



TURF TIMES

MONDAY, JUNE 12th, 1989

MICHAYWE HILLS LAKE COURSE

GAYLORD MICHIGAN

CHARLES BRINK ROAD, TURN EAST OFF OF OLD U.S. 27

JIM SPARLING, SUPERINTENDENT MIKE HUSBY, GOLF DIRECTOR

Volume 18 No. 3



NORTHERN MICHIGAN TURF MANAGERS ASSOCIATION

3733 APOLLO DRIVE • TRAVERSE CITY, MICHIGAN 49684 • 616-943-8343

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April 15, 1989

Dear Northern Michigan Turf Managers:

Your Michigan Turfgrass Foundation Benefit Committee is pleased to announce that this year's event is to be held Monday, June 13 at the new Michaywe' Lake Course. The Lake Course was recently featured in *Golf Digest* as the third best new public golf facility in the United States. We are very grateful to superintendant Jim Sparling and Director of Golf Mike Husby for providing their uniquely outstanding golf resort.

As most of you know, revenues from this benefit are donated to the Michigan Turf Foundation for turfgrass research. M.T.F. funds most of the research programs done at Michigan State University. Last year the Northern Michigan Turf Managers donated \$8,000 and we are expecting another exceptional year. Through our donations we assure that our turf problems will be continually addressed.

The format and cost of the event remains the same except the afternoon shotgun will begin at 1:30 P.M. Again there will be many prizes including several rounds of golf with carts at the areas' prime golf destinations. Dinner will be served at the completion of both rounds at the Inn the Woods.

We strongly urge you to invite your club members and friends to support our benefit. This event is extremely popular with some club members because the monies donated eventually translate into better golfing conditions. Many support it because it is an outstanding golf value at an excellent facility. In any case, bring some friends and have a great time on this spectacular new course. If you are a single, please call and we will find a group for you.

To reserve your tee time, please return the enclosed entry as soon as possible. Times will be reserved on a first come, first served basis. Hope to see you there!!

Sincerely,

Charles C. Menefee CGCS
MTF Benefit Chairman.



13TH ANNUAL TURF BENEFIT DAY

Michaywe' Lake Course
Monday, June 12th, 1989

Proceeds will go to
Michigan Turf Foundation
Turfgrass Research Fund

ENTRY FEE: \$60.00 per player
(\$240.00 per team)

FOUR MAN BEST BALL
Best Two of Four
Full Handicap

Team Prizes &
Prizes For
Individual Events



Michaywe'
Lake Course

*Includes:

1. Golf (Shot Guns 8:00 a.m. or 1:30 p.m.)
2. Golf Carts
3. Cheese Board - Cocktail Hour
4. Dinner (Morning Players - 2:30, Afternoon - 7:30)

In case of inclement weather the banquets will be held as scheduled.

Rooms are available
for those desiring to stay over.
1-800-322-6636

ENTRY FORM

Players	Handicap	Preferred Starting Times
_____	_____	Shot Gun 8:00 am _____
_____	_____	or _____
_____	_____	Shot Gun 1:30 pm _____

All Tee Times
are assigned
on a first-
come, first-
served basis
and will be
confirmed by
mail.

Make checks payable to N.M.T.M.A. and along with entrees, send to:

CHARLES MENEFEE C.G.C.S.
P.O. Box 384
Harbor Springs, MI 49740

DIAL-A-PHONE (517) 355-5221

Turfgrass problems could soon start, remember this hot line is available 24 hours each day for the latest information direct from the Robert Hancock Research Center at MSU.

JULY MEETING

At the time of this writing, no location has been definitely approved. Should a location become available, you will be notified as always with full details in our next "TURF TIMES". Should you like to offer your course, please contact Tom Reed. Thanks.

"Organic" Turf Management

by
Eliot C. Roberts

Among current topics of interest and concern to turfgrass managers, the so called "pesticide issue" is receiving major attention. Turfgrass scientists and practitioners alike recognize the importance of pesticides in the maintenance of high quality sports and golf turf. The more the grass is stressed by play of the game, the more likely pesticides will be required to keep turf healthy.

At the same time, there continue to be reports of less than satisfactory pest control from use of chemicals that "used to work". New disease and insect resistance to old reliable pesticides is noted and even terms like "The Black Plague" are being used to describe detrimental conditions on the many sand putting greens. Some turfgrass research is leading to conclusions that use of chemicals is causing grasses to become weakened, soil biological systems to be thrown out of balance and pathogenic organisms, insects and weeds given advantages that they should not have under conditions of well maintained turf.

