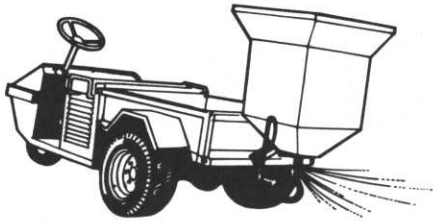




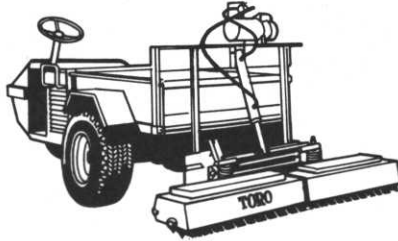
WORKMASTER



RED WAGON



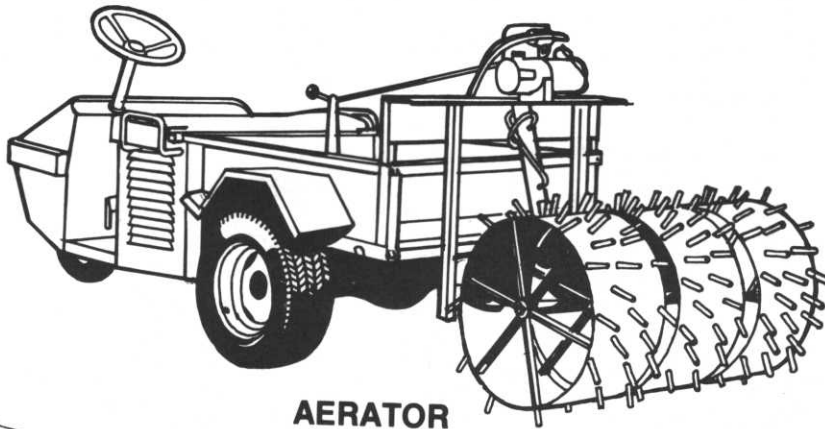
FERTILIZER SPREADER



SPIKER

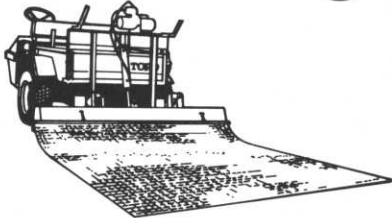


WORKMASTER



AERATOR

CAB ENCLOSURE



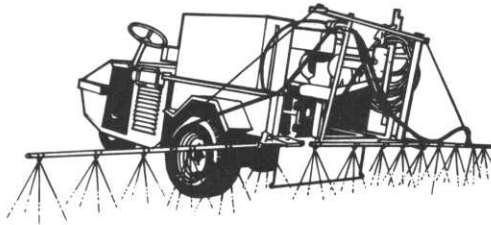
INFIELD ATT.



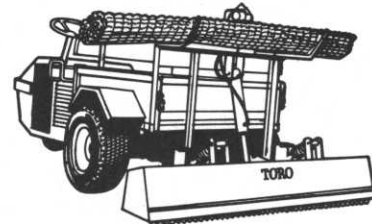
BOX COVER



TOP DRESSER



SPRAYER



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Optimism Marks March Meeting

On a bright sunny first day of spring when the temperature reached into the 50's for the initial time in 1978, the mood of the 85 to 100 in attendance at the Mini Seminar was definitely upbeat. This feeling was also apparent in the speakers who discussed possible problems but had definite answers or remedies to try to solve those problems. Our thanks to Dr. White, Larry Vetter, Dr. Watson, Dr. Rieke and Dr. French for a most informative afternoon. Special thanks to George Ostler, the host superintendent, Dennis Hendrickson, Educational Chairman and Carl Johnston, Arrangements Chairman, for all their efforts which produced such a successful session.

