Tee to Green

Vol. II, No. 10 | Published monthly by the Metropolitan Golf Course Superintendents Association | December 1971

MGCSA CHRISTMAS PARTY

Date:	Thursday, December 9th, 1971
Place:	Hampshire Country Club Hommocks Road Mamaroneck, New York
Cocktails:	7 PM
Dinner:	8 PM
Dancing:	9 – 1
Price:	$32.00 per couple

Coming Events:

Dec. 8	Pesticide Conference 8:15 Registration Tappan Zee Motor Inn Nyack, New York (Exit 11)
Dec. 17	NJGCSA Christmas Party No tickets sold at door Send check to Jack Martin 600 Colonial Avenue Union, New Jersey $30.00 per couple

1972

Jan. 10-11	Mid-Atlantic Golf Course Superintendents Conf. Holiday Inn, Downtown Baltimore, Maryland Contact: A. D. Watson Sparrows Point Country Club Sparrows Point, Maryland
Jan. 19-21	Golf and Fine Turf – Rutgers University
Feb. 13-18	International GCSAA Turfgrass Conference Cincinnati, Ohio
Mar. 1-3	Turfgrass Conference University of Mass.

MGCSA Annual Meeting, Election of Officers

The following members were elected to Office for the 1972 season:

President:	Everett Wood
First Vice President:	Harry H. Nicol
Second Vice Pres.:	Ron Boydston
Secretary:	Edward C. Horton
Treasurer:	Garry N. Crothers
Sergeant at Arms:	Anthony Altomaro
Directors:	Dominick DiMarzo Pat Lucas, Jr. Gus Powell Anthony Savone John Sundholm Allan Tretera

Job Openings:

Stevensville Country Club
Sullivan Co., New York
18 hole resort golf course
Minimum 3 years experience as Superintendent
College education preferable
Salary $10-12,000
Fringe benefits include housing
Contact: Mr. Kenneth Dinnerstein
Stevensville Country Club
345 West 58th Street
New York, N.Y. 10010
No later than Feb. 1, 1972

Shorehaven Golf Club
East Norwalk, Conn.
18 holes – Private
45 years old
Degree in Agronomy requested
Manual irrigation
Experience as Superintendent
Salary – open
Send resume to: Paul Harris
Chairman of Selection Committee
Shorehaven Golf Club
P.O. Box 721
East Norwalk, Conn.

Tee to Green

DRAINAGE

Edward C. Horton
Superintendent of Golf Courses
Winged Foot Golf Club

The following notes partially summarize the discussion on drainage led by Professor Carl S. Winkelblech at Winged Foot Golf Club on November 15, 1971:

To use the enclosed "The Drain Design Chart" from the 1971 Agricultural Engineers Yearbook, the **Drainage Coefficient** will generally be 3/4"-1" for golf course conditions. This is a measure of the rate at which water should be removed from the soil for turfgrass survival. **Velocity** of water in the tile, designated by V-1, V-2, etc., should be kept greater than 3 feet per second if possible. This would help to prevent settling of sand and silt particles which could potentially block the tile. The **Acres Drained** column represents the total topographical area in which surface drainage is to a common location. **Discharge in cubic feet per second, tile grade in inches per 100 feet** or **in feet per 100 feet** are self explanatory. The results obtained by using this chart would be the determination of tile size.

Further considerations to study when selecting tile are:

1. **Soil Type** will influence the number of gallons which might have to be handled by 1000 feet of tile. For example:

Coarse Sand	– 67 to 438 gal/1000 ft.
Sandy Loam	– 32 to 112 gal/1000 ft.
Silt Loam	– 18 to 45 gal/1000 ft.
Clay & Clay Loam	– 9 to 90 gal/1000 ft.

