

# NORTHERN MICHIGAN TURF MANAGERS ASSOCIATION

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1147 SANTO

TUESDAY, JULY 17th, 1979  
ANTRIM DELLS GOLF CLUB

TRAVERSE CITY, MI. 49684

PHONE: 616-947-9274

The above information tells you when the next meeting of this Association will be. This is a different date than printed in our membership booklet so please be sure that on your appointment calendar that you will be free to be with us.

Prior to this date of July 17th, there will be another important date for you to consider. Field Day at Michigan State University will be held on July 10th at East Lansing. Registration will be 9:00 A.M. at the Crops Barn, Mt. Hope & Beaumont Road. This is the same location as other years. While there, please be sure to see the location where the new turfgrass research building will be located since it is close by and on the southeast corner of Farm Lane and Mt. Hope. Two years from now, this will be the location where Field Day will be held in 1981.

For the benefit of you that do not know where Antrim Dells is located, it is at Atwood, west side of U.S. 31, 13 miles south of Charlevoix, overlooking Grand Traverse Bay. It is a beautiful 18 hole golf course built by Jerry Matthews and one of his best. It is so well thought of that they are playing the qualifying rounds there for the Michigan Amateur. Considerable thought has been given to move the tournament there in the near future.

Robert McElheny is Superintendent, Gene Naymen is the Golf Professional and Jeff Kirby, the General Manager. Starting times are necessary and these can be procured by calling 616-599-2679, the Pro Shop. Lunch is available in case you desire a bite before you tee off.

Dinner will be served at 6:15 P.M. and this time we must know of the number that will be there by July 11th. We must advise the Chef there so that he can procure the meat for our party so don't delay in returning the postcard. Get it in the mail today.

Our speaker for the evening will be the architect that designed this golf course, Jerry Matthews of the firm W. Bruce Matthews & Son. He will be able to fill us in on all the details concerning Antrim Dells from the very beginning to what we see there. We should look forward to a very interesting evening with many new ideas to take back with us.

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We want to report that the benefit day for The Michigan Turfgrass Foundation was very successful at Cadillac Country Club on June 13th. Our sincere thanks go to our Golf Committee Chairman and Host, Joe Yoder. It was a beautiful day in every respect, fine weather, good conditioned golf course, splendid cooperation by the staff and above all, an excellent steak that makes my mouth water just by writing about it. We are now looking for a location where we can hold our 4th Benefit Day in 1980 therefore if you would like to host this affair, please advise.

Diseases

**FUSARIUM BLIGHT:  
A Research Progress Report**  
Dr. Richard W. Smiley  
Dept. of Plant Pathology  
Cornell University, Ithaca, NY 14853

Fusarium blight of Kentucky bluegrass (*Poa pratensis* L.) continues to be a severe problem in southeastern New York, and it is, therefore, given considerable emphasis in the Cornell University turfgrass disease research program. This report summarizes some recent findings.

All plant diseases are dependent upon the presence of the pathogens, the presence of susceptible host plants, and the existence of environmental conditions that are more favorable to the pathogen's activity than to the growth of the host or of the pathogen's microbial competitors. Each of these parameters is being studied in our program.

**THE PATHOGEN**

*Fusarium* species are a normal and ubiquitous component of the turfgrass microflora, and are, therefore, almost always associated with healthy as well as with dying grass. The diversity of *Fusarium* species in turf is large (Smiley and Craven, 1979), and many species are capable of infecting living tissue. But infection of living plants that have fusaria occupying their crown and root tissues do not always succumb to disease. The disease-causing activity of the fusaria in living tissues becomes amplified if the plant undergoes a stress that causes a general weakening of the plant. Fusaria readily begin the decomposition process of the weakened plants in which they live, a similar process to that of the primary decomposition of plants that have died without being diseased. Turfgrasses continually produce new tissue, and the older parts are continually senescing and being decomposed. *Fusarium* species are important components of this natural recycling of nutrient elements.

