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MEETING NOTICE

Date:	August 31, 1972
Place:	Silver Springs Country Club Ridgefield, Conn.
Golf:	12:00
Lunch:	Available in grill room
Cocktails:	6 P.M.
Dinner:	7 P.M.
Program:	Morocco, As We Saw It Ted and Nancy Horton
Host:	Dick DePencier
Directions:	Saw Mill Parkway to Route 35. Turn right to Ridgefield, Conn. Just outside Ridgefield look for sign MGCSA meeting, Silver Springs Road

SPECIAL NOTICES

Invitational at Whippoorwill has been changed to Sept. 14 due to circumstances beyond our control.

Chairman of the Nominating Committee for 1972 is Richard Allen.

COMING EVENTS

August 23	Rhode Island Turfgrass Field Day
Sept. 11	Field Day Brae Burn C.C.
Sept. 12	Rain date Field Day
Sept. 14	Invitational, Whippoorwill Club
Oct. 3	NJGCSA Equipment & Supplies Field Day
Oct. 4	Mountain Ridge Country Club West Caldwell, New Jersey Call Skip Cameron for further information
Oct. 4	Rain date NJGCSA Field Day
Oct. 4	Sunningdale Golf Club
Nov. 16	Lake Isle C.C. Annual Meeting

MGCSA News:

It was another fine turnout at Mt. Kisco. It was a nice day for golf as the rains had finally stopped. Fred Sheyhing had the course in great condition considering the many low areas on the course. Drainage is one thing, but where or how to drain a low flat area is another. It was the Superintendent's Championship and as usual it's either Chuck Fatum or Frank Lamphier. This year Frank came through the winner. The evening was high lighted with an excellent steak dinner and a humorous talk by Dean Dennis from Stockbridge, University of Massachusetts. It was the Dean's first try at golf and he did very well his first time out so he will probably become a golf enthusiast from now on. It was nice to see Stan Priest, and Dick and Bob DePencier brought along their Dad for the day. Bob has been very busy preparing for the Westchester Classic. There was a nice write-up in the local paper about Bob and the Classic.

Dom DiMarzo and Bill Caputi have been busy getting ready for the Field Day. If any member knows of a commercial firm that might be interested in participating in our Field Day, please contact Dom DiMarzo.

There weren't too many local Superintendents at the Rutgers Field Day. The turf breeding program is probably one of the best in the country so it is interesting to see what new grasses are being developed. They have an excellent, well-rounded staff to cover all areas. **Note Chip Cal users:** It was revealed at Rutgers that Chip Cal does cause injury to certain Blue Grasses noteably Fylking. Dick Allen standing next to Dr. Halinsky did a slow flip.

The lower fertility rates always seem to look better especially at this time of the year. We probably could have a very interesting panel discussion on fertilizing greens, tees and fairways.

Take a good look at some of your bent patches on your golf course. If you feel that any of them seem especially good, please bring a sample to Dr. Engel as they are just now starting research on improved bent grasses. They need samples of better strains which you just might be able to furnish. If you have some especially strong poa, bring that too.

Metropolitan Golf Course Superintendents Association

presents

ANNUAL TURFGRASS SUPPLIES IRRIGATION
and
EQUIPMENT FIELD DAY

MONDAY, SEPTEMBER 11, 1972 – 1:30 P.M. – 5:30 P.M.

BRAE BURN COUNTRY CLUB
BARNS LANE, PURCHASE, NEW YORK

FREE BEER FREE DOOR PRIZES FREE ADMISSION FREE PARKING

All interested persons are welcome to view displays and demonstrations under actual field conditions

RAIN DATE WILL BE SEPTEMBER 12, 1972, TUESDAY

Tee to Green

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FEDERAL OCCUPATIONAL SAFETY & HEALTH ACT

The Williams-Steiger Occupational Safety and Health Act of 1970 (OSHA) which establishes on-the-job safety and health standards, applies to all golf courses. An employer is required to have his course, and everything in or on it, in a non-hazardous condition at all times. For example, all holes (presumably not the ones on the greens which encase the cup) must be guarded to protect employees from falling into or through them regardless of where they may be situated. Use of tractors, carts, sprayers, aerators, mowers, and other golf course machines, is covered by OSHA standards. Likewise, fertilizers and pesticides, disposition of dangerous materials, walking and working surfaces, personal protective equipment, environmental controls, fire and medical and first aid protection, materials handling and storing, machinery and machine guarding, powered tools, electrical requirements, etc., are covered.

The standards that affect golf courses (same as for all industries) are contained in Part II of the Federal Register of May 29, 1971 entitled "Part 1910-Occupational Safety and Health Standards." A copy of this, as well as all other needs and information, can be obtained from the regional office, Department of Labor, Hartford, Conn.

