

# Department of Plant Sciences

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## TESTING TURF FOR WINTERKILL

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*Eric H. Reazor, Graduate Research Assistant*  
*Kyley H. Dickson, Graduate Research Assistant*  
*James T. Brosnan, Associate Professor*  
*Adam W. Thoms, Department of Plant Sciences*  
*John C. Sorochan, Associate Professor*

Warm-season turfgrasses maintained throughout much of Tennessee can be damaged during severe winter weather. This low temperature damage (often termed “winterkill”) can be caused by exposure to sustained low temperatures or abrupt temperature decreases.

### Causes of Winterkill

In Tennessee, winterkill often occurs when warm-season turfgrasses such as bermudagrass (*Cynodon dactylon*) are exposed to sub-freezing temperatures during the dormant winter season. Moisture present in turfgrass tissue can cause the formation of intracellular ice crystals in plant crowns that can cause cells to rupture. Additionally, exposure to temperatures less than 23 F can also be lethal. Affected plants will have a water soaked appearance that becomes necrotic over time.

Soil can insulate underground portions of the plants, allowing turfs to withstand sudden temperature decreases for short periods of time. However, several days of exposure to lethal temperatures can be fatal to warm-season turfgrasses.

Bermudagrass dormancy is a critical process that allows plants to acclimate for winter conditions each fall. Weather conditions that interrupt winter dormancy (i.e., abnormally warm temperatures) can make plants more susceptible to winterkill.

### Testing Turf for Winterkill

Many turfgrass managers may want to inspect questionable sites for winterkill in early spring before plants would normally break dormancy. Typical areas of concern are golf course putting greens, highly trafficked sites, spots with excessive thatch, shaded areas, as well as areas directly receiving winter winds such as north and west facing slopes. The process of testing for winterkill can help turfgrass managers determine if any renovation or new establishment practices will be needed moving into the bermudagrass growing season.

The process for testing turfs for winterkill can be quite simple.

## Testing Turf for Winterkill

1. *Remove samples from questionable sites (Picture 1)* — Remove samples of turf from questionable sites using a golf course cup cutter. Make sure samples are at least four inches in diameter and at least three inches deep. A minimum of two samples from each questionable site is recommended. During cold winter months, this process can be repeated on a monthly basis if needed.
2. *Remove samples from areas not of concern* — It is recommended that samples are also removed (in the same manner as previously described) from sites that are not of concern. These include areas of full sun or south facing slopes. These samples can be used for comparison purposes.



*Picture 1. Use a golf course cup cutter to remove samples from areas of concern.*

3. *Pot and label all samples in containers* — Place all samples in individual containers and add soil so the sample will fit in the container. Add labels to designate the origin and date collected.



*Picture 2. Individually pot all samples in containers and place them in a warm area.*

4. *Place labeled samples in an area of warm temperature and light (Picture 2)* — Place all samples in a warm area such as a south facing window that receives ample sunlight, a greenhouse, or place the sample under growth lights. Make sure that all samples have adequate moisture to sustain growth.

5. *Observe* — Plants that will survive winter should begin “greening up” after being placed in an area of warm temperature and light for approximately 14 days (Picture 3). If no green tissue emerges, turf in the area sampled has likely been damaged and will require renovation/re-establishment in summer.



*Picture 3. Check samples for new green leaf tissue to determine if they have been damaged by winterkill.*

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