spring applications are also often necessary, but fortunately, with changing spring conditions, the warmer periods help turf grow out of damage problems."

Pink snow mold surrounded by gray snow mold. Photos by J. Connell.

For golf course managers using Turfcide, a granular fungicide, on creeping bentgrass, Burpee advises an annual calibration of applicators. "Don't simply adjust your type of spreader to the appropriate number opening, because over-application of some fungicides can cause initial stunting and yellowing in the spring. However, it won't kill the grass," he adds. ❑

Technical Credit: Uniroyal Chemical Company.

Battery Safety

Improper battery handling is responsible for more than 20,000 injuries nationwide each year.

The most common cause of injury is use of incorrect jump starting procedures. As the weather cools and you begin to use equipment that may have been in storage, jump starting equipment can become a more common task.

A battery stores electricity chemically within the lead plates via sulfuric acid and water. This acid/water mixture, called electrolyte, is very corrosive. Any time you work around batteries, you should wear rubber gloves and eye protection.

It pays to conduct routine maintenance on the battery when you take a piece of equipment out of storage. The following are some basic procedures you should follow when maintaining batteries.

Battery Maintenance

First, check the electrolyte level. If needed, add *only*distilled water and to the level the manufacturer recommends. Never put in electrolyte after the initial set up because it can result in a chemical reaction that could cause serious skin and eye injury.

To remove or replace a battery, use a chemistry lab apron because clothing will disintegrate if the electrolyte contacts it. Use baking soda and water to wash off any electrolyte you spill on the equipment frame or engine.

The electrolyte normally remains sealed in the battery. When a stored battery is charging, the current drives sulfuric acid out of the lead plates. If the charging rate is excessive, some of the current breaks down water into hydrogen and oxygen gas. Because hydrogen is a light gas, it bubbles to the surface where a stray spark or flame can ignite it.

Make sure there are no ignition sources in the area, including lit cigarettes, when you are working. If the battery you are working with has a vent cap for each cell, check the electrolyte level with an explosion-proof flashlight or switch on the light *away* from the battery.

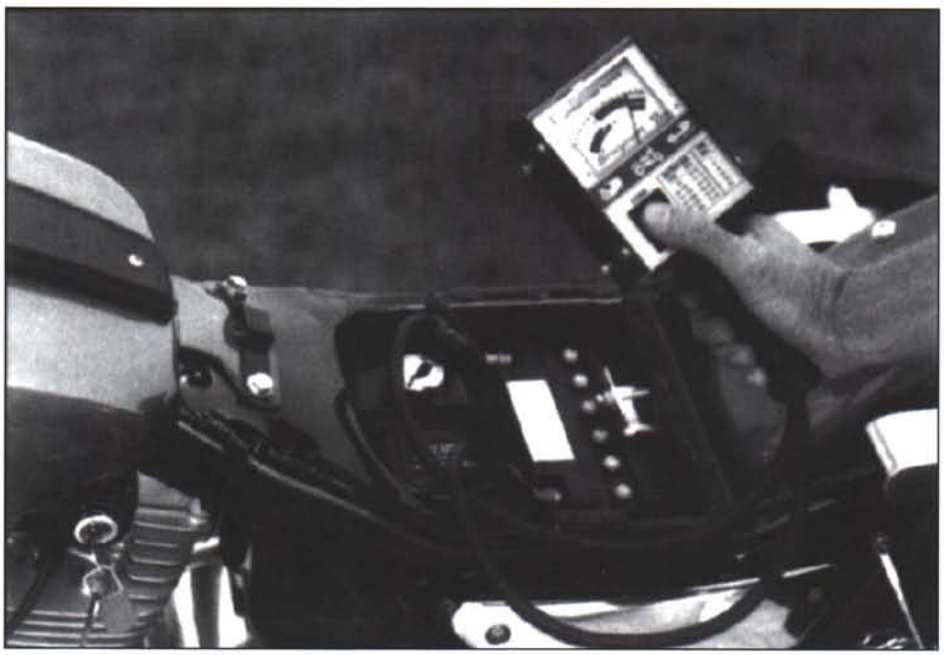
Jump Starting Procedures

Following proper jump starting procedures will help prevent accidents. Jump starting is not an everyday event, so employees often forget the procedure. Post the steps to follow in a convenient location and tie a laminated copy to the jumper cables.

When a vehicle needs a jump start, bring a helper vehicle with a battery of the same voltage as the disabled vehicle. Use insulated jumper cables with adequate cable length. the vehicles must not touch.