In some instances, fusaria are not the dominant fungi in tissues of plants which exhibit the typical symptoms of Fusarium blight. Species of *Rhizoctonia*, *Curvularia*, or *Drechslera* (*Helminthosporium*) are occasionally the dominant or the only detectable fungi which can be isolated from the diseased plants, but usually only one of these fungi will be dominant in a particular diseased stand. In most instances, fusaria are present, yet we must ask why the other fungi are apparently capable of causing the same symptoms as fusaria in the Fusarium blight disease. Perhaps it is because there is nothing magical about *Fusarium*, except that it is most prevalent on grass at the time the disease occurs. It is known that *Drechslera* and *Curvularia* dominate the composition of leaf-surface fungi in the spring and fall, and *Fusarium* species are most prevalent in the summer. *Rhizoctonia* is a soil inhabitant that is active over a wide temperature range. The occurrence of any disease during the summer is, therefore, likely to include fusaria as primary or secondary invaders of weakened leaf and crown tissue. Perhaps the overall symptoms of this disease are more indicative of plant growth patterns and of plant stress than of the activity of a particular pathogen, and therefore, the actual pathogen which attacks the weakened plant is unimportant. This hypothesis will be carefully examined in future investigations.

Several of our recent studies have indicated that Fusarium blight has been most severe on plots where the lowest numbers of fusaria were counted in soil, and where the lowest percentages of *Fusarium*-colonized plant crowns occurred prior to disease symptom development. The meaning of these results is not easy to recognize. Tentative explanations, which have not been tested experimentally, are: 1) the *Fusarium*-colonized plants may have been altered in their chemical composition such that they were less severely stressed when the environmental conditions or the management program caused a general weakening of the overall plant population; or 2) the

higher population of fusaria in some plots decomposed plant tissue more rapidly and thus less decomposable organic litter was in that turf when the environmental stresses occurred. These concepts must be studied further.

It may be concluded that the pathogenic fusaria are almost always present in turf, but if they are not, equally-effective pathogens surely are, and they can all cause the characteristic diseased condition of grass which we know as Fusarium blight.

**THE HOST**

Although greenhouse tests have suggested that creeping bentgrass is susceptible to Fusarium blight, this has rarely been observed in the field. Transforming bluegrass fairways to bentgrass fairways has, in fact, been accelerated on one New York golf course where the blight reduces the bluegrass competition so that the bentgrass can become established more rapidly. The bentgrass has not been affected by this disease.

Information is now available about the relative susceptibility of seeded Kentucky bluegrass cultivars to Fusarium blight (Funk, 1976, Turgeon, 1976; and Gibeault et al., 1977); however, little is known about the comparative susceptibilities of cultivars when they are established from sod. The reasons why seeded cultivars differ in their susceptibility to Fusarium blight, and why the patch symptoms occur as they do are also unknown. These aspects of the disease are being investigated in an attempt to develop more efficient control measures.

It is my hypothesis that the patch (frog-eyes, crescents, or solid patches) symptoms may be a reflection of the bluegrass growth habit. The question becomes one of defining a plant that originated from a single seed, as it ages and becomes more complex. The biology of tiller and rhizome growth, and of apomictic reproduction are being studied. It is known, for instance, that from 0 to about 20% of the seeds in a seed lot of any one cultivar are genetically different from the other 80 to 100% which are genetically identical to one another. Could the plants arising from the off-type seed be more prone to Fusarium blight, and the differences in susceptibilities among cultivars reflect the heterogeneity of seed lots?

The climate, soils, and geography of each cultivar's origin are also being investigated for possible linkages with the cultivar's susceptibility to Fusarium blight. A superficial and thus preliminary survey suggests that the most susceptible cultivars were derived from parents or selections taken from more northerly latitudes, from shaded areas, or from higher elevations. These factors will be considered to determine if they can be used to predict a cultivar's potential susceptibility to this disease. If so, breeders would have new guidelines to include in their search for resistant cultivars.

