

How to Solve Winter Turf Injuries

Turf in a weakened condition resulting from disease or pest damage, low or excessive moisture, lack of fertility or poor root development is much more susceptible to winter damage. At no time is the importance of healthy turf more significant than during fall months. But even a lush, vibrant turf often cannot withstand the pressures of severe winter weather. Winter injury results from many different extreme conditions. Symptoms are often complex, since many of the injuries can interact. Some of the conditions include:

Ice Sheet Damage

Turf covered with ice for extended periods can experience injury from oxygen suffocation and toxic gas buildup, but these conditions are rare. More commonly, freezing and thawing cycles cause crown hydration, which reduces winter hardiness.

(Crown Hydration occurs when plants stand in moisture following a thaw, causing tissues to absorb high levels of water. When temperatures drop again, ice crystals form within the plant cells, rupturing cell walls and killing tissue. The plant crown, or growing point, is the most critical tissue affected by these freezing and thawing cycles. Damage appears in irregular-shaped areas, similar to direct low temperature kill. Poa annua is most susceptible to this type of winterkill.)

Low Temperature Damage

Direct kill may occur in freezing-thawing situations, when turf experiences a rapid drop in temperature (usually below 20°F). Poorly hardened plants with a high moisture content are more susceptible to this type of winterkill. Leaves and stems appear water-soaked, turn brown and become matted. A foul odor is often evident, and damage occurs in large, irregularly shaped areas.

Chill Injury

Most commonly seen on warm-season turf grasses, chill injury occurs when green pigment production ceases during periods when temperatures dip below 55°F. along with high light intensity. Generally, grass leaves appear light brown to white.

Desiccation Injury

This condition is common in regions with high winds and relative humidity, but can occur anywhere turf remains unprotected and soil moisture is limited due to low temperatures or drought. Leaves and shoots turn white to silver and plant tissue is not matted down. Damaged areas vary from small patches to large irregularly-shaped areas.

Frost Heaving Injury

Freezing and thawing cycles on wet soils move the surface during ice formation, pushing crowns and roots out of the soil. Roots can be severed from the plant. Symptoms

include tissues turning white or silver to tan. This condition is most common on seedling turf.

Traffic Injury - Frozen Ground

Foot and vehicle traffic on frozen leaves causes mechanical injury by rupturing cells in leaves and shoots. Frost damage is common when traffic occurs in early morning before frost leaves the turf. Damage to frozen turf appears as white or silver areas, taking on the shape of footprints or tire tracks.

Traffic Injury - Slush-Covered Ground

Traffic on slush-covered turf causes crown hydration and reduces winter hardiness. Damage is most severe when temperatures drop below 20°F. following heavy traffic injury, except patterns tend to be more regular.

Diagnose Winter Injury Early

Early diagnosis of turf winterkill or injury is essential to alleviating damage. Diagnostic steps should be taken prior to normal greenup in the spring. If you suspect winter injury, take the following steps to determine the extent of turf damage:

- Collect turf plugs from suspected sites.
 - Place plugs in suitable container for short-term growth.
 - Place containers in a greenhouse or well-lighted area, preferably a window facing south.
 - Keep turf adequately watered.
 - Turf will initiate greening in 5-7 days, depending on growing conditions.
 - Assess the extent of greening after two to three weeks.
- Areas with less than 50% greenup should be considered extensively damaged and will require renovation to ensure satisfactory quality. Lesser damaged areas can be recovered with extra attention to proper fertilizing, watering and mowing. Keep traffic off damaged areas until adequately recovered.

Take Action Early

If you determine that your turf suffers from winter injury, plan early to reseed those areas in the spring. Some of the steps you may wish to consider include:

- Communicate with your membership or customers to alert them that some turf areas will be under renovation.
- Ascertain equipment needs.
- Arrange your seed purchase and locate the best source.
- Plan your herbicide and fertility programs.

Proactive Approach Pays Off

Even if you experience severe winter injury on your turf, you can assure your membership or customers of a quality turf in the spring by planning early to re-establish damaged areas. A proactive approach will yield positive results a few months down the road.

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North Star Turf, Wilbur-Ellis Form Partnership

North Star Turf, St. Paul, and Seattle-based Wilbur-Ellis Company recently announced a newly formed partnership. The recently defined marketing agreement between the two companies promises to offer both the golf and commercial turf markets in Minnesota, the Dakotas and western Wisconsin expanded service and product availability of turf and ornamental chemicals.

