

losses by transpiration place unattainable demands for water on an already crippled root system. Often much of the soil water is frozen and unavailable for absorption. This further reduces the time for severe desiccation to occur. Winters with plenty of snow cover seldom result in desiccation damage except for exposed areas where snow is blown away. Most winters however, have bare ground periods when the potential for desiccation is high.

Many techniques are used for the prevention of desiccation with varying degrees of success. Organic and inorganic mulches, burlap, polyethylene sheeting, porous plastics covers, or erection of snow fence to increase the amount of snow accumulation, have all been used to alleviate desiccation. Hauling of water to greens, if irrigation cannot be turned on, is an expensive and inconvenient solution, but necessary to save desiccating turf. The very best control is to apply water through irrigation lines if possible and drain the lines the same day.

Snow mold generally is more of a problem when snow fence is used, and preventive fungicide applications are more essential. Covers are bulky and difficult to secure to the turf and condensation often occurs on sunny, warm winter days. Temperatures under various covers occasionally are elevated high enough to induce growth of *Poa annua*. Screen materials or porous plastic covers do allow air movement and reduce temperature fluctuations and are superior to solid tarpaulins.

Although desiccation does not occur every winter, turf managers should be alert to the environment conditions conducive for its appearance. Turf professionals must cultivate the ability to recognise conditions favourable for desiccation and take the proper precautions to minimise its effect. During snow-free winter periods the crown area of turfgrasses should be periodically checked for turgidity. Desiccating turf appears very dry, is brittle to the touch, and is easily pulled from the soil. Examination of the upper 1½-2" of soil should also be made periodically, particularly during windy weather, as soil moisture can decline very rapidly during low humidity days (10-20 per cent relative humidity) which occur during the winter months.

Much continuous effort is expended for excellent turf during the growing season, and there is no reason for those efforts to go down the drain by losing grass to winter desiccation. Providing for the needs of dormant turf is every bit as important as the attention it receives during the growing season. Grass needs your attention 12 months of the year. Are you there?

## Turf Manager's Winter Check List

Frank Sirianni

November is the month Superintendents and Turf-managers in Pennsylvania are making preparations for winterising their golf courses, sod farms and equipment. The following is a list of *musts* we use at the University Golf Course.

1. Protect turf from frost damage, either by water or by keeping golfers and traffic off until conditions are favourable.

2. Complete all outside work, save inside work for wet and cold days.
3. Drain all water lines, open drains where there is danger of freezing. Blow lines out with air if possible.
4. Store equipment that will no longer be used.
5. If course is left open for late play move cups to front of greens—take tee markers off and put in front of tee.
6. Add a few tablespoons of anti-freeze to water in ball washers if they are left out.
7. Use snow fence along entrance roads and near shops to protect areas that drift.
8. Keep leaves picked up.
9. Wrap and use guy wires on trees planted in fall.
10. Check radiators on vehicles that will be out and subject to freezing conditions.
11. Clean catch basins and drain boxes.
12. Spray greens for winter protection of winter kill, if budget permits spray tees and collars, etc.
13. If greens are exposed to winds and have been a problem, snowfence may help.
14. Spray evergreens if necessary.
15. Paint ball-washers—flagsticks—tee markers and waste baskets.
16. Overhaul and sharpen machinery, check each machine for worn parts.
17. If course is new and not fully covered keep seed on hand for dormant seedling.
18. Store all liquids in heated area to protect from freezing.
19. Mark and label all materials, use shelf rotation.
20. Attend Turf conferences, equipment shows and schools.
21. As soon as snow cover is gone check course several times during winter months.
22. Look over last season's records, make plans for next season's improvements.