At the business meeting President Keith Scott read the following letters into the records from two retiring members:

From Cal Polsean, Arrowhead Country Club, Rapid City, South Dakota: "To my many friends, the members of the Minnesota Golf Course Superintendents' Association. My wife, Veronica, and I, after much thought and thirty-two years on a golf course - ten years at the Brookings Country Club and twenty-two years at the Arrowhead Country Club, Rapid City, South Dakota - decided that we should spend more time FISHING. So April 1, 1978 I am retiring. At this time I want to thank the M.G.C.S.A. for all the great help they have given me in the past and to wish them the best in the future. We have bought a home in Hill City 'In the Heart of the Black Hills' and want to at this time invite you and yours to stop in and see us when ever you are in the Black Hills. Thanks again and may God bless you and help you in your work as He has helped me in the past. Thanks again and hope to see you in the future."

From Howard E. Kaerwer, Manager, Research-Service Department, Northrup King Co.: "May I express through you my deep felt appreciation to the Minnesota Golf Course Superintendents' Association for the honor which has been bestowed upon me. This honor is especially gratifying because it came from a very active and progressive organization. I have enjoyed my contact with the membership over the years and have been grateful for the knowledge and friends I have gained through the M.G.C.S.A. Thank you very much for voting me an Honorary Member of the Association. Best wishes."

Bill Johnson, Membership Chairman, announced the following reclassifications: Cal Polsean, Sr., AA; Richard Crosby, AA; Richard Williams, B1; Randy Nelson, A; Carlos Stimson, A; James Brooks, A; John Steiner, B2; John Kuusinen, A; David Swanson, B1; Maurice Anderson, B1; Einer Oscarson, A; Bob Nulph, B1; Robert Grew, A; John Helget, A; Kerry Gladen, B1; Richard Dicks, Jr., B1.

A record number of new members were in attendance and approved at the general meeting. Bill did an excellent job of introducing all of them. Our first lady member was among the new approvals and we are sure this is just the start of many more to come. The new members approved are: Richard P. Berscheit, F2; Orv Robertson, F2; Joseph Check, F2; Steve Schumacher, C; Pat Klein, C; Scott Liestman, C; Stephen Lawson, B2; David McDermott, B2; Andrew Lindquist, F; Allan Smith, B2; Scott Pruszinske, B2; Fred Taylor, C; Michael Barnum, B2; Regina Zwart, B2; John Sheedy, C; Charles Vedvick, C.

President Scott proposed that the M.G.C.S.A. contact the National organization and see if it is possible to schedule a G.C.S.A.A. Seminar in the Twin Cities area this coming fall. A show of hands indicated a sufficient number were willing to attend so that the idea was feasible. Regarding the subject matter, the overwhelming interest was in the course entitled Management II. President Scott will contact the National office and report back next month.

Mark your calendar now for M.G.C.S.A.'s monthly meeting which will be held April 11 at the Hazeltine National Golf Club. Host Superintendent Nick Dunn is sure to have a great day in store for all. Don't forget to send in your reservation.

The Causes of Late Winter - Early Spring Damage to Golf Turfgrass

J. R. Watson
Vice President, The Toro Company, Minneapolis, Minnesota

During late winter-early spring, fluctuating temperatures and waterlogged, partially frozen soil produce conditions that cause the loss of turf. This loss may be the direct or indirect result of one or more of these phenomena. Direct damage or kill of the permanent grass may occur at any point of the freeze - frozen - thaw cycle so characteristic of this season. Indirect injury may result from attacks by disease producing organisms (mostly snowmold and other low temperature fungi) and by traffic on frozen and partially frozen turfgrass areas.

Causes Relating to Temperature Variations

Turfgrass may be destroyed - at the time it freezes, during the time it's frozen, during the time it's thawing, or after it's thawed and growth has begun. Some killing probably occurs during each of these periods. This cycle of freezing, frozen, thawing may be repeated several times during each winter and early spring. When associated with intermittent growth in late winter-early spring, damage may be severe. Death as the plant freezes happens most often in the late fall-early winter, but may occur after a period of growth (particularly rapid growth) in the spring when a sudden drop in temperature occurs. This is most damaging when the grass plants are in a non-hardened condition. Ice crystals form within the cells and this disruption of the protoplasm may cause death. Too, repeated cycles in the spring will exhaust food reserves upon which the plants must draw to initiate growth. For this reason, Poa annua is especially vulnerable.