**THE ENVIRONMENT**

Fusarium blight is known to become most prevalent on heavily-fertilized turf, or turf that is cut too low, on older turf unless it is established from sod rather than from seed, on fully-sunlit sites, and on turf near heat-accumulating sources such as sidewalks, streets, or buildings. The disease has also been thought to be associated with drought stress, with low soil pH, and with heave accumulations of thatch. Each of the latter three factors is contradictory to the results of recent research findings.

A survey of weather records for 1966 and for 1973 to 1978 (Smiley, Craven and O'Knefski, 1979) indicated that Fusarium blight always occurred soon after major rainfall events, regardless of the presence or absence of subsequent droughty periods. There was also no apparent relationship between the disease and summer temperatures. These results, illustrated in Figure 2, are consistent with the occurrence of the disease on seemingly well-watered lawns and fairways, and with the severe occurrence of the disease in 1976, which was one of the wettest summers in recent history. Since the disease

followed major rainfalls even on irrigated turfgrasses, the length of the wetting period may be of major importance since irrigation cycles are brief in comparison to the wetting cycles of large storms.

Smiley and Craven (1977) observed that no relationship existed between *Fusarium* blight and either the thatch-plus-soil pH or the depth of thatch at the Mill River Club on Long Island, where the Kentucky bluegrass fairways are about 12 years old. However, we have now obtained much different results on a sodded bluegrass plot at Ithaca. The most disease on the sodded plot occurred where pH values were highest, and where the thatch layer was thinnest.

Decomposition of thatch is most rapid when the soil and thatch are not acidic, when they are well aerified, when the temperature is high, and when they are alternately moistened and dried. Decomposer organisms, including the fusaria, are favored by these conditions. Decomposition becomes intense when dry thatch is remoistened, and a large quantity of potentially toxic organic chemicals are released from the debris, especially when aeration is poor. Anaerobic and near-anaerobic conditions have been measured in thatch on sunny days following major rain-storm or irrigation events (Smiley, Craven and O'Knefski, 1979). It is of interest to determine whether plant-derived toxins or whether poor aeration of thatch, each of which would inhibit root functions, could be involved in the predisposition of bluegrass to *Fusarium* blight.

The benzimidazole fungicides (benomyl, methyl thiophanate and ethyl thiophanate) were shown to be ineffective against *Fusarium* blight on several golf courses in New York and in Pennsylvania in the early 1970's. Smiley and Howard (1976) observed that the majority of fusaria on one such golf course were tolerant of the benzimidazole fungicides, and pathologists in Pennsylvania made similar observations. We attributed the inefficiency of these chemicals, which are still the only commercially-available controls, to the presence of the tolerant strains of *Fusarium*. But recent observations of these golf courses indicate that these fungicides are now beginning to control this disease again, even though the tolerant fusaria are still prevalent. It is now also evident that just prior to the years of uncontrollable diseases, each of the golf courses in question had been treated with tricalcium arsenate herbicide to control *Poa annua* (Smiley, Craven, and O'Knefski, 1979). The degree of disease uncontrollability appears to be in proportion to the amount of herbicide applied over the previous years, and it was shown experimentally that this chemical greatly reduces the oxidation of thatch and increases the occurrence of *Fusarium* blight. Smiley and Howard's explanation of the inefficiency of benzimidazole fungicides on these sites appears to have been based on insufficient knowledge, and the later studies now cause us to question not only whether the benzimidazole-tolerant fusaria are important for disease development, but also whether the presence of fusaria is at all necessary for disease to occur.