Set the parking brakes on both vehicles and put the shift lever into neutral. Then, turn off both master switches. Put on safety equipment, such as safety goggles and rubber gloves. If it is dark where you are working, turn on the flashlight away from the batteries. Then,

If the battery you are working with has a vent cap for each cell, check the electrolyte level with an explosion-proof flashlight or switch on the light away from the battery.



Charging and starting problems can be detected early with a battery tester. Photo courtesy: Associated Equipment Corporation, St. Louis, MO.

open the hood of the vehicle.

Check the electrolyte in the disabled vehicle's battery. If ice is present, *do not* attempt to add water. Otherwise, fill with distilled water only to the level the manufacturer recommends.

Do not replace the vent caps. Cover the vent holes with a water-soaked rag, but don't allow the rag to touch the battery terminals.

To jump start the battery, attach the red clamp to the positive (red, + or pos marking) post of the dead battery. Clamp the other end of the same cable to the positive post of the helper battery.

Next, clamp the other cable to the negative (black, —, or neg marking) post of the helper battery. Attach the second cable's negative end to the engine block or frame of the disabled vehicle. (Locate it as far away from the dead battery as possible.)

Start the helper vehicle and let its engine run for a few moments. Then, start the disabled vehicle.

Disconnect the jumper cables in the exact reverse order of attachment. First disconnecting the negative cable from the previously disabled vehicle. Then, remove the negative clamp from the helper battery. The last step is to remove the positive clamp from the helper battery and then from the other vehicle's battery.

Remove and discard the damp rag and reinstall the vent caps. Close the hoods, switch off the flashlight and remove your safety equipment.

Allow the previously disabled vehicle battery to recharge or take it back to the shop for diagnosis. ❑

STMA PROFILE: VERSATILITY SPELLS SUCCESS FOR RAY FLOOD

By Bob Tracinski

Rugby at the University of Maryland, College Park. "We have the only regulation-size rugby field in the mid-Atlantic," says Flood. "Rugby teams love to play here."

The University of Maryland marching band steps onto the field to perform before the halftime crowd, confident that their routine will be executed with precision because of hours of practice under field-like conditions. Football fans reward the performance with exuberant applause. Ray Flood smiles and adds another satisfied customer to his list.

Raymond J. Flood is landscape technician III for the grounds maintenance department of the University of Maryland, College Park, MD. That designation means versatility.

Flood says, "Rather than the set job description of other positions, ours is broad-range and flexible within the management and training areas. In effect, the university grounds maintenance department can use a landscape tech anywhere, to do anything."

Just a bit of that "anything" includes management of nine automatic irrigation systems, training of more than 50 grounds employees on proper turf management procedures, annual training for more than 25 pesticide applicators, and coordination of turf and ornamental care on approximately 100 acres of the 340 acres of campus that are devoted to turf and landscaping.

Flood's first assignment upon joining the university grounds maintenance department in 1988 was to work with a three-person crew to whip the 35 acres of recreation and athletic fields into shape.

The intercollegiate fields are under the care of Bill Reinohl and William (Bunk) Carter, except for the women's intercollegiate softball field, which is under Flood's domain. Carter has been with the university 31 years; Reinohl 14.

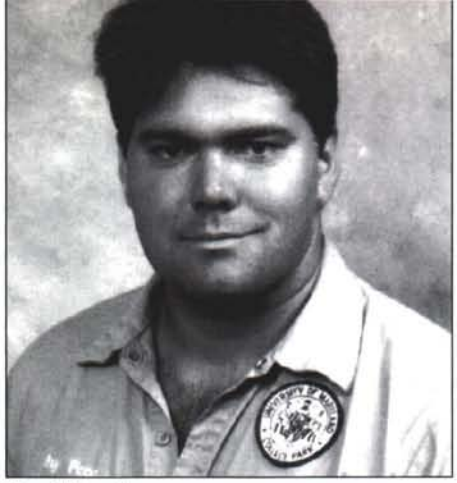
"With a combination of technical background and hands-on experience, these fellows have put together an outstanding program," Flood says. "They're also very willing to share their expertise. It's like having a team of supporters right here on campus."

Flexibility Under Harsh Conditions

The University of Maryland is near Washington D.C., in the transitional zone for turf, with hot, humid summers and cold, windy, sometimes snowy, winters.

"Byrd Stadium is planted in Tufcote bermudagrass, which thrives under the maintenance program they've developed for that location. Bermudagrass requires a level of maintenance that is difficult to provide at this time for the recreational fields," Flood laments. "I've gone to a mixture of bluegrass and perennial ryegrass

for them, overseeding worn areas each fall with the best possible varieties according to performance in testing under local conditions. We use turf-type tall fescues for the rest of the campus area."