Death during the time the plant is frozen is unlikely to occur unless it is subjected to traffic. This will seldom occur if a good snow cover exists, which is the case most often during the winter months. However, play during the time period under discussion may cause mechanical damage either by attrition or from pressure which forces the ice crystals through the cells, thereby puncturing them and causing death. Play during times the grass is covered with frost has the same effect.

Death at the time of thawing depends on the amount and the state of the "bound" water within the cell (intra-cellular water). Unless adequate bound water is present in the protoplasm, death may result if thawing is rapid or if inter-cellular water re-enters the cell too rapidly. In the latter case, the cell wall is permeable but the protoplasm is unable to absorb the water. Prolonged cold may be conducive to death because it contributes to brittleness of the protoplasm and, if contact (from traffic) is made, the plant is highly susceptible to damage.

Causes Relating to Traffic

Grass will initiate growth during the warmer periods of late winter-early spring. If the season is characterized by widely fluctuating temperatures, the grass is vulnerable to the freeze-frozen-thaw growth cycle with its attendant problems. Too, the environment produced is highly conducive to disease development. Thus, this may be the most critical phase of the turf management program facing the golf course superintendent. And, he often finds his turf management programs (and, therefore, himself) in direct conflict with the golfing membership, especially those desirous of playing a few early rounds.

Mechanical injury by traffic on partially frozen or wet soil may be immediately evident (visible) or delayed (invisible). Visible injuries (soil displacement) are the footprints and ruts caused by foot and vehicular traffic - sliding and slipping, walking or rolling - on partially frozen or saturated soil. Invisible injury stems from soil compaction.

CONTINUED ON PAGE 5

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Although this type of mechanical damage is not confined to the winter months, soil compaction may be far more damaging during this period than generally recognized. Traffic on partially frozen or wet soil, without the protection of living grass, will exert greater pressure (hence, more compacting force) than during the normal growing season. This results, subsequently, in poor growth and may explain "problem areas" which show up in spring and summer for no apparent reason. Cupping areas are particularly vulnerable in this respect.

Traffic on frosted turf causes the frost crystals to puncture leaf cells and kill the grass. Removal of frost, or preventing play when the grass is frosted, is essential.

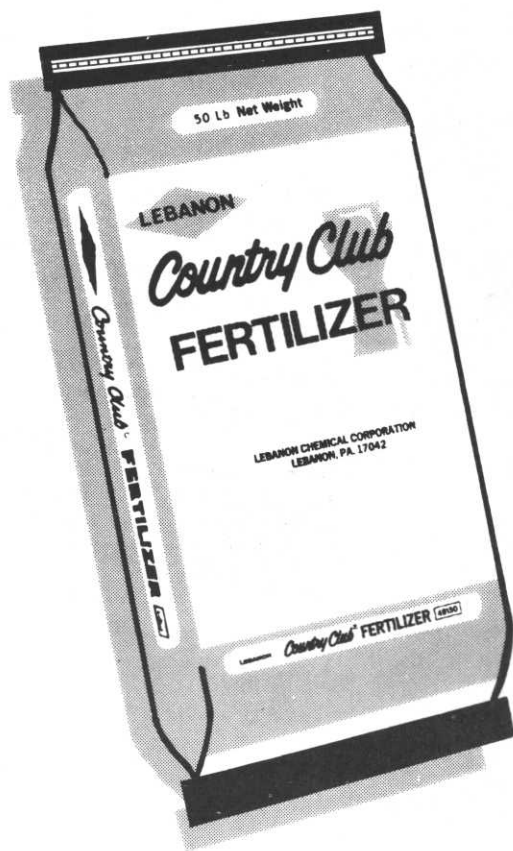
Control of traffic during vulnerable periods does not always contribute to harmony between early golfing members and the less enthusiastic golfing and non-golfing members. The responsibility for control rests with the club officials - president, green chairman, superintendent and golf professional.

