Protect Greens From Winter Desiccation

With winter's cold winds only a few months away, the latest Turfcomm from Dr. Douglas Hawes deals with some of the steps that can be taken to prevent loss of turf in bentgrass putting greens from winter desiccation. For better winter survival, he suggests you be sure and apply adequate amounts of potassium and iron to greens in early Fall, including raising the height of cut ¼" in late September and topdressing where desiccation is a perennial problem.

To provide adequate potassium, apply 4 pounds of potassium sulfate per thousand square feet before September is over and water it in; it should be applied again a month before the ground freezes for the winter. Iron sulfate should be applied at 2 ounces per thousand every other week for three applications before the ground freezes. Two ounces of sulfuric acid per 100 gallons of water is helpful in getting this material to dissolve in the spray tank where high pH water is a problem.

Other measures Doug suggests are preventive snow mold fungicide applications, heavy sand top dressing (up to ¼"), occasional winter watering in December, January, and February, and covering the greens. Covers have a number of drawbacks, despite preventing moisture loss and allowing light to penetrate. They promote snow mold attacks, are expensive, do not allow play when in place, and leave the covered grass quite tender so that a length of relatively mild weather is necessary to harden it after the cover is removed in the Spring.

Writing Awards Open

Articles from MAAGCS members are always welcome in this newsletter, but in 1987, a $100 savings bond will go to the member who authors the article adjudged best. In addition, members who contribute a "Tip of the Month," a short description of some procedure they have developed and recommend to others, will receive a $25 bond; Tip awards will be made each month.

NEW MEMBER

John A. Terminella, Class F
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SULFUR: Friend or Foe?

by Tom Lubin

There has been much talk this past year about sulfur and its benefits, but in most cases people have used the two most common forms of sulfur (elemental sulfur and sulfate ion) interchangeably. The problem is not with the materials but with how they have been used.

ELEMENTAL SULFUR (S) This element exists most commonly in S_8 rings which will convert to sulfate at a rate directly related to the surface area of the particles and soil temperature. As a particle of sulfur is broken into smaller and smaller pieces, the surface area increases, and the rate at which the sulfur oxidizes to sulfate ion increases rapidly at a fixed temperature. As the oxidation takes place, sulfate ion is produced, along with hydrogen ion, which can help to acidify the soil.

$$S + 4\,H_2O = SO_4^{2-} + 8\,H^+ + 6c^-$$

SULFATE ION: ($SO_4$2-) This ion, the highest oxidation state of sulfur, is usable by the turf in this form, but *the sulfate ion will not acidify.*

When the sulfate ion concentration reaches 50 ppm, any higher concentration can cause a series of problems on either greens or fairways. As the sulfate ion concentration increases, because it is an anion (negative ion) with a charge of minus two, it will hold or bond various ions such as sodium, calcium, potassium, etc. The main problem is that one of the most used fertilizers in the past has been ammonium sulfate. The sulfate ion seems to move very slowly through greens where the organic content has built up and in clay soils. When the ammonium ion is used up, sodium or other less desirable cations (positive ions) will be held, along with the high sulfate ion concentration that has built up in the soil.

Localized high salt level can also cause the turf to show "water stress" when the water level in the surface of the soil has decreased even slightly. This is because the high concentration of salt is still around the root and, as the water starts to evaporate, the salt concentration rapidly increases to a point where osmosis is actually reversed. When this takes place, permanent damage can take place within hours.

On golf greens, after a number of years of forced growth and the normal cycle of root replacement, the percentage of organic matter will increase. As the percentage increases, then the ability of the soil to hold salts (especially sulfate salts) increases.

If the sulfate levels are high, ammonium sulfate should not be used as a fairway or green fertilizer until the soil's sulfate concentration has been lowered.

The fastest and the most sure method is to physically remove some of the organic (high salt center) material in the greens by deep time aeration. Topdress, filling holes with *pure sand!* This process should be repeated periodically to keep the organic content from building up to problem levels. The process will take some time, but play can continue through the rebuilding process, and the large expense involved in building new greens can be eliminated or postponed.

Through this process, a non-ionic penetrant can be used in extremely low concentrations in a program designed to lower the surface tension and improve the flow of water through the soil profile. No matter what is done, the flow of water through the soil must be improved in order to carry off the excess salts, keeping the soil EC low enough to allow the turf to grow efficiently. The greens have bands of differing particle size built up at various depths; the consistent application of non-ionic penetrant in low concentration will cause the surface tension of the water to be lowered and allow the water the pass more readily from one layer to another. Once the soil is wet through the complete profile, a siphon-like action will cause the water to move much more easily.

In order to determine the sulfate level in the soil, it is suggested that a complete set of soil samples be taken (especially on the greens) so that the nutrient levels can be monitored. The investment is small for the information that can be gained.

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MAAGCS Team Takes 4th in Metro Event

Mid-Atlantic golfers traveled to Oak Lane Country Club in New Haven, Conn., in October to play in the Metropolitan Area Superintendents' Association team championship. Of 11 teams, the Mid-Atlantic finished fourth with a stroke total of 337, six shots back of the winning Philadelphia team, and individual low gross honors went to MAAGCS entry Tom Regan, who shot a 78 under windy and difficult conditions.