2. **Spacing** between tile lines is also determined by soil type. For example:

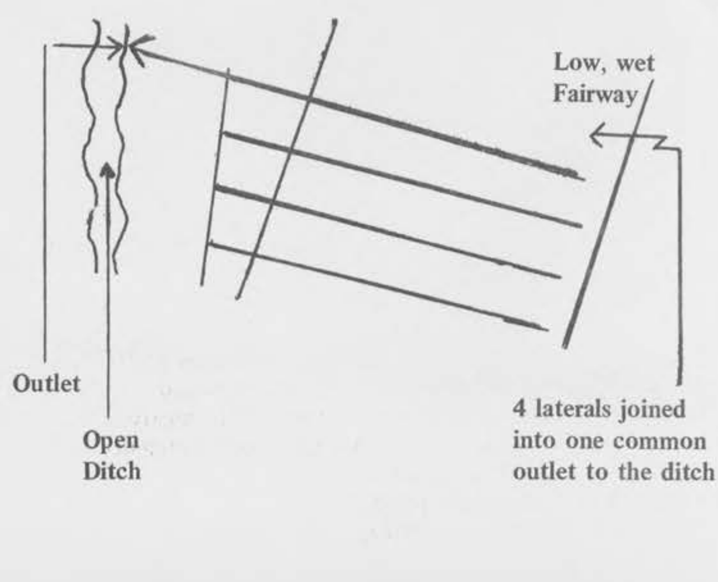
Sandy Loam	– 100-200 ft. apart
Silt Loam	– 60-100 ft. apart
Clay & Clay Loam	– 30- 60 ft. apart

3. **Topography** will, of necessity, influence the placement of tile lines.

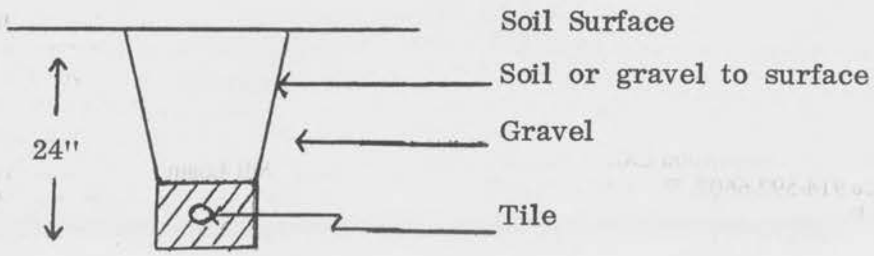
4. The **depth of tile** placement should be 24" if possible. This would help to prevent breakage from equipment traffic as well as draw maximum amounts of water from the soil. Again Soil Types influences this decision. For example:

Sand	– 3 to 4 feet minimum
Clay	– 24"

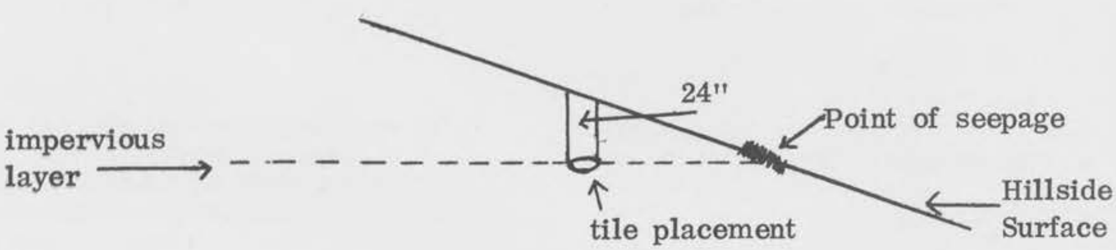
5. **Outlets** for tiles are critically important and maintenance was stressed. One example illustrated particularly impressed me. If running laterals into an open ditch, attempt to consolidate the outlets as much as possible for future maintenance. This could be diagrammed as follows:



6. Types of tile were illustrated. Those discussed were orangeburg tile, agricultural clay tile, ADS plastic tile and poros cement tile. Briefly, Professor Winkelblech approved of all of the above and noted further that:
   a. Poros cement tile should not be used in alkaline conditions.
   b. Poros cement tile would be most suitable in sandy conditions.
   c. Orangeburg tile and ADS plastic tile should be carefully embedded in gravel to prevent mishaping after periods of time.
   d. Although the ADS plastic tile had not been approved for use in New York State at present, it was probably the easiest to install, cheapest to purchase drain tile available and should provide life time drainage if correctly installed.