Causes Relating to Ice Sheets and Poned Water

Turfgrasses, although essentially dormant during the winter months, nevertheless, carry on metabolic (growth) activity, particularly respiration. During late winter-early spring, as growth activity increases, the grass may suffocate (a) if diffusion of atmospheric and soil gases is reduced or stopped; (b) if excess carbon dioxide accumulates, or (c) if oxygen supplies are reduced to a minimum. Such conditions exist under ice sheets in poorly drained areas where the soil remains 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.

CONTINUED ON PAGE 7



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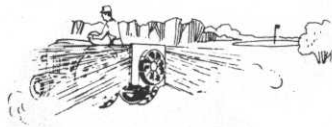
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Mistblowers

by William Burdick, Canterbury Country Club, Beachwood, Ohio

We started mist blow spraying at Canterbury about five years ago and it has developed into our primary means of applying fungicides to fairways.

The equipment we're using is a small, three point hitch mist blower from Myers. We bought this machine in 1972, more or less as an insurance policy, in case during our PGA championship in 1973 we had to get out there and do a fast spray job. We did not buy it to be our primary piece of spray application equipment, although it has turned out that way.

The biggest factor in favor of mist spraying is time saved. With a boom system it was taking us anywhere from a day to a day and a half, with play on the golf course, to spray all our fairways. With the mist blower we've gotten that time down to two and a half hours or five hours, depending upon the method we're using.

Our program at Canterbury is to spray each week, and we do this religiously. We use all chemicals at half rate. We've found this to be very effective since we spray once per week.

The first week we'll spray down the center of the fairway blowing out both sides of the machine. Our fairways average 90-120 ft. wide and we can easily cover that.

The second week, and this is where we came up with five hours as opposed to the two and a half hours, we'll spray one side of the fairway, then back up the other. We're actually getting double coverage that way, still using the chemical at half rate. We also find that there is a benefit because the machine has a

boom directly underneath the tractor.

If we have to operate in a wind of more than six miles per hour we're losing a great deal of effectiveness. The operator can, however, become accustomed to using the wind to some advantage.

Morning applications are of benefit because of the dew. We're using 20 gallons per acre so we like to spray in the early morning when we have dew cover. I can't honestly say we've seen any noticeable difference in the amount of control between spraying on mornings when we do or don't have dew.

One of the disadvantages of this early morning application is the noise level. The fan on the sprayer plus the high tractor rpm that's needed are loud. We've had few complaints but if you have close neighbors or apartment buildings, I'm sure that this could be a problem.

An advantage of mist spraying is that the machine can be operated in almost any kind of weather condition. If you have a very wet situation you don't have to drive on the fairway — you can drive down the sides. This has saved us many times. In a pythium situation, we can get out there after any kind of rain storm, doing no damage to the fine turf, and still getting a beautiful application of chemical.

I think the mist blower is pretty much goof-proof. We've had no trouble at all with calibration. All you have to do is know your ground speed and pump pressure and the nozzle size takes care of the rest.

It's also a very low maintenance piece of equipment. I think the biggest problem, or the thing that you have to watch the closest, is nozzle size and wear, because you're operating at about 350 lbs. of pressure.

We were using brass tee-jet nozzles and found that we could only spray 18 holes of fairways about twice before changing nozzles. Since then we've changed to the same round steel nozzle that we use in the blower manifold and we only have to change those about twice a season.

There are many different types of stainless steel and hardened steel nozzles that can be used. It becomes a systematic thing to know exactly how much chemical we're going to use on an 18 hole fairway application. For example, if we don't have that extra 10 gallons left over to spray the practice tee area, we know it's time to change those nozzles.

Unlike boom spraying, where you're operating at low pressure nozzle clogging is not a problem.