The combined marketing effort between the two companies addresses a number of issues that seek to benefit all

prospective customers. The partnership provides Wilbur-Ellis with Twin Cities-based warehousing and provides North Star Turf with access to one of the Upper Midwest's broadest product lines of turf and ornamental products.

"Joining forces with Wilbur-Ellis provides North Star with a stronger presence within the soft goods business," says Dan Miller of North Star Turf. "Without a doubt, the arrangement with Wilbur-Ellis will fortify our position as being a full-line, service-oriented turf distributor."

Shane Andrews, Wilbur-Ellis sales representative, agrees: "We're excited about our new relationship with North Star. It's going to work out well for both of us. The bottom line though is that it is going to benefit our customers most of all."

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IN MEMORIAM

The members of the MGCSA extend their thoughts and prayers to the families of recently deceased Carl Anderson, Glen Odash and Herman Seneseth.



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Environmental Resources Library Gets Major Boost from Lebanon

The Golf Course Superintendents Association of America (GCSAA) will utilize a major financial contribution from Lebanon Turf Products to begin collecting and cataloging information on golf course environmental issues.

This collection will be called the Environmental Resources Library and will include appropriate scientific and technical journals and references.

A significant amount of research has been and continues to be conducted into the environmental impact of golf courses. Dissemination of the results of those investigations is vital to the golf industry. The library, to be housed at GCSAA headquarters in Lawrence, Kan., will help facilitate effective delivery of that information.

Lebanon National Sales & Marketing Manager Paul Grosh said that "there currently is very little effort to monitor, collect and catalog this large volume of information into a single identified source. Because of the absence of a convenient collection, superintendents and the golf industry have not had ready access to information vital to the management of their facilities. To that end, Lebanon

is proud to assist GCSAA in the development of this new Environmental Resources Library."

"Through Lebanon's generosity, GCSAA is in a unique position to establish and maintain the Environmental Resources Library to serve as a central technical information source to the golf industry," said GCSAA President Joseph G. Baidy, CGCS. "The association has been a leader in the dissemination of environmental information, and the addition of current, comprehensive reference materials would greatly strengthen and enhance that effort."

GCSAA will utilize funds contributed by Lebanon to begin acquiring the literature necessary to build a comprehensive library. This material will include:

- Scientific journals and studies
- Technical publications
- Trade and advocacy group magazines
- Reference materials
- Textbooks

To monitor changes in environmental legislation and regulations, GCSAA will use part of the funding to subscribe to a regulatory news service. Selection will be based on the applicability of the service to the golf industry's needs and the availability of the information in CD-ROM format.

GCSAA's Technical Information Services department will oversee the development and maintenance of the Environmental Resources Library.

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Larry and Joan Mueller with Michael and Becky Bohnenstingl. Minnesota Valley awarded an Environmental Steward Award at the National Conference.



MGCSA members and friends stopping off in Utah on the way home from San Francisco are (l to r) Greg Nelson, Ed Hanzlik, Tim Mihalko, John Harris, Jeff Aschenbek and Cary Femrite.

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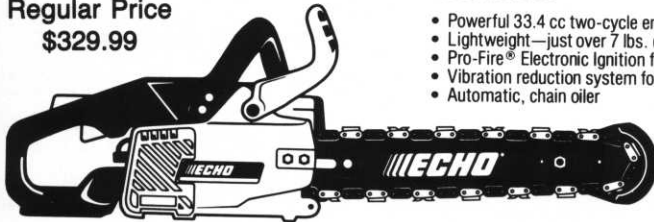
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Questions for Superintendents Around the State

Editor's Note: The purpose of Hole Notes is to get information to MGCSA members. Some of the most important information is that from exchange between superintendents. It could be a simple idea, a complex plan or a certain philosophical approach to golf course management.

In this issue, three superintendents were asked the same questions. Sometimes the answers will be similar but the ideas is to exchange information and perhaps learn from a fellow superintendent. A thank you to Bill Larson, Town & Country Club; Tom Parent, River Oaks, and Tom Johanns, Bemidji Town & Country Club.

How critical are environmental concerns in the performance of the superintendent's job?