All of this has taken place at a time when public concern for quality of air and ground water is very high. Many people are frightened and feel the safety of lawn care and turf management practices is in doubt. The technical aspects of this issue are more often than not overlooked in favor of emotional concerns and this makes an easy resolution of the pesticide controversy most difficult. We must recognize both the technical and social aspects if we are all serious about making working conditions more favourable for the turf manager and lawn care specialist.

Technology of Chemical Turf Management

When treating turfgrasses for the control of living organisms (within a community of living grasses) we ask for a lot when we expect selective control with no adverse effect on the turf. Life processes are all



Eliot Roberts is the Director of the Lawn Institute at Pleasant Hill, Tennessee.

similar and even though a weed may die or a fungus spread stop, or an insect be killed by use of chemicals with no apparent injury to the turf, there is likely to be a loss of grass vigor that can weaken the plant and predispose it to other injury.

Variability in sensitivity of living systems to chemicals is striking. Not only do turfgrasses and weeds differ, but also various insects and disease-causing pathogens. Other plants in the landscape vary in sensitivity to chemical spray. In addition, animals, including people, vary in reaction to exposure to chemicals used in turf management. This is of concern to the applicator of the chemical, to the user of the turf (perhaps the golfer) and to those who reside on or use neighboring property.

Because of severe reaction to foreign chemicals in the environment demonstrated by some people, the matter of environmental pollution has taken on special meaning by local, state and even national government. Where population densities

are relatively low, ground, water and air pollution are not likely to reach problem proportions. However, in urban and suburban regions, these matters are of concern to the population in general and thus to responsible government agencies. Among many good intentions, much misinformation concerning pesticides has been reported. Some clarification has been evident in a recent report entitled "How Risky Are Pesticides" by Keith C. Barrons published in the January 1987 issue of "Science of Food and Agriculture".

The following charts illustrate the difference between the reality of risk, and the perception of risk by 3 different groups. In a 1983 U.S. survey, numbers of accidental deaths from poisoning by various agents listed medicinal substances - 2,866, carbon monoxide and other gases or vapors - 1189, miscellaneous - 216 and pesticides 22. **The perceived risk from use of pesticides is far greater than the actual risk according to these data.**

On the other hand, for those few who have high sensitivity to pesticide exposure and experience allergic or other adverse reactions, the risks are real and the discomfort genuine. Because of this, some controls on pesticides use are necessary.

Use of chemicals on lawns and sports turf is now a high tech operation. Sophisticated equipment provides the proper pressure for the nozzles in use so that material applied is left on the leaf, moved into the thatch, or down into the soil. In order to obtain full value from this apparatus, the matter of expertise in problem diagnosis, in selection of materials for use and in timing of application is more important than ever.

Skill in application of chemicals involves a wide range of mechanical, climatological and biological knowledge. Mis-application is more likely to occur when this knowledge is not available or practiced. At these times environmental pollution, lack of effective control or damage to the turf can result. With current public attitudes what they are, there is little margin for error.

"The Perception"

How Three Groups Perceive the Significance of Pesticides as a Cause of Death

LEAGUE OF WOMEN VOTERS

1. Nuclear power
2. Motor vehicles
3. Handguns
4. Smoking
5. Motorcycles
6. Alcoholic Beverages
7. General Aviation
8. Police work
9. **PESTICIDES**
10. Surgery
11. Fire Fighting
12. Large Construction
13. Hunting
14. Spray Cans
15. Mountain Climbing
16. Bicycles
17. Commercial Aviation
18. Electric Power
19. Swimming
20. Contraceptives
21. Skiing
22. X-rays
23. Scholastic Football
24. Railroads
25. Food Preservatives
26. Food coloring
27. Power Mowers
28. Prescription Antibiotics
29. Home Appliances
30. Vaccinations

COLLEGE STUDENTS

1. Nuclear power
2. Handguns
3. Smoking
4. **PESTICIDES**
5. Motor Vehicles
6. Motorcycles
7. Alcoholic Beverages
8. Police Work
9. Contraceptives
10. Fire Fighting
11. Surgery
12. Food Preservatives
13. Spray Cans
14. Large Construction
15. General Aviation
16. Commercial Aviation
17. X-rays
18. Hunting
19. Electric Power
20. Food Coloring
21. Prescription Antibiotics
22. Mountain Climbing
23. Railroads
24. Bicycles
25. Skiing
26. Scholastic Football
27. Home Appliances
28. Power Mowers
29. Vaccinations
30. Swimming

