Research Update - Field Assessment of Winter Injury on Creeping Bentgrass and Annual Bluegrass Putting Greens

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The winter of 2005 represents the final year of a 3-year study sponsored by IaGCSA and GCSAA. Ten winter scenarios were applied to a creeping bentgrass soil green at Veenker Memorial Golf Course and also to a *Poa annua* USGA sand based green at the Horticulture Research Station. Covers were placed in early December and ice and snow treatments started during the first week of January and lasted for 66, 60 and 50 days in 2003, 2004 and 2005 respectively. The first two years of the study indicated that *Poa annua* was much more sensitive to winter ice cover than creeping bentgrass. In fact, bentgrass was never killed with up to 66 days of continuous ice cover while *Poa annua* had above 50 percent winter kill from ice cover. Bentgrass showed more turf bleaching and delayed spring green-up but never any loss in turf cover. It is interesting to note that removal of ice after 30 days of continuous ice cover provided no improvement in either creeping bentgrass or *Poa annua* compared to the control or the 66 days of continuous ice cover treatments. The Evergreen Turf Cover or natural snow cover always resulted in earlier spring green up of bentgrass and more winter survival of *Poa annua*.

Winter conditions, as they relate to turfgrass injury, across Iowa were variable. We can always count on very cold temperature and in 2005 there were 40 days below 32°F. Soil temperatures at 0.5-inches dropped below freezing on 26 December and did not rise above freezing until after 4 February. The coldest soil temperature was 8°F on 17 January. Ice, snow, and desiccation were more variable. Northwest Iowa experienced open, dry and desiccation conditions during early winter while the north central area had an ice storm in early January that occurred on ground that was barely frozen. Snow and rain in January provided some reassurance for most superintendents that desiccation was not going to be a problem on soil based greens, while those with sand based greens were still standing by with water tankers incase winter watering was necessary. It is important to remember that even a single well timed winter watering may be sufficient to keep greens alive.

All of the samples taken through February 2005 in the creeping bentgrass winter trial have completely recovered in the growth chamber indicating that we do not anticipate any degree of winter injury up to that point. The 2005 *Poa annua* green had about 25 percent loss of turf cover for treatments, whereas, in the previous two years we had approximately 50% turf loss on *Poa annua* from ice cover. I do not anticipate any severe loss of putting green turf from ice cover this year and there was no need for superintendents to implement ice removal practices in 2005. Most of the winter turf injury and slow green-up we experience on putting greens is caused by desiccation and superintendents should always have a plan to reduce this type of injury. Three proven methods, in order of preference, to reduce winter desiccation are covers, winter watering, and topdressing.

Pictured below is the *Poa annua* Putting Green Winter Injury Study at the Horticulture Research Station on 21 March 2005 (upper left was GreenJacket cover + 4-inches of ice cover for 50 days, lower left was winter watered, upper right was Evergreen cover, and lower left was ice cover for 50 days).