Bill Larson: It has become increasingly more critical. Being able to provide the membership with a product they are happy with and understanding the public's concern regarding this situation is our biggest challenge. This issue just isn't going to disappear! It is the responsibility of superintendents to expand their knowledge and be prepared to respond to the public's concerns.

Tom Parent: I feel that environmental concerns are extremely important. Our industry is faced with a negative impression from much of the public. It's our responsibility to maintain our golf courses in as environmentally friendly manner as possible. We all know the use of pesticides and fertilizer are necessary in the operation of a golf course, but the key issue is to limit their use to a minimum. At River Oaks, we installed a disease forecaster/weather station to monitor environmental conditions at our facility. Although these units are expensive, they allow us to make more intelligent decisions, and we are able to justify our fungicide use. This unit has paid for itself many times over. We have also installed a fertigation system to reduce our fertilizer use.

In 1994 we cut our nitrogen applications by 60 percent. We need to do everything possible to limit our negative environmental impact and extol the positive aspects of golf courses. As an example, we should all join the Audubon Cooperative Sanctuary Program and follow its guidelines. Think of the positive press we would receive if Minnesota golf courses had 100% membership in this program!

Tom Johanns: Environmental concerns are a very important aspect of a superintendent's job performance. With the increased emphasis on environmental issues in our industry, it is our job as professionals to implement solid IPM programs and adjust our practices to include more natural and biological controls.

Do you use growth regulators on any part of your course?

Bill Larson: We have done some experimentation the past couple of years on fairways. This year we are implementing a program on fairways, steep hillsides and boulevards.

Tom Parent: As you can see from my answer to the first question, I am a proponent of using turf chemicals as a last resort. However, mowers also generate pollution. If you collect clippings, there is a waste disposal problem. Is there a valid trade-off? Since ours is a relatively new course, we have not needed to experiment with these products to suppress Poa Annuua. We did use Scotts T.G.R. in the fall of 1991. If you want your greens lightning fast, and you don't want to mow more than twice a week, this is an excellent product. We did experiment with Primo in 1994 around our bunkers to reduce hand and bank mowing with mixed results.

Tom Johanns: I have not, at this point, used any growth regulators on my golf course.

Are you rolling greens or considering rolling? If you have, describe your experience and why you started. If you do not intend to

roll, tell why.

Bill Larson: We have had a roller for one season now and we are still learning exactly where its place should be in our maintenance program. We have been successful keeping our greens at or slightly above 9' on the stimpmeter on a consistent basis without the roller. For special events and tournaments we have used the roller and increased our speed up to the 10' to 10'6" range. It has been brought to our attention that this is too fast for our golf course because of the older back to front pitched greens. Se we need to be a little careful about how we use it. One definite benefit is how smooth the green gets after rolling.

Tom Parent: Yes, we roll our greens. Last year, we started rolling once a week, usually on Tuesdays. We found that weekly rolling significantly increased the smoothness of our greens. Being a municipal golf course we do not need to maintain ultra-fast greens. We get more complaints about our greens being too fast than too slow. Excessive green speed slows play. And let's face it, for a daily fee course — time is money. Although we do not roll under saturated conditions, we don't worry about compaction from this procedure. We aerify and topdress monthly from May through August. We use a GA-30 with 1/4 inch tines and have done so for the last four years. This gives us a light topdressing and aerification with greens recovering in three to five days with little or no impact on ball roll.

Tom Johanns: I am not rolling greens at the present time. I look at rolling as another management tool to help achieve a faster, smoother putting surface. Research indicates that the benefits of rolling appear to be short-term. I would not be an advocate of repeated rolling for the negatives that would result. I have a hard time instituting a practice that could increase compaction in soils when our whole management scheme is geared toward reducing it!!

Two Minnesota State Agencies Differ On Giants Ridge Course

One state agency is supporting creation of a \$4.5 million golf course and housing development at the Giants Ridge Recreation Area near Biwabik, Minn. Another is seeking to slow down the process.

In favor of the project is the Iron Range Resources and Rehabilitation Board (IRRRB), which is financing it.

Meantime the Department of Natural Resources (DNR) is concerned about the process used to study the project's environmental effects.

These concerns include potential damage to water quality, songbird habitats and species of rare plants.

DNR officials aren't against the golf course per se, but they have said there are other sites in the area with less potential for environmental harm.