Penalties for non-compliance can be severe. The following are germaine to all golf courses:

Failure to post the official OSHA poster – $50
Failure to post citation received at the worksite – $500
Failure to post OSHA from 102, summary – $100
Failure to report fatality, or incident in which five or more employees are hospitalized – $200
Failure to maintain OSHA form 100 Log, or form 101 – $100
Failure to compile OSHA form 102 – $100

Actually, depending on the gravity of the violation, good or bad faith of the employer, his safety record, and size of business, the employer can be fined up to $1000 a day per violation.

Just recently, safety standards for construction vehicles covering roll-over protective structures were amended by the OSH Administration. The vehicles covered by the amendments include all rubber-tired, self-propelled scrapers, front end loaders and dozers, crawlers tactors, crawler-type loaders, motor graders and wheel-type argicultural and industrial tractors of more than 20 horsepower used in construction work. The standards require that roll-over structures be able to bear at least double the weight of the machine or meet the Society of Automotive Engineers criteria and minimize the likelihood of a complete overturn, thereby reducing the possibility of the operator being crushed. Any machines with a roll-over structure that meet the requirements of the State of California, the U.S. Army Corps of Engineers or the Bureau of Reclamation of the U.S. Department of Interior in effect on April 5, are considered to be in compliance with the new standards. The roll-over structures must be installed under a progressive schedule of dates. The effective date of these amendments for new equipment is September 1, 1972. The amendments contain a schedule for effective dates for retrofitting machines built after July 1, 1969. The retrofit date for machines manufactured prior to July 1, 1969 has been delayed pending further study. The Construction Safety Advisory Committee recommended the adoption of five standards recently issued by the Society of Automotive Engineers on roll-over protection to update the amendments. The five involve prime movers; wheeled front end loaders and dozers; track-type tractors and front end loaders; motor graders; and laboratory evaluation of the protective structures. George Guenther, Assistant Secretary for Occupational Safety and Health, the Department of Labor, indicates that OSH Administration will initiate action in the near future to implement the amendments.

DROUGHT STRESS AS A FACTOR TRIGGERING FUNGAL DISEASES OF TURFGRASS

by Dr. R. M. Endo and P. F. Colbaugh
University of California – Riverside

Fungal diseases of crop plants, such as potato and wheat, usually worsen with continued monoculture since pathogen populations tend to increase in the crop debris and in the soil. Although turfgrass diseases occur on golf courses each year, their amount and severity vary from year to year and from location to location, bearing little relationship to the age of the planting.

The erratic occurrence of turf diseases is also evidenced by the

limited areas of grass that are diseased even under the most favorable conditions. The frequent failure of disease to develop is difficult to explain since even a small lawn consists of millions of ground-hugging plants of similar genetic make-up and disease susceptibility. The crowded plantings and grass debris (mat and thatch) at the soil surface favor the formation and retention of high humidity and even temperatures required for the growth and rapid plant to plant spread of the disease. Guttation and dew formation is almost a daily occurrence and the population of fungal pathogens apparently increase yearly in the soil, in the mat and thatch and on infected plants. Furthermore, turfgrass pathologists have had to rely on natural disease development for fungicide evaluations, because most attempts to create disease artificially in the field have failed. The factors responsible for this failure, and the erratic development of disease are probably biological in nature.

Facultative fungal parasites of turfgrass (e.g. *Rhizoctonia solani, Sclerotinia homeocarpa, Pythium aphanidermatum, Helminthosporium sativun,* etc.) are constantly being exposed in the following ways to antagonism and competition from the flora and fauna, and therefore their development is subject to biological influences throughout their lifetime:

1. The dense planting and the short, prostrate growth habit of the grass plant place it in contact, or in proximity to the microbiologically active surface litter and soil.
2. The plants are constantly being exposed to microorganisms by means of foot traffic, by maintenance practices such as mowing, fertilization, and irrigation, and by the varied activities of the macrofauna such as earthworms, nematodes, birds, and insects.
3. The grass clippings and the death of lower leaves, stolons, rhizomes, roots and tillers form the surface litter which is composed of fresh and decaying grass debris in various stages of decomposition. The constant addition of fresh clippings to the litter during the growing season is unique and constitutes an effective and continuing source of food for the litter-inhabiting microorganisms which actively compete with the fungal parasites for food.
4. Depending upon the depth of the litter, a variable amount of the stems and roots will be covered by the biologically-active litter.
5. Because of the extreme root density and their surface location, the nutrients which leak out from fresh grass clippings may influence the growth of microorganisms living on or near the root surfaces as well as the litter-inhabiting microorganisms.