The benzimidazole and new experimental fungicides that control *Fusarium* blight are all systemically-translocated, and all can alter the appearance of the turfgrass stand. The best suppressors of this disease are the fungicides that most visibly alter the turfgrass color and the leaf shape, size, angle, and growth rate. It can be assumed that each of these fungicides also alters the physiology of the plants, that is, that each has growth regulant activities. The benzimidazole fungicides have been proved to be substitutes for plant hormones. They are similar to the

cytokinins which regulate plant senescence, and which are necessary for plants to survive stressful environmental conditions. By supplying these fungicides to plants, the plants would be able to withstand greater-than-normal stresses of excess radiation, excess heat, drought, and anaerobiosis. It, therefore, becomes imperative to determine whether the disease-controlling effect of the benzimidazoles is due to fungicidal activity, to the alleviation

of plant stress, or to a combination of both. Moreover, the benzimidazoles differ in their hormonal efficiency; benomyl is slightly more efficient than methyl thiophanate, and both are considerably more efficient than ethyl thiophanate and thiabendazole. The same sequence and magnitudes occur for these fungicides in their ability to control *Fusarium* blight and several other diseases. Much more research on the influence of fungicides on the physiology of plants is required to answer the questions raised by the relationships summarized here.

### CONCLUSION

The absolute importance of the environment and the irregularities found in the relationship between *Fusarium* species and *Fusarium* blight lead me to question the importance of fusaria as a primary cause of this disease. The cause and the control of the disease can be explained without implicating the fusaria, although it is certainly recognized that these fungi are potentially pathogenic and are always present in turfgrasses. By questioning whether fusaria are always (or ever) involved as primary pathogens, I feel that research progress can be accelerated to solve the many mysteries that lie unanswered concerning the *Fusarium* blight of Kentucky bluegrasses.

### THE FUTURE

Additional research on the causes and control of *Fusarium* blight dominates our research program. Sodded turfgrasses have not been studied in the past, and are therefore being given much emphasis. Sod of Adelphi, Merion and A-34 Kentucky bluegrasses were installed on a fairway by the Mill River Club in Oyster Bay. The 12,000 square foot plot will be used to conduct investigations of varietal susceptibility, mowing height, soil pH, soil fertility, soil aeration, herbicides and fungicides, as well as some rather academic questions related to this disease. A 9,000 square foot sod plot is also being established at the Pine Lawn Memorial Park at Farmingdale. Dual automatic irrigation systems are being installed to create two different watering regimes, and up to 20 different varieties and/or blends will be placed in each of the two areas. Other variables on the plot will include a cutting-depth study, a sod origin study, and several studies of academic interest. Studies on additional sodded and seeded stands are being set up at Ithaca. In 1981 we will cut the sod produced by about 4000 individually cloned plants at Ithaca and move them to Long Island to observe their susceptibility to *Fusarium* blight. Detailed notes on each plant will be made from the time of its emergence as a seedling until it is 5 to 6 years old. An intensive fundamental research program is also underway in our laboratories and greenhouses at Ithaca; including studies of toxins produced during thatch decomposition, of hormonal effects of blight-controlling fungicides, of growth habits of individual bluegrass plants, of climatic conditions in the regions of the world where different bluegrass varieties were originally found or bred, of precise regions of the USA where blight occurs, and of other concepts.

Your moral and financial support of these investigations has been truly appreciated and essential. We look forward to additional cooperation with each of you, and to the potential of touring the plot areas with you if *Fusarium* blight also chooses to cooperate.

(This progress report is a modified version of the report published in the Proceedings of the 32nd Annual New York State Turfgrass Conference, Volume 2, Pages 46-54.)