7. Correction of **Side Hill Seepage** is best accomplished by determing the depth of the impervious layer and placing a tile along this layer to catch water before surfacing.



If the ditch is dug to the correct depth, water should enter from the soil.

8. A soil auger approximately 3/4"-1" in diameter and 4 feet in length will be found helpful in drainage work. This is especially useful to locate tile previously ditched.

Stanley Zontek, U.S.G.A. Green Section agronomist briefly discussed the use of slit trenches for drainage. It was noted that the trenches, when filled to the surface with pea gravel, would provide fast drainage for several years but would in time become less effective.

In summary, I am sorry that the rainy weather prevented field examination of problems at Winged Foot. I had hoped to get some free advice from all who attended. However, I think that Andy Androsko should be applauded for presenting us with the timely opportunity to question Professor Winkelblech and Stanley Zontek at the end of a year which proved drainage to be of critical importance.

REDUCING WINTER DAMAGE ON PUTTING GREENS

by F.B. Ledeboer and C.R. Skogley
University of Rhode Island

Winter injury to turfgrasses often occurs in the northeastern United States, and particularly so on putting greens. Excessive frost heaving in soils of high silt content, and strong winds blowing over open turf combine in dehydrating the turf and surface layers of the soil.

These conditions produce injury referred to as desiccation.

Damage is generally more severe if the turf has been weakened during late summer and fall and if it is underlain by a moderate to heavy thatch layer. Excellent fall management to provide healthy turf for winter dormancy is important in preventing winter injury. This includes proper fertilization, insect and disease control, and frequent and judicial topdressing, combined with aerification and vertical mowing to prevent excessive thatch build-up.

Once heavy damage through desiccation has occurred, considerable time, effort, and, often, frustration are involved in returning damaged greens to acceptable playing conditions. At times even the professional life of the golf course superintendent may be in jeopardy. Superintendents and professional turf specialists are aware of this problem and have devised a number of counter measures.

Winter irrigation and antidesiccant sprays are used to retard transpirational water losses through the foliage. Excelsior, hay, straw or brush have been suggested as insulation against cold temperatures and to trap snow. However, most of these procedures have some serious drawbacks which are responsible for their limited acceptance.

In research work at the Rhode Island Agricultural Experiment Station a number of opaque polypropylene shade screens have been investigated for putting green winter protection. An earlier report showed that dark-colored materials providing 45-55 per cent shade were effective. They provide protection for the grasses, not so much by trapping heat or preventing freezing, but by producing a modified micro-environment in the turf surface with a reduced amount of physical stress on the plants during the winter. These screens are apparently unaffected by weather and will last almost indefinitely if not willfully destroyed.

Further experiments were conducted on both Velvet and Penncross creeping bentgrass putting turf during the winters 1967-68 and 1968-69. In addition to a black polypropylene screen of 55 per cent shade, several nitrogenous fertilizers and snowmold fungicide treatments were employed to determine their effectiveness in conjunction with the protective cover. The tests were started in mid-December of 1967 and late November of 1968.

Velvet Bentgrass Study: 1967-68

In a split plot field experiment, ureaform (Nitroform) and activated sewage sludge (Milorganite) were applied at two and four pounds of nitrogen per 1,000 square feet and compared against an unfertilized check treatment. Fungicide treatments consisted of Cadminate at two ounces per 1,000 square feet applied in 20 gallons of water and Calogran at 10 pounds per 1,000 square feet. Half of all plots were then covered with the polypropylene screens (55 per cent shade). Data were taken in the form of visual turf quality scores which reflected color, density, texture and vigor of the turf.

