



Winter injury can be devastating. Begin preparing now to reduce the risk of damage on cool-season putting greens.

WINTER PREP

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Recent winters have been harsh in the Northeast. Winter injury has damaged turf at many golf courses over the last four to five years. Taking preventive measures now can greatly reduce the potential for winter injury on cool-season putting greens. While there is no surefire method to prevent winter injury, the following practices will help reduce the risk.

Height of cut — Increase the height of cut on putting greens to at least 0.150 inch. This will help promote carbohydrate storage and cold temperature hardiness.

Fertility — Avoid excessive nitrogen fertility that promotes luxuriant growth and unnecessary carbohydrate consumption. Research suggests that maintaining soil potassium at or above 50 parts per million can reduce winter injury on *Poa annua* putting greens. However, some research has shown that applications of potassium at extremely high rates during late fall can increase the severity of snow mold on creeping bentgrass putting greens, so be sure potassium rates are within reason.

Drainage — One of the most common forms of winter injury on *Poa annua* putting greens is crown hydration. Poor surface drainage is the single most important factor contributing to crown hydration. Eliminate collar dams to prevent water from accumulating along putting green and collar interfaces. Additionally, [dry wells](#) can be installed in low-lying areas of putting surfaces. [Narrow drainage channels](#) also can be installed to provide positive surface drainage away from low-lying areas. Some facilities install heating cables in drainage channels to quickly melt any ice that disrupts surface drainage. Holes can also be cut over subsurface drain lines in low-lying areas with poor surface drainage to provide water with a direct route to drainage pipes.

Deep soil modification — Practices that reduce compaction and incorporate sand deep into putting green profiles can improve drainage when soils are not frozen. Practices such as drill-and-fill and deep-tine aeration are commonly performed during late fall but provide benefits that often extend into summer.

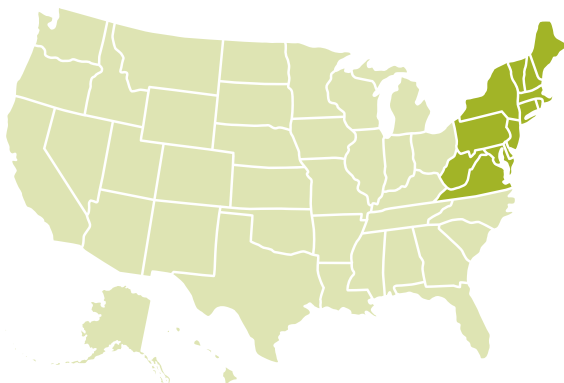
Shade — The correlation between shade and winter injury is complex but, in general, maximizing sunlight on putting greens throughout the day is advantageous. Maximizing sunlight penetration during winter helps snow and ice melt quickly and reduces the number of freeze and thaw cycles that cause the majority of winter injury in the Northeast. In addition to reducing the potential for winter injury, additional sunlight will expedite recovery in the spring if damage does occur. Additionally, turf needs cold temperatures and dry conditions during fall to properly harden off. Light is a critical component of this process.

Try to avoid scenarios where putting greens receive morning sunlight and afternoon shade during winter months. A few extra hours of afternoon shade can cause water to refreeze after being melted by morning sunlight. During tough winters, an extra few hours of afternoon shade can be the difference between healthy turf and winter injury.



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