The mist blower solved the problem of disease control in rough areas around our greens where it's just too tight to get any kind of boom spray equipment in. We can go up around the green very easily and we do this about three times a year. If we get into a situation where we can't get on the green or tee to spray with our regular equipment, we can give it enough of a shot with the mist blower to hold until the weather dries up.

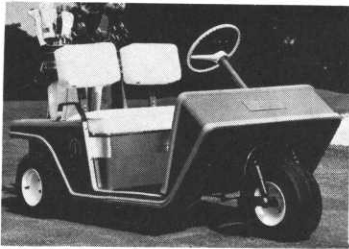
We used to find that leaves were a problem on the fairway. A lot of times we were putting more chemical on the leaves than we were on the grass. We didn't have time to get out and clean them up before we sprayed. With the mist blower there was enough air blast to get the fungicide to the turf.

One of the primary things you must do is to be sure your operator has the proper protective clothing. We require they wear a rubber suit and respirator. We also require them to take a shower as soon as they are finished spraying. WTT

Causes Related to Reduced Water Intake

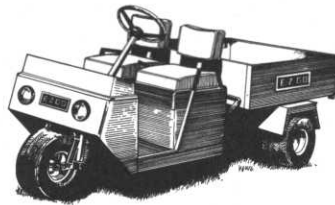
Desiccation is a "wilting" phenomenon. Like wilt, which occurs during the normal growing season, desiccation occurs when evapotranspiration exceeds water intake. This inability of the roots to absorb water, or for the plant to transport it to or through its system, may result from a shallow, poorly branched 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.

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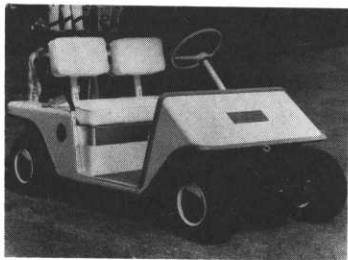


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In late winter-early spring, before the irrigation system has been activated, damage from desiccation may be severe. Water hauled in spray tanks or by other means and applied to critical sites will preclude or minimize loss.

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.

* LOOK FOR REVIEW OF PROTECTIVE *
* MEASURES NEXT MONTH *



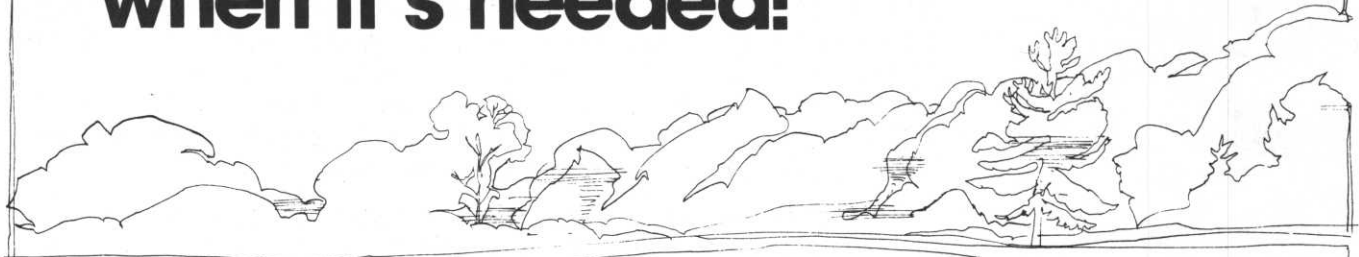
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TOM STELTER, golf course superintendent at the Como Golf Club, has been associated with this St. Paul owned golf course since 1964. Tom started as an assistant at the Lost Spur Golf Club in 1961 before moving over to Como three years later. Appointed superintendent in 1970, Tom not only is responsible for maintenance of the golf course in the summer but is also charged with setting up the ski lifts for use on the course during the winter months. Five children, ranging in age from six to eleven years, keep Tom and his wife, Kathryn, busy from dawn to dusk. With this type of active household, it is easy to see why family bike rides and camping trips are two of Tom's favorite hobbies along with geese hunting and cabinet making.