Results and Discussion

Very little response was observed during December and January, since the turf was dormant when the test was initiated. Some color development was noticed on covered plots by early February. It was most pronounced in combination with the activated sludge treatments. Effects continued to increase slowly during February and March. Progress was related to prevailing weather conditions as the season progressed. Early responses to cover and fertilization were evidenced by the appearance of new basal shoots near the surface. During freezing temperatures these tillers changed color from bright green to a purplish brown – a characteristic change of chlorophyll in plant tissues during cold weather. As long a frost periods were quite prevalent, this purplish color would predominate. As warmer temperatures prevailed (late March), the newly produced growth remained brilliant green. At first little vertical growth occurred. Early turf improvements were produced primarily by the cover but were strongly enhanced by both application rates of activated sludge.

Visual data were taken from late March through mid-May weekly, at first and later at biweekly intervals. Until April 19, the cover treatment was the predominant force in influencing turf quality. After the cover was removed on April 11 and the turf mowed on April 19, the cover effect diminished. Most of the early growth was removed by cutting, and open turf improved in color with normal spring recovery. The subsequent improvement in turf quality after mowing from May 15 to May 19 demonstrated that the cover was not detrimental to the grass since the effect of the cover treatment was still quite noticeable.

Fertilization with activated sludge at four pounds N/1,000 square feet under the cover produced the best turf on all reading dates during the test period, followed closely by the two pound rate. Ureaform treatments did not show significant benefits over the unfertilized check until May 17.

Fungicide evaluations were not made because Tiphula snowmold incidence was small. Both fungicides prevented snowmold completely in open as well as covered areas. The thought that the cover would provide better conditions for snowmold development could not be substantiated. Number and size of diseased areas in protected plots were not greater than in open turf of the untreated check areas. Nitrogen sources and rates apparently had no influence on snowmold incidence.

Penncross Study – 1968-69

A test area of Penncross creaping bentgrass was selected for a similar study the following year. The site had been maintained as putting turf the previous summer and had received fertilization to produce acceptable growth, density, and color. The cutting height was one quarter inch.