Ray Flood.

Flood describes the recreational fields as multi-use. Physical education classes and intramural teams share the space, with the sports changing to fit the seasons and the needs of the students. As the seasons and time demands change, field use often overlaps.

"We have all the standard sports, including a lot of flag football, and a few of the less widely known sports as well," Flood explains. "We have intramural club lacrosse and crease soccer, which is similar to soccer, but uses a smaller field and a triangular, mini-lacrosse net. We also have the only regulation-size Rugby field in the mid-Atlantic. Rugby teams love to play here. A groomed turf field with painted lines is a treat for a sport that is often relegated to the last available space, whatever that surface may be."

Equipment use must be coordinated between sites also, because fields are scattered throughout the campus setting, rather than clustered in a central area. Flood says, "In essence, the university put a field wherever they could find a suitable open spot. As pressures grow for additional academic space, we loose fields to buildings."

The budget crunch facing all universities is affecting the program as well. Limited resources are greatly curtailing the program for the recreational fields, cutting maintenance to the "essentials only" level.

The Human Touch

Flood brings an added dimension to his position. He earned his bachelor's degree in behavioral and social science from the University of Maryland in 1985 with the intention of concentrating on his strong people skills. Following graduation, he took a position with Chemlawn Services Corporation, planning to use his industrial psychology background, combined with summer job experience in the turf and ornamentals area, as a stepping stone for advancement within the company. By 1988, several promotions had brought him to the position of beneficial services manager. Sensing that a change in ownership would slow inter-company advancement, he opted to go back to the university to add more human relations credits.

He entered his current position with the intent of using his landscape-related skills to the maximum to fund the furthering of his education, a condition the university clearly understood and welcomed as a good trade-off for his commitment and expertise. But the constant challenge of the job, especially in the sports turf and irrigation areas, "hooked" him.

Flood finds those "people skills" are a definite asset when interacting with department personnel, instructors, coaches, athletes, students, and other university employees. "Working with the university is really like working for a business in the private sector," says Flood. "I've encouraged my staff to see the foreman, supervisors, repair personnel, students, players, and those working in the buildings as our customers. I make it a point to talk to the people we serve. We need to find out what we can do to make it easier for them."

"The little things that can be changed make a big difference to the individuals involved," he continues. "We talk with the intramural players to assess their needs and work to make conditions as suitable as possible within budgetary constraints. We spend a few minutes with those using each building to learn their preferences in which bulbs and flowers to place in the landscape. It is the work environment of both students and university employees and, as such, it should satisfy their needs. We've added picnic tables in the spots they've chosen to make on-campus lunch and coffee breaks more enjoyable."

Sports turf takes enough of a beating from the athletes in games and practices. The added wear of marching band practice is not welcome on the field. But it's tough for the band to display precision routines without on-field practice. Flood and his supervisor have made solving the band's problem their personal crusade. A large area near the front of the campus is maintained as a football field, and painted once a week, to ease the transition from practice to performance.

Flood directly manages a crew of eight, coordinating tasks for the least interference with campus activities and the most effective personnel usage. For example, he may schedule spraying for midnight,

continued on page 18

STMA Profile

continued from page 17

or 3 or 4 a.m.

"With crews dressed up like men from the moon, we want as little contact with people as possible," Flood says. "We don't want anyone walking across the treated areas to find out what we're doing dressed like that. It's extremely important in such heavily populated settings to be mindful of all safety concerns. But with a campus, no matter what time of day or night, there are always at least a few people out."

Striving For Excellence

Flood continually works to raise the level of professionalism within the grounds department. Maryland requires that one person for each facility that applies pesticides be certified by the state. Other individuals handling pesticides must be registered under that person. Flood coordinates the in-house training for the registration program. During the past year, the state has produced a video training course that covers six of the eight required topics, which the grounds department has now acquired. A prepared test accompanies each of the videos. The remaining two topics and exams covering the material are prepared in-house, as the entire program had been prior to the issuance of the videos. The testing for registration is also administered through the grounds department.

Flood encourages employees to go through the state certification program. The University of Maryland at College Park is the flagship campus of the 12 state schools, setting the high standards the public expects of its institutions. It's necessary to apply pesticides to maintain the beauty of the landscape. With 60 employees in the grounds maintenance department, 25 are registered, and seven of them are certified by the state.

Always working to improve his own skills as well, Flood has taken an irrigation troubleshooting, installation and design course from the Professional School of Irrigation in Chantilly, VA, and an IPM: Integrated Pest Management Short Course at the University of Maryland. He is a Maryland Certified Pesticide Applicator, a member of the Maryland Turfgrass Council, and joined the national Sports Turf Managers Association in the summer of 1989.

