

How to Solve Winter Turf Injuries

Turf in a weakened condition resulting from disease or pest damage, low or excessive moisture, lack of fertility or poor root development is much more susceptible to winter damage. At no time is the importance of healthy turf more significant than during fall months. But even a lush, vibrant turf often cannot withstand the pressures of severe winter weather. Winter injury results from many different extreme conditions. Symptoms are often complex, since many of the injuries can interact. Some of the conditions include:

Ice Sheet Damage

Turf covered with ice for extended periods can experience injury from oxygen suffocation and toxic gas buildup, but these conditions are rare. More commonly, freezing and thawing cycles cause crown hydration, which reduces winter hardiness.

(Crown Hydration occurs when plants stand in moisture following a thaw, causing tissues to absorb high levels of water. When temperatures drop again, ice crystals form within the plant cells, rupturing cell walls and killing tissue. The plant crown, or growing point, is the most critical tissue affected by these freezing and thawing cycles. Damage appears in irregular-shaped areas, similar to direct low temperature kill. Poa annua is most susceptible to this type of winterkill.)

Low Temperature Damage

Direct kill may occur in freezing-thawing situations, when turf experiences a rapid drop in temperature (usually below 20°F). Poorly hardened plants with a high moisture content are more susceptible to this type of winterkill. Leaves and stems appear water-soaked, turn brown and become matted. A foul odor is often evident, and damage occurs in large, irregularly shaped areas.

Chill Injury

Most commonly seen on warm-season turf grasses, chill injury occurs when green pigment production ceases during periods when temperatures dip below 55°F, along with high light intensity. Generally, grass leaves appear light brown to white.

Desiccation Injury

This condition is common in regions with high winds and relative humidity, but can occur anywhere turf remains unprotected and soil moisture is limited due to low temperatures or drought. Leaves and shoots turn white to silver and plant tissue is not matted down. Damaged areas vary from small patches to large irregularly-shaped areas.

Frost Heaving Injury

Freezing and thawing cycles on wet soils move the surface during ice formation, pushing crowns and roots out of the soil. Roots can be severed from the plant. Symptoms

include tissues turning white or silver to tan. This condition is most common on seedling turf.

Traffic Injury - Frozen Ground

Foot and vehicle traffic on frozen leaves causes mechanical injury by rupturing cells in leaves and shoots. Frost damage is common when traffic occurs in early morning before frost leaves the turf. Damage to frozen turf appears as white or silver areas, taking on the shape of footprints or tire tracks.

Traffic Injury - Slush-Covered Ground

Traffic on slush-covered turf causes crown hydration and reduces winter hardiness. Damage is most severe when temperatures drop below 20°F, following heavy traffic injury, except patterns tend to be more regular.

Diagnose Winter Injury Early

Early diagnosis of turf winterkill or injury is essential to alleviating damage. Diagnostic steps should be taken prior to normal greenup in the spring. If you suspect winter injury, take the following steps to determine the extent of turf damage:

- Collect turf plugs from suspected sites.
- Place plugs in suitable container for short-term growth.
- Place containers in a greenhouse or well-lighted area, preferably a window facing south.
- Keep turf adequately watered.
- Turf will initiate greening in 5-7 days, depending on growing conditions.

- Assess the extent of greening after two to three weeks.

Areas with less than 50% greenup should be considered extensively damaged and will require renovation to ensure satisfactory quality. Lesser damaged areas can be recovered with extra attention to proper fertilizing, watering and mowing. Keep traffic off damaged areas until adequately recovered.

Take Action Early

If you determine that your turf suffers from winter injury, plan early to reseed those areas in the spring. Some of the steps you may wish to consider include:

- Communicate with your membership or customers to alert them that some turf areas will be under renovation.
- Ascertain equipment needs.
- Arrange your seed purchase and locate the best source.
- Plan your herbicide and fertility programs.

Proactive Approach Pays Off

Even if you experience severe winter injury on your turf, you can assure your membership or customers of a quality turf in the spring by planning early to re-establish damaged areas. A proactive approach will yield positive results a few months down the road.

—NOR-AM Chemical Co