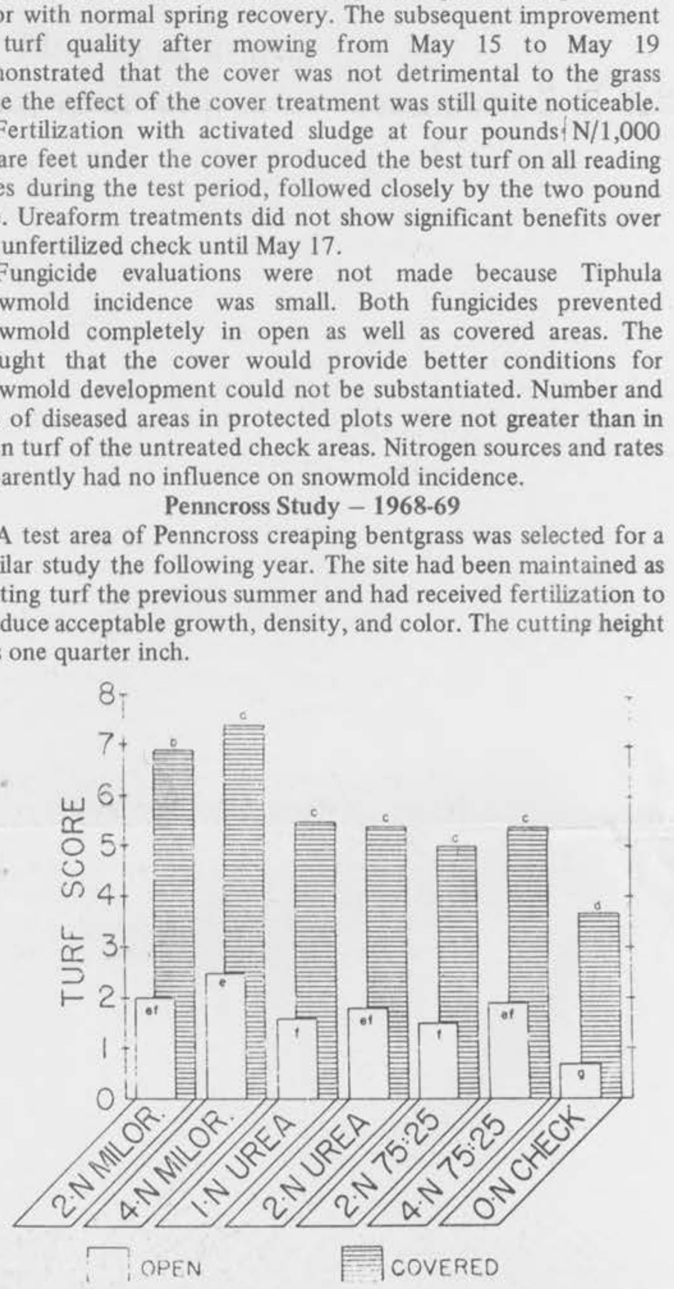


Figure I. Response of Penncross putting turf on 4/4/69 to cover and fertilizer treatments applied during the winter.

Fertilizer treatments were made on November 22 as follows:

1.Activated sewage sludge at two and four pounds N/1,000 square feet.

2. Urea at one and two pounds N/1,000 square feet.
3. 75:25 Ureaform: Urea at two and four pounds N/1,000 square feet.
4. Check-no fertilization.

The test was laid out in a split plot design. Two snowmold fungicides were applied across the fertilizer treatments on November 25, Calogran at eight pounds/1,000 square feet and Calochlor at four ounces/1,000 square feet. Half of all plots were covered with the polypropylene screen (55 per cent shade) on December 10. The cover remained in place until April 8, 1969, and half of all plots were mowed the first time on that day. All plots were mowed completely on April 15.

Because of the generally low incidence of snowmold in the test site, data on treatment effects again were omitted. As in the previous winter, the cover did not appear to increase snowmold incidence or damage.

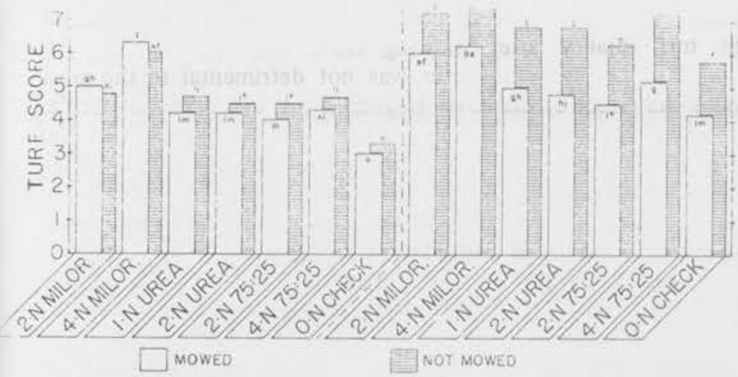


Figure II. Effect of mowing on Penncross turf quality at time of cover removal on 4/8/69 as influenced by cover and fertilizer treatments applied during the winter.

Results and Discussion

Results obtained were quite comparable to the 1968 data. Turf quality was significantly increased by cover and fertilizer treatments.

The cover treatment, again, strongly influenced spring recovery early in the year (through March). Turf score data in Figure I, on April 4, demonstate this effect. Differences between fertilizer treatments on open turf were only small at this time but all were significantly better than the unfertilized check. Turf recovery under the cover was enhanced most by activated sludge treatments, producing excellent quality turf by early April. Both rates were clearly more effective than either urea of the 75:25 mixture.

After the cover was removed on April 8, half of all plots were mowed at 3/8 inch. Mowing on the other half was delayed until April 15. This cutting schedule was used to detect if a delay in mowing after removal of the cover would prevent the severe color loss of turf encountered in earlier studies. Turf scores were taken one day after mowing in both cases. The data are shown in Figure II and IV for previously covered turf as well as open plots.

Early mowing resulted in loss of color, depressing turf scores more severely in covered plots than in open turf. Early mowing of open turf fertilized with activated sludge actually improved appearance slightly for a while because mowing removed primarily necrotic leaf tips and exposed new green foliage below (Figure II).