DAVE DODDS has been the superintendent at the Detroit C.C. in Detroit Lakes for the past four years. Dave accepted this position after having been previously employed as an assistant at both Olympic Hills and Majestic Oaks. A diploma from the Anoka Vo Tech Institute completes his well rounded background in turf management. A member of M.G.C.S.A. since 1970, Dave grooms 27 holes as well as the clubhouse grounds and driving range area. He finds the superintendent's responsibilities at Detroit C.C. surprisingly similar to those of a metropolitan area course. Due to the resort type area of Detroit Lakes, the golf course receives an extremely high amount of play for an outstate club. A bachelor, Dave likes to cross country ski and fish as well as partake in almost every one of M.G.C.S.A.'s outings.

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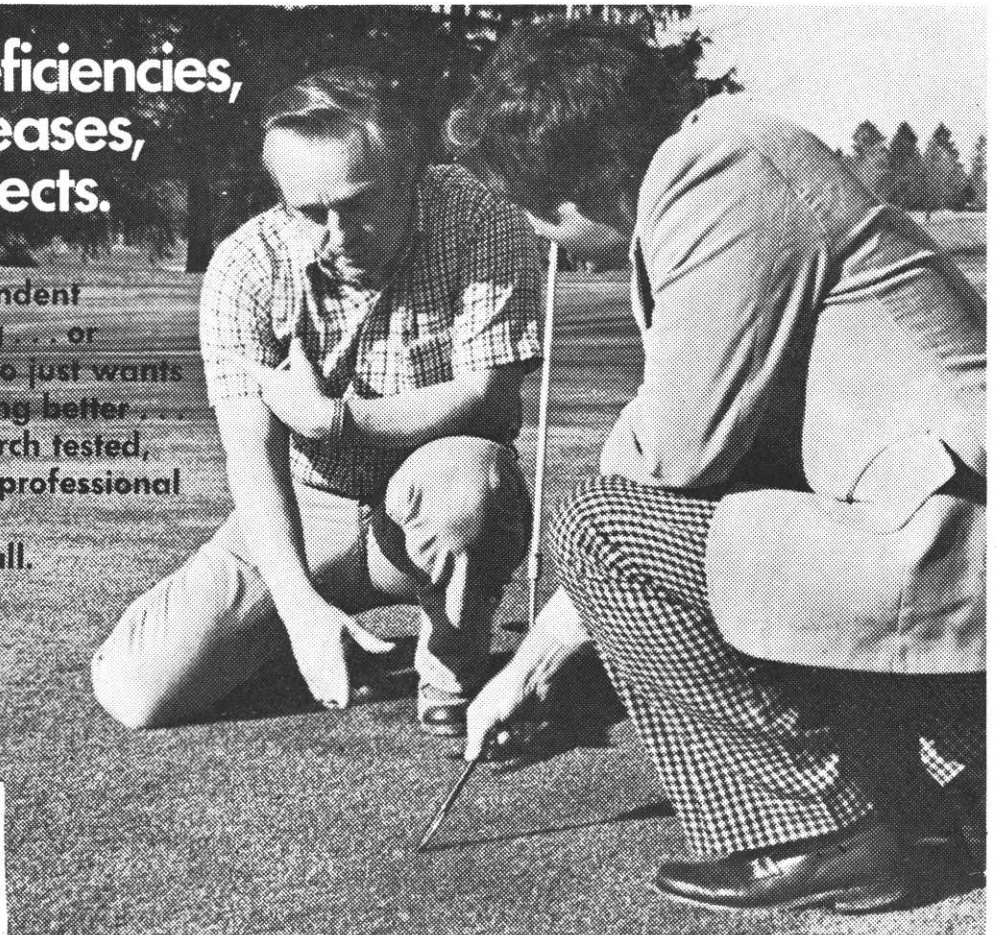
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