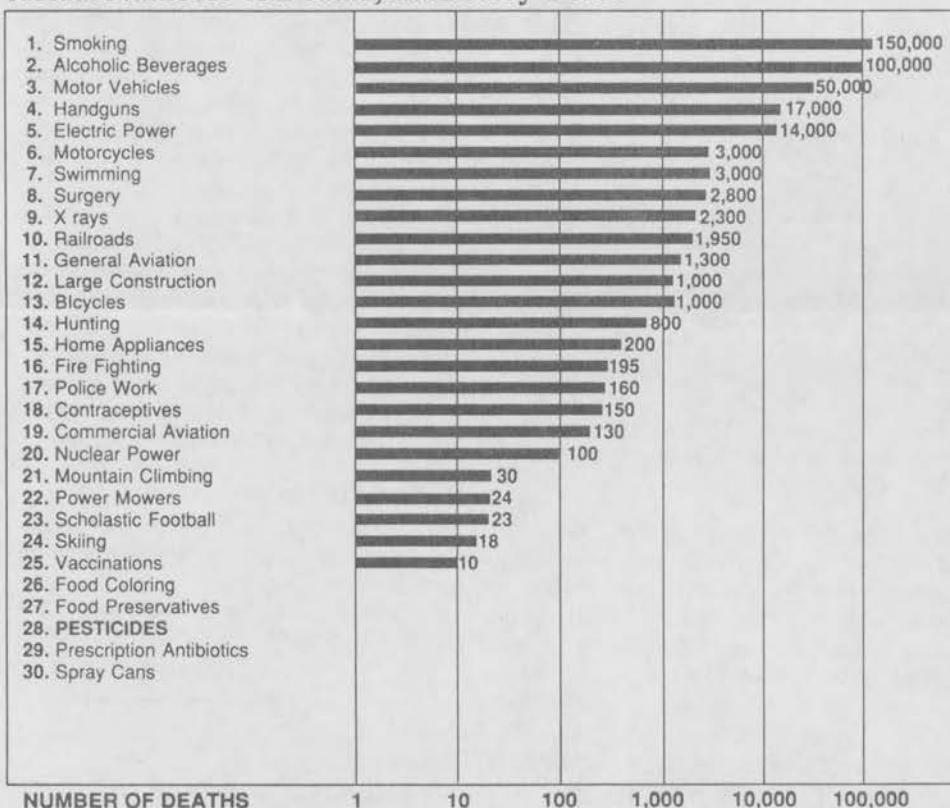
BUSINESS AND PROFESSIONAL CLUB MEMBERS

1. Handguns
2. Motorcycles
3. Motor Vehicles
4. Smoking
5. Alcoholic Beverages
6. Fire Fighting
7. Police Work
8. Nuclear Power
9. Surgery
10. Hunting
11. General Aviation
12. Mountain Climbing
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16. Skiing
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24. X-rays
25. Power Mowers
26. Prescription Antibiotics
27. Home Appliances
28. Food Preservatives
29. Vaccinations
30. Food Coloring

Mortality rate due to pesticides is not the problem most people perceive it to be. (Information contained in the February, 1982 issue of Scientific American magazine.)

"The Reality"

Actual Numbers of Deaths, Ranked by Cause



Credit: Scientific American, February 1982

Development of Chemicals for Turf Management

Chemicals for use on lawns and sports turf, including fertilizers, soil conditioners and pesticides, take years to develop and involve costs that run in the millions of dollars. During the product development process, tremendous amounts of information are generated about the chemicals and their properties in various formulations. Environmental Protection Agencies require this information and the results of extensive testing and evaluation prior to granting approval for marketing. All reasonable care is taken to assure effectiveness of the material for the purpose intended and safety of the material for use on lawns and sports turf used by people with widely differing sensitivities to irritants in the environment.

It is understood that methods in analytical chemistry improve each year thus allowing detection of smaller and smaller amounts of chemicals in air, soil and water and in plant and animal tissue. Now, very small amounts of contamination can be found in almost everything. Because contamination can be detected, doesn't necessarily mean that this is harmful or that there is something present that wasn't there before. What is important is the amount of these substances in relation to the limits of tolerance of various living entities - plants and animals.