The setback produced in covered plots was quite severe for all fertilizer treatments regardless of rate or types, but it was no worse than that suffered by the check. The smallest reduction in turf scores occured with the activated sludge treatments, This would indicate – and it was clear from the appearance of the turf – that new growth produced was bright green to the base of the plants and that this growth was not overly succulent at the time the cover was removed.

Data in Figure III represent turf quality of the test plots one week later after the entire plot area had been cut at 1/4 inch. Overall quality had increased slightly in numerical values as temperatures became more favorable. It is clearly evident, however,that the delay of mowing by one week did not adversely affect the turf in previously covered plots. The detrimental effect of earlier mowing on open plots on April 15 was similar to the reduction suffered by covered plots.

While significant differences still persisted between fertilizer treatments, relative differences became smaller as the season progressed. The effect of the cover also diminished with time.

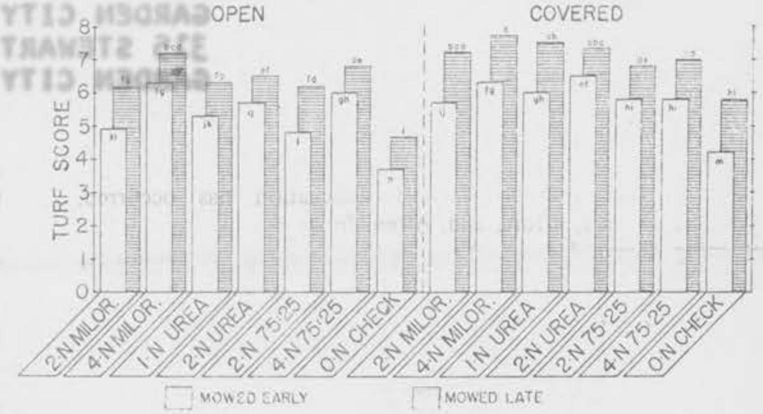


Figure III. Effect of delayed mowing on Penncross turf quality on 4/16/69. One week after cover removal as influenced by cover and fertilizer treatments applied during the winter.

Summary

Late fall nitrogen fertilization and protective covers strongly affected the time and intensiveness of spring recovery of bentgrass putting green turf in test conducted in Rhode Island during the winters 1967-68 and 1968-69. Cover strongly enhanced turf quality early in the year, but the effect diminished slowly as the season progressed.

Fertilizer treatments variably intensified the cover effect depending on source and application rate. Of the fertilizer sources tested, activated sludge at four pounds N/1,000 square feet consistently gave the best results, especially early in the season. It was followed closely by the two pounds N rate, but urea at one and two pounds N/1,000 square feet gave similar results. A mixture of 75 per cent ureaform and 25 per cent urea at two and four pounds N/1,000 square feet gave somewhat poorer results. Ureaform (UF) alone, at the same rates, was ineffective in producing the desired early results. UF did not produce a significant response until the normal growing season was well under way.

Timing of cover removal was critical. Subsequent management requirements of the putting surface depended on proper timing. The cover should be removed early enough to avoid overstimulation of succulent foliage, yet late enough to escape cold weather injury. Removing the cover a few days too early is better than removing it too late!

Mowing should be delayed for several days following removal of the cover so that the turf can acclimate to the open environment (higher light intensity and greater moisture as well as temperature differentials). No apparent damage is sustained with delayed mowing, and the turf continues to develop normally.

Two winters of testing did not produce a clear picture relative to snowmold incidence in conjunction with late fall fertilization, protective cover and snowmold fungicides. What can be stated is that the cover has no apparent influence on snowmold occurrence. Preventive snowmold fungicides should be applied as usual prior to covering of the turf in fall or early winter.

Tee to Green

Edward C. Horton, Secretary
145 Crotona Avenue
Harrison, New York 10528

MAMARONECK N.Y. DEC-6'71 U.S. POSTAGE .08

First Class

MELVIN B LUCAS JR A
GARDEN CITY GOLF CLUB
315 STEWART AVE
GARDEN CITY NY 11530

GOLF COURSE SUPERINTENDENTS ASSOCIATION OF AMERICA