

**BY DR. DAVID MINNER**

Professor, Iowa State University

Questions?  
Send them to  
David Minner at  
Iowa State University,  
106 Horticulture Hall,  
Ames, IA 50011  
or email [dminner@iastate.edu](mailto:dminner@iastate.edu).

Or, send your  
question to  
Grady Miller at  
North Carolina State  
University, Box 7620,  
Raleigh, NC  
27695-7620, or email  
[grady\\_miller@ncsu.edu](mailto:grady_miller@ncsu.edu).



**W**e had extensive snow and ice cover this winter in Iowa and by the time spring green-up occurred we realized that 50% of the turf was dead on some fields. Why did the grass die? What advice can you give to help us be prepared for next winter?

Joe Wagner, Iowa City Parks and Recreation

It was an unusual and record-setting winter in parts of the Midwest. Iowa experienced 100 days of continuous ice and snow cover. Golf courses seemed to have more injury than athletic fields. In general annual bluegrass and perennial ryegrass were injured more than Kentucky bluegrass so I would expect that any injury to your fields occurred on the perennial ryegrass. Sections of cool-season grass fields are often dominated by perennial ryegrass because it is routinely overseeded to repair worn areas.

Perennial ryegrass is more susceptible to low temperature injury than Kentucky bluegrass but we have had colder winters than this year with no loss of perennial ryegrass. The difference was in the hardening off process that occurred during November. Turf needs several cycles of freezing to allow the plants to acclimate to winter and store plant food.

If the ground freezes several inches deep before snow fall then plants generally have had sufficiently low temperature cycles for hardening. That did not happen this year in much of Iowa. Instead, we had high soil moisture and unfrozen ground when the first ice storm hit in early December. The ice and snow over the non-frozen soils kept the grass growing very slow and prevented it from hardening off.

As the winter progressed the frost eventually entered the ground and killed the unhardened turf. The frost depth was only about 12 inches this year and it is normally about 3 feet deep. Perennial ryegrass on poorly drained soils was especially damaged this year. We are always trying to force growth to fill in worn turf so nitrogen fertilizer applied in late fall has been a standard recommendation, however, this year late applications of nitrogen probably kept the turf a little lush going into the winter and added to winter kill on perennial ryegrass.

When the snow and ice finally came off in March there were large sections of fields that looked brown or light tan and recovery of the turf was uncertain. To predict potential turf recovery I often take samples and put them in the greenhouse. In about a week you will have your answer and this will help you develop a plan as the season unfolds or to give some prior warning to user groups about what to expect for the spring season.

If you don't have a greenhouse just cut a 2 liter bottle in half, put some water in the bottom, place your grass sample with about 2 inches of attached soil in the bottom half of the bottle, and then replace the upper half of the bottle to make a miniature greenhouse. Leave the lid off for ventilation and place in a warm location such as the window sill or near a heater vent. If it grows like a Chia Pet, you win. If not then you can start getting your sob story together.

About 50% of the perennial ryegrass that appeared brown and dead at the end of the winter actually recovered. A look into the future allowed some sports turf managers the advantage of early seeding and faster recovery. ■