Thus, the total microbiological activity may, at times, be very high in the litter and in the soil, and undoubtedly influences the activity and survival of parasitic fungi.

We suspect that the erratic occurrence of turfgrass diseases caused by these parasites is due to the suppression of them by competitive and antagonistic activities of the flora and fauna. Disease usually occurs when resistance of trufgrass plants has been reduced, or when conditions favor the development of the pathogens more than they favor the development of the competing and antagonistic flora and fauna. Drought stress is an example of a commonly occurring condition or "trigger" which probably frees the fungal parasite from the restraining influence of the competing microorganisms, and allows the parasite to develop. The occurrence of localized dry spots in turf is a commonly occurring problem due to compacted soil, infrequent irrigation, uneven therrain, lack of rainfall, excess mat and thatch, wind disruption of sprinkler patterns and a high degree of water runoff.

The first experimental evidence that low soil moisture may increase certain turfgrass diseases was presented by Couch and associates. They demonstrated this relationship for dollar spot caused by *Sclerotinia homeocarpa* and for greasy spot caused by the water-mold fungus, *Pythium ultimum.* Bean has not only noted that the field occurrences of *Fusarium* blight of bluegrass caused by *Fusarium roseum* is correlated with the occurrence of dry spots but also that the disease can be greatly reduced by proper watering.

The mechanisms responsible for this increase in disease in dry soils have not been investigated in turfgrass. It may therefore be instructive to consider the research of Cook and Papendick who found that foot rot of wheat caused by *F. roseum,* the same fungus that causes *Fusarium* blight of turfgrass, is favored by dry soils. They found that the number and activities of soil bacteria were reduced greatly at soil mositure levels below -8 bars, that the resistant thick-walled spores of *F. roseum* germinated in soil well below the permanent wilting point of plants (-15 bars) and that after germination occurred, the threads of the fungus were able to germinate and infect plants. They also reported that soil bacteria were not only able to inhibit fungal germination but were also able to dissolve the walls of the fungal threads. Cook and Papendick therefore attributed the heightened parasitic activity of the fungus in dry soils to the reduction in populations and activities of soil bacteria.

Following the lead of Cook and Papendick, the effects of drought stress are presently being investigated in turfgrass by P. F. Colbaugh, graduate student at the University of California, Riverside. He has found that disease activity of *Helminthosporium sativum,* which causes leafspot and foot rot of Kentucky bluegrass, is increased under conditions of low soil moisture. Field observations on the incidence of the disease indicated that leafspot symptoms decreased with increasing distance of sampling from drought-stressed areas of bluegrass lawns. Severe foot rot and spore production by the fungus on thatch and on infected plants were observed in drought-stressed turf but not in areas receiving adequate water; only occasional leafspots were found in watered areas of the lawn.

The fungus has been recognized by previous workers to be a very weak competitor in the presence of other microorganisms. There is evidence which strongly supports the involvement of microbial activity in suppressing the ability of the fungus to develop on the thatch debris. Spores placed on moist thatch residue do not germinate, even though adequate moisture is present, but when washed from the surface of moist debris, they germinate readily. The inhibitory effects of moist thatch residue can be removed by thoroughly washing, sterilizing, or drying debris. The inhibitory property can be restored to the sterilized thatch debris if microorganisms are added to the residue. Immediately after rewetting the dried thatch, it greatly favors germination of *Helminthosporium* spores but the inhibitory property of moistened thatch debris returns after a few hours. At the time of rewetting dried thatch debris, large quantities of sugars and proteins are released. Both the level of release and the rate of release were greater from dried debris which was remoistened than from moist debris. Since abundant nutrients are present when the dried debris is remoistened, there is sufficient food to nourish not only the *Helminthosporium* fungus, which is a poor competitor, but the numerous competing microorganisms as well.

It appears that the inhibitory property of thatch debris is active only when the debris is in a moist state and when microorganisms are present and active. This coincides with the period of greatest microbial activity on the decomposing residue. Drought lowers both microbial numbers and their activities. Upon rewetting, the dried thatch growth and microbial activities are resumed at high levels until equipibrium is once again established with the available food supply.

Another important aspect of drought stress is its effect on stopping plant growth. When growth stops, *Helminthosporium* infections on the lower part of the bluegrass plant tend to develop into the lethal foot rot stage. But when growth is continuous as in the presence of moisture, such infections tend to develop into harmless leaf blade infections.

Effects of drought on reducing microbial activities and increasing the competitive ability of *H. sativum* have been briefly described. Other influences of drought and its effect on turfgrass disease activity await further investigation. Our goal is an understanding of the nature of facultative fungal parasites. Our goal is an understanding of the factors responsible for "triggering" them into activity.

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