From the beginnings of time there have been irritants and other so-called pollutants in the environment that have been contended with by all life forms. Some have survived, others haven't. Now we have more control over the environment, and can help create conditions that allow many to live under otherwise hazardous conditions. The longer people inhabit the earth and use its natural resources, the more waste we generate that can be harmful to plant or animal health. Can or should we stop science and technological advances and go back to the "cave" for a much less protected life style and a far greater emphasis on the survival of the fittest? Most of us would vote enthusiastically against this.

Public Attitudes and Perceptions

The mid-to-late 1980's continue to be a time of emphasis on human rights. Freedom of opportunity and all conditions that impinge on health and safety in the work and residential environment are of prime importance. The legal system has, in general, been generous with settlements that have been brought to light through the grievance process. Insurance payments have provided major benefits at the expense of those responsible for payment of premiums. Now increasing costs of insurance are making it difficult for some segments of the turf management industry to survive.

(continued page 4)

Unfortunately, along with the good that has come to some who deserve it, there has also been an increase in an attitude that promotes getting something for nothing whenever possible. Now is my time to cash in. Others are doing it; why shouldn't I? My grievance is just as good as theirs and who can prove that it wasn't that pesticide that caused the trouble?

There's an old saying that "laws cost nothing". So, it's relatively easy to have laws or ordinances passed on most anything. They are great in protecting us from everything but ourselves. It's also true that the implementation of laws always cost someone. It may be the taxpayer directly or it may be the consumer through the higher cost of goods and services made necessary through compliance with regulations and increased insurance premiums. Small firms may go out of business for lack of ability to absorb these increased costs. There is no way that private enterprise can for long continue to sell a product without a profit. Thus, it's ultimately the consumer who pays or accepts the option of going without the product or service. This could even force the closure of some golf courses and other recreational facilities.

Now, there are some rather diverse public perceptions regarding lawns and sports turf that must be recognized, understood and worked through if we are going to deal constructively with the pesticide issue in turfgrass management. These include the following:

- Most people who enjoy lawns and sports turf are not really interested in knowing all about how it's done. Some few gardeners are. The same applies to information on soils and conservation. It's good to be in favour of environmental matters. This is an "in" thing to do and makes you look like you're an expert.
- Most people who enjoy lawns and sports turf are likely to place the blame for something gone wrong on someone else in such a way that they remain uninvolved. This keeps them "off the hook" and very much baffled and victimized by whatever happened. At such times there is a lot of talking and very little listening. Technical understanding of the soil and turfgrass variables may be lacking to the degree that that communication is most difficult.
- Most of us are influenced these days by the media - especially TV. There often seems to be a vested interest in exploitation. The general public is interested;

newspapers sell. Pesticide use and environmental pollution are topics for which we need to find some scapegoat.

- Many of us are interested in groups and in causes. If there's a negative aspect to the cause, this gives people a feeling of doing something positive by combating it. Often it's easier to be against something than for something. Immediate answers regarding a specific situation are more important than long term solutions to broader based problems. At times it seems important to avoid reading technical material that would provide improved understanding. And, often an attempt to promote scare tactics is obvious.
- Most of us underestimate the value of lawns and sports turf in creating an acceptable quality of life or enhanced standard of living. The fact is we cannot do without the green of turfgrass and this really seems to bother some people. Further, we often do not even understand why the turfgrass commodity is so important. It's contribution to increased real estate value, neighborhood value and over-all quality of life are recognized but not easily quantified. There is little difficulty in understanding the value of mechanical apparatus. Not so with living plants. What is the value in a diseased or weedy putting green? The turfgrass commodity has recognized value but the specifics are hard to come by.

With this understanding of the problem at hand, where do we go from here? There would seem to be several options:

- Sit back and do nothing.
- Wait and see if all the fuss won't blow over.
- Act like we're above it all - not really concerned because there's no real problem - it just doesn't exist.
- Take the position: "Ask me a stupid question and I'll give you some kind of a stupid answer".
- Argue with the environmentalists as long as there's any breath left.
- Try to find new technical information to help explain the safe use of chemicals in turf management.

Now, none of these work very well. There is no way to argue with environmentalists and expect to win. For them the issue is emotional rather than factual. As a matter of fact, "facts cloud the issue". Communication is difficult at best when one party has little

interest in listening. Understanding is all but impossible when one party has no desire to recognize that there are two sides to every coin. So what is left? Is there a common ground for clarification of these issues? I believe there is and that this needs to be worked out in terms associated with "organic gardening".