Therefore, the DNR is filing a friend-of-the-court brief in a case being brought by two environmental groups—the Minnesota Center for Environmental Advocacy and a Biwabik group—before the Minnesota Court of Appeals. These two groups claim the Giants Ridge project needs a thorough

environmental review at the state level—but they were unsuccessful arguing their case in a lower St. Louis County court.

DNR Commissioner Ron Sando supported citizens groups last summer when they requested that Minnesota's Environmental Quality Board (EQB) to require additional studies, including an analysis of alternative sites. However, the EQB ruled that county planners already had done enough research.

IRRRB Commissioner James Gustafson, quoted in an article by Tom Meersman, staff writer for the Minneapolis Star Tribune, said "the issue is not rare plants but how to provide for an economic stimulus for an area of the state that needs job and higher property values. There's not a golf course in Minnesota that's gone through an environmental scrutiny that we have and passed with flying colors."

Gustafson expects the golf course to be planted this coming summer and open for play in July 1996.

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Minnesota Valley's Experience With the Audubon Program

By Mike Bohnenstingl
Minnesota Valley Country Club Superintendent

It seems that week after week we continue to hear negative publicity about the golf course industry.

Much of the criticism is unfounded and many times information is distorted to fit the agenda of a particular group or individual. Regardless of motive, one thing is evident; a good percentage of the golfing and non-golfing public believes that golf courses have negative affects on the environment. As people become more and more environmentally sensitive, these negative perceptions will only continue to grow. Therefore, we in the golfing industry need to take it upon ourselves to try and change these ideas and begin promoting the benefits golf courses provide in our communities. The place to start this education process is with our club members, and one way to do this is by joining the Audubon Cooperative Sanctuary Program.

Becoming a member of the A.C.S.P. sends a positive message about your golf course. The program is a way for members to get involved and to become aware of the role golf courses play in our environment. Enrollment requires a small \$100 a year fee and does not require a huge time commitment. It is completely up to each golf course to decide just how involved it wants to become. One important thing to remember though, once participating, is to promote your efforts. This can be done in local newspapers, in monthly newsletters, with course signage, or it can be as simple as having your membership mentioned on your course score card.

Minnesota Valley Country Club joined the A.C.S.P. in 1992. Before joining, M.V.C.C. was already making efforts to protect and improve environmental quality and wildlife habitat. For example, a number of nest boxes were in place on the course and out of play areas were left to grow naturally. Since we joined the program, many more nestboxes have been added to the course, including bluebird boxes, woodduck houses, kestrel hawk houses, bat houses and martin houses. We have also placed mallard nesting platforms on our pond. Our natural areas have been expanded and now total about 10 acres. Other ideas we have implemented include establishing grass buffers around pond edges to filter runoff, creating brush piles for small animals, creating a compost pile and maintaining bird feeders all year long. We have had very limited costs associated with this program. In fact, a number of our practices have actually saved money.

During the winter of 1993-94, M.V.C.C. applied to become a Certified Audubon Cooperative Sanctuary. This process required documentation of our maintenance program and environmental efforts in seven different categories: Water Enhancement, Water Conservation, Environmental Planning,



Integrated Pest Management, Public Involvement, Wildlife Cover Enhancement and Wildlife Food Enhancement. It has now been reduced to six categories. Initially we applied for all seven categories, and received certification in five. After submitting additional documentation, we quickly received certification in the sixth category.

The category we found most difficult to gain certification in was Public Involvement. We did a number of things to help us in this area. After contacting the Minnesota Department of Natural Resources we were put in touch with an Audubon committee of staff and club members. The committee works together to create new ideas for future projects on the course. Through our relationship with the wildlife refuge, we were able to become involved with a local Explorer Scout Troop. They constructed a number of nestboxes for us and will help us monitor the boxes in 1995. We also created a bulletin board in the clubhouse with a wildlife inventory list for members to record any sightings while on the course. After completing a number of these projects, we re-submitted our application and in May, M.V.C.C. became the first golf course in Minnesota and the 16th in the nation to become a Certified Audubon Cooperative Sanctuary.

Once certified, we received a beautiful Audubon wildlife print, which is on display inside the entrance of our clubhouse. With our certification we also received a press release to distribute. To our disappointment, we found little interest in the media and were only able to get it printed in local

(Continued on Page 31)