(Credit SUPERNEWS)

*A bank robber shoved a note across to the teller, saying: "Put the money in a bag, and don't make a move."*

*The teller pushed back another note: "Straighten your tie, stupid — they're taking your picture!"*

NEW MEMBERS AND ADDRESS CHANGES FOR IN YOUR 1979 MEMBERSHIP BOOKLET

Douglas L. Bebout B-142  
Rt. 7 Box 365  
Lewiston, Mi. 49756  
Garland Golf Club

Jim Brocklehurst G-143  
1964 Catalpa  
Berkley, Mi. 48072  
O.M. Scott & Sons  
(Eastern Mich. Rep)

Jim Cole A-144  
Box 82  
Thompsonville, Mi. 49683  
Crystal Mountain  
Phone: Business 616-378-2911

Merle Ellis G-141  
259 Eisenhower Dr. (Home)  
6915 W. Mich. Ave. (Office)  
Phone: Bus. 616-375-3535  
Home 668-3677  
Ellis Cushman-Easy Go

Gerald L. Jacobson A-146  
Rt. 1 Box 32AA  
Northport Point, Mi. 49670  
Northport Golf Club

John LaBoskey A-141  
4455 McCandlish Road  
Grand Blanc, Mi. 48439  
Genesee Hills Golf Club

Bob Meyer Jr.  
300 Haynes St.  
Cadillac, Mi. 49601  
Crystal Mountain  
Phone: Home 616-775-2266  
Office 775-3542

Ralph H. Sill G-29  
7115 E. Shore  
Traverse City, Mi. 49684

James J. Specker A-115  
727 E. Eastreday  
Sault Ste. Marie, Mi. 49783  
Kinross Golf Club

Chris Skellenger A-134  
Box 254  
Eastport, Mi. 49627  
Antrim Dells Golf Club  
Phone: Home 616-599-2262  
Office 599-2679

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A new lawyer had just opened up his office. "Ah! A client already," he thought as he saw the door opening. "I must impress him."

He picked up the telephone. "No, I'm very sorry, but I can't take your case, even for \$1,000," he said. "I'm just too busy."

He replaced the receiver and looked at his caller. "And now, what can I do for you?" he asked briefly.

"Nothing really," was the reply. "I just came to hook up your phone."

*The Bagpipe*

**New Catalog Features  
Turf Care Equipment**

Ryan's professional turf care equipment line, which can handle golf course maintenance duties ranging from thatch removal to grass mowing, is showcased in a new catalog available free upon request from the manufacturer.

Although essentially product-oriented, the 16-page catalog does explain basic turf maintenance techniques such as aerification. It also contains color photographs, illustrations and specifications of the 14 products in Ryan's 1979 turf maintenance line.

Ryan turf equipment is marketed by OMC-Lincoln, of Lincoln, Neb., through nearly 100 independent dealers in the United States and Canada. OMC-Lincoln is a division of Outboard Marine Corporation.

**Sulfur - the Forgotten Turf Nutrient**

Sulfur is essential to the healthy growth of turf as well as all plants. Here are some of sulfur's benefits to turf.

1. Improves water penetration in soil.
2. Increases availability of iron, manganese, copper, zinc, and boron to the plant.
3. Improves soil structure.
4. Enhances color.
5. Builds healthy protoplasm and plant tissue to help resist drought.
6. Promotes turf growth and density.
7. Aids the turf response when used in combination with nitrogen.
8. Helps keep alkalinity in balance.
9. Aids nitrogen release from organic matter.
10. Improves recuperation capacity.

## CREDO

There must come a time  
In everyman's life  
When he is uplifted to the stars  
Because of something he does  
With all his heart and soul.  
It does not matter  
Whether this lasts  
For years or hours or seconds—  
What matters  
Is that it happens at all!  
For, a man who lives  
Even one hundred years  
Who has not been uplifted  
Even one second,  
Dies stillborn. . . .

*Martin Schneider*

### GCSAA MEMBERS TO BE ADMITTED FREE TO RYDER CUP MATCHES\*\*\*\*\*

Upon presentation of current GCSAA membership cards, free admittance will be allowed to the Ryder Cup Matches which will be played September 9-16, 1979, at The Greenbrier Golf Course, White Sulphur Springs, West Virginia. In order to facilitate entry to the tournament, GCSAA members should go directly to the "Will-Call" trailer, present their current membership card and they will be issued a complimentary daily ticket to the grounds and golf courses.