"Organic" Turf Management

The "organic" method is not new. Actually the advent of chemical agriculture is relatively new. Research 50 to 100 years ago had mostly to do with organic matter as of critical importance in soil fertility. This research has continued. In 1986 there were 131 research papers on soil microbiology and biochemistry presented at the annual Soil Science Society of America Convention in New Orleans, Louisiana.

Over the years we've come to understand the importance of some 900 billion bacteria, fungi, actinomycetes and protozoa in each pound of soil. (There are close to 2,000,000 pounds of soil in the root zone for each acre of turf.) This amounts to about 70 pounds of micro-organisms per 1000 square feet of turf grown on soil that would weigh close to 50,000 pounds.

And, that's not all. There are large numbers of small animals that enrich the soil by decomposition of organic matter. For example, earthworms increase fertility of the soil by producing casts that often contain 40 percent more calcium, 204 percent more magnesium, 366 percent more nitrate, 644 percent more phosphorus and 1019 percent more potassium than surrounding soil.

The value of organic processes is well understood in maintaining soil productivity. And these processes are most beneficial on grassland agriculture, that segment which includes turfgrass management. It is natural that we should use slow release "organic" fertilizers so as to take greatest possible advantage of the biological system already functioning within the root zone.

A New Definition

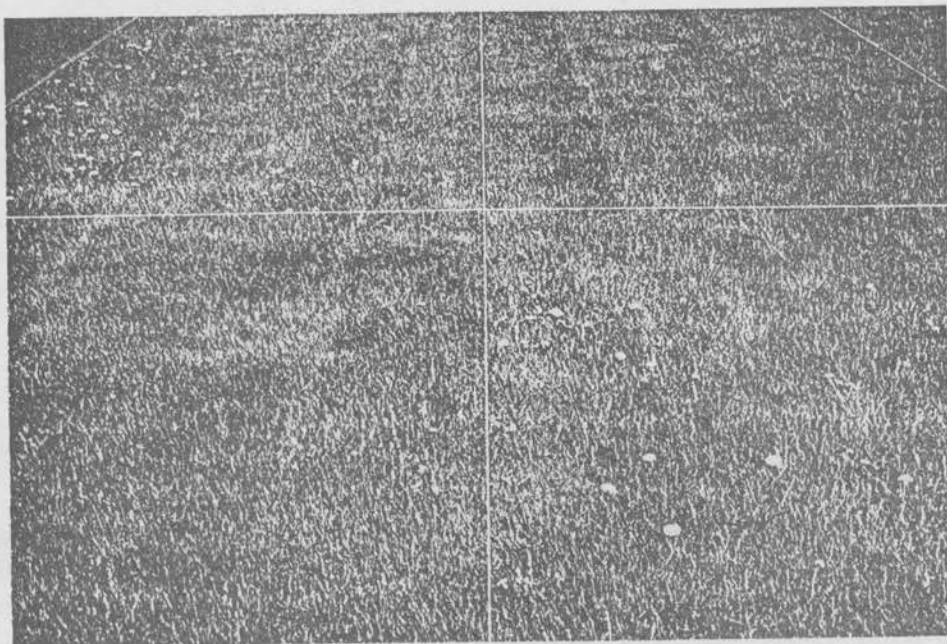
This new definition of "organic" turf management presents three criteria which must be met.

FIRST. "Organic" turf management concerns a **complete** maintenance program

Continued on page 5

Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives.

Willia A. Foster



These plots were not treated with herbicide. Ureaform slow release nitrogen helps develop turf that can crowd out seedlings -- lower left and upper right. Plots with dandelions were fertilized with inorganic sources of nitrogen.

featuring the application of organic (containing carbon) products either natural or synthetic that have slow release and/or decomposition properties that promote lawngrass growth and also enhance natural soil macro- and micro-biological processes.

SECOND. "Organic" lawn care features the use of natural or synthetic inorganic products that breakdown slowly and have slow release properties as long as natural soil macro- and micro-biological populations are enhanced.

THIRD. "Organic" lawn care may require applications of inorganic plant nutrients in very small quantities necessary in the sustenance of natural soil macro- and micro-organisms and in the development of vigorous healthy lawn turf.

Conclusion

The pesticide issue is real; it is serious, but we need not sit back and do nothing. There is a positive approach to be taken and that is through turf management practices that emphasize the age old concepts of soil organic matter and soil