Effects of Ice Cover on Annual Bluegrass and Creeping Bentgrass Putting Greens

Abstract

Damage as a result of ice cover on putting greens affects golf courses in cold climates. The objectives of this study were to assess cold-hardiness levels and injury of annual bluegrass [*Poa annua* f. *reptans* (Hausskn.) T. Koyama] and creeping bentgrass (*Agrostis stolonifera* L. cv. Penncross) under ice cover maintained for various periods of time under laboratory and field conditions. In the lab, cold-hardened plants of both species were subjected to either snow-covered, ice-covered, or ice-encased treatments and tested for cold-hardiness levels at various periods of time. Ice-encased annual bluegrass plants stored for 90 d were dead, while ice-covered and snow-covered plants had cold-hardiness levels of −4°C and −18°C, respectively. In contrast, at 150 days after treatment (DAT), creeping bentgrass that was ice encased had a cold-hardiness level of −18°C, while snow-covered plants had a cold-hardiness level of −27°C. In the field, annual bluegrass and creeping bentgrass plants were subjected to the following treatments: snow cover, ice cover, and snow or ice removed 45 DAT and then were sampled at various times to determine cold-hardiness levels. As in the lab, ice cover had less impact on bentgrass than annual bluegrass. At 90 DAT, ice-covered creeping bentgrass had cold-hardiness levels of −29°C while annual bluegrass plants were dead at 75 DAT. Snow-covered annual bluegrass plants still had cold-hardiness levels of −16°C

at 75 DAT. Removing the snow or ice after 45 DAT had little or no effect.