Robert V. Mitchell, a past president of GCSAA, is superintendent of The Greenbrier.

### FALL SEMINAR SCHEDULE IS SET\*\*\*\*\*

The 1979 Fall seminar schedule is almost complete. GCSAA will offer five two-day seminars in Cincinnati, Ohio, on December 2nd & 3rd, 1979. The exact location within Cincinnati is yet to be determined. The following is a list of the seminars to be offered and the cost.

	<u>Member Cost</u>	<u>Non-Member Cost</u>
Irrigation II Equipment/Operations	\$80.00	\$115.00
Landscape I Design Theory	\$90.00	\$125.00
Management II Personnel	\$80.00	\$115.00
Nutrition I Principles	\$80.00	\$115.00
Pesticide III Insects	\$80.00	\$115.00

The seminars are being offered immediately prior to the Ohio Turfgrass Conference. Members and non-members should plan to attend both if at all possible.

We are getting into the time of the year when we may be expecting to encounter turfgrass diseases. With this thought in mind, at the June 13th meeting at Cadillac Country Club, Dr. Joe Vargas showed the complete set of 66 slides on various diseases put together by the New York State Turfgrass Association. These sets are available from them at 8 Flint Road, Amityville, N.Y. 11701. Your check for \$15.00 must accompany your order. These slides may be viewed with either a projector or hand viewer so that when disease strikes, they can be beneficial in helping identify your disease problem.

Another source of excellent slides on DISEASES OF TURFGRASSES is Soil Science Society of America, 677 S. Segoe Rd., Madison, WI. 53711. This set developed by the CSSA's Division C-5, this slide presentation focuses on several of the most common and widespread turfgrass diseases. It brings together essential information relative to the identification, nature, and control of the various fungus and nematode-incited diseases of turfgrass. A narrative is included. Set of 80 slides. \$30.00 in U.S. Currency.

Another useful tool in our work as superintendents is "A TURF MANAGER'S GUIDE". Microscopic Identification of Common Turfgrass Pathogens available from The Penna. Turfgrass Council Inc., 16 Tyson Bld'g, University Park, Pa. 16802. Your check in the amount of \$10.00 must accompany your order.

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A speed reading school in Los Angeles asked the new students to fill out a form explaining why they were taking the course. One student stated that he was a slow reader and on the freeway you have to read the exit signs fast or you never get off!

*Sunshine Magazine*

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"CONSERVATION: OUR KEY TO THE FUTURE" IS TO BE THEME FOR 1980 CONFERENCE & SHOW\*\*  
GCSAA's 51st Conference and Show will be held in St. Louis, Missouri, February 17-22, 1980. The theme is to be "Conservation: Our Key to the Future". We have plans well underway for this conference and show, so our members should begin making their plans to attend. St. Louis is such a central location, we hope members from all parts of the United States will be able to attend.

The conference and show information packets will be mailed to all members of GCSAA around the first of October, but it is not too early now to mark the dates on your calendar and plan your schedule so that you can attend.

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It was the start of a holiday weekend and the service station was crowded. Finally an attendant hustled up to the clergyman, who had been waiting in line for some time. "I'm sorry about the delay," he apologized, "everybody waits until the last minute to get ready for a trip they knew they were going to take."

The clergyman smiled, "I know what you mean," he said. . .  
"I have the same problem in my business."

*The Emeth*

The August 21st meeting of our Association will be held at West Branch Country Club. The host superintendent there is David Longfield and he invites you to polish up your clubs for a real test of golf. NOW our problem is knowing by July 11th, the number that will be at ANTRIM DELLS on July 17th for DINNER. SO PLEASE GET YOUR POSTCARD IN THE MAIL IMMEDIATELY. Also remember that starting times are necessary for golf.