"WITH CREWS DRESSED UP LIKE MEN FROM THE MOON, WE WANT AS LITTLE CONTACT WITH PEOPLE AS POSSIBLE,"

George Frazee, a grounds department employee assigned to the recreation fields, Flood and Reinohl attended the national STMA meeting held in Houston in January, 1990. On the way back, all agreed it was a very good program, but didn't cover as much material directly related to the transition zone as they would have liked. After discussing the issue with then executive director, Dale Keller, and national board member, Greg Petry, Flood was encouraged to get the ball rolling for a local chapter.

He contacted sports turf managers at parks and recreation departments, colleges, universities, and high school throughout the Mid-Atlantic region. Working with a core of a dozen other dedicated sports turf professionals, he established the Chesapeake Chapter of the Sports Turf Managers Association and was appointed Chapter President.

As with any young organization, the work involved with establishment is just the tip of the iceberg. Flood credits his wife, Susan, for her support and understanding—and his year-old son, Raymond, for the comic relief—that make it possible for him to continue his high level of commitment to the blossoming chapter.

He has now immersed himself in "facilitating" board meetings and quarterly chapter meetings; coordinating chapter seminars, workshops and athletic tournaments; working with the chapter's secretary, Mike Gerwig, in producing the bimonthly newsletter, seeking support from commercial affiliates; assisting vice president, Art Downing, in monitoring committee activities and collaborating with chapter treasurer, George Frazee, on budgeting matters. In addition, he serves as the chapter's official liaison with the national STMA and other industry organizations.

As usual, he's using those management and people skills to create another group of satisfied customers. ❑

Editor's Note: Bob Tracinski is manager of public relations for the John Deere Company in Raleigh, NC, and public relations chairman for the national Sports Turf Managers Association.

REBOUND

LETTERS FROM THE FIELD

As an employee of the State of California, as well as an ongoing student, I share your apprehension on the condition of the education system of this state. I also believe that landscape programs (as well as many others) need more attention. To that end I offer the following.

A program was recently aired on the University System of North Carolina and its coalition with business. In this program it was presented that the state of North Carolina, in an effort to promote business and industry, has designed curriculum specific to the needs of private industry, as well as opening research and lab facilities. In the case of North Carolina, it was presented that the concept originated within the state system. However, in light of the exodus of business from California and the financial crunch on several state controlled budgets, the timing appears ripe to present such a program to California educators.

Another point of consideration for anyone in California at least (and I suspect other states), is the Junior College system. I have both taught and attended several of these institutions and have found the focus and dedication to vocational training excellent. In California it is possible to transfer up to 90 credits from a junior college to a state college or university, and in general, the price tag is much lower.

A final piece of information, one specific to my department, is the State Park Internship Program. As part of California Park System's mission "to provide for the health, inspiration and education," California parks have a very active internship program in cooperation with the junior college system, and both the State College and the California University systems. Typically, interns will express their areas of interest (California having nearly 300 diverse parks, can accommodate virtually all areas) and upon locating a park that is suitable, will enter into a contract of sorts involving their school, themselves, and appropriate park staff and begin a project(s) that will facilitate the student's education. The school's role is usually that of a monitor and/or counselor. The park employee fulfills the role of mentor/coach. Projects range from basic plumbing to historical restoration, to endangered plant protection, an almost endless list. I am certain that a landscape project could be arranged in any of several parks.

While the present intern program is allied with colleges and universities, we also participate in several youth programs so I would not think a high school intern would be out of the question.

This approach may also be available in local and county parks. It may warrant investigation.

Sincerely,
William Mennell
Maintenance Chief II
Department of Parks and Recreation
La Costa District
Carlsbad, CA

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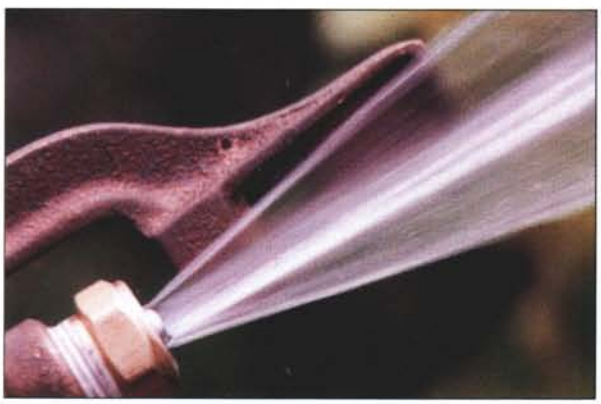

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