

saturated for extended periods and, under flooded conditions when ponded or standing water persists. The higher the temperature, the shorter the period of time that the grass can survive these adverse conditions.

Under limited (and rare) conditions, ice sheets and ponded water may act as a lens. When this happens, the sun's rays are magnified to the point where the excessive heat produced may cause a burning or scalding of the turfgrass.

Causes Related to Reduced Water Intake

Desiccation is a "wilting" phenomenon. Like wilt, which occurs during the normal growing season, desiccation occurs when evapotranspiration exceeds water intake. This inability of the roots to absorb water, or for the plant to transport it to or through its system, may result from a shallow, poorly branched root system; diseased vascular system, or, from a reduced or restricted soil water supply. Limited soil moisture may be the result of a "dry" soil (not enough water) or of a frozen or partially frozen soil (water unavailable to the root because of its physical state). Thus, the roots simply cannot take in enough water to offset that being lost by the plant and it "desiccates" or dries up - it wilts. Although more serious during periods when the soil is "on the dry side" or partially frozen, desiccation on high windswept sites may occur at any time. The increased air movement causes excessive transpiration and under limited or reduced soil moisture conditions, the plants may die unless protected.

In late winter-early spring, before the irrigation system has been activated, damage from desiccation may be severe. Water hauled in spray tanks or by other means and applied to critical sites will preclude or minimize loss.

Protective Measures

Techniques and procedures that protect, avoid and correct the damage that occurs in late winter-early spring are well known to and understood by the golf course superintendent. For the most part, protective measures relate to production of a healthy vigorous grass and to the control, to the extent possible, of the soil-plant environment. When these factors are adversely impacted by anomalous conditions of weather, poor construction or inadequate equipment and supplies, the responsibility for loss of turfgrass must be shared.

**J. R. Watson, Vice President
The Toro Company**

TO PREVENT WINTER DAMAGE

Question: Our golf course superintendent prohibits play when there is frost on the ground. Is this good practice and if so, why?

Answer: When turfgrass plants with a frost cover experience foot or vehicular traffic, permanent damage frequently occurs because walls of plant cells are ruptured. Also, it is possible that the crown of the plant may be damaged, which could result in permanent turf loss. A weakened plant provides an ideal opportunity for weed and disease invasion and a decrease in plant density for the summer stress months. The golf course superintendent has the interest of the majority of players in mind, and he is interested in the maximum use of the course for all seasons when he faces the decision to close the course because of inclement weather.

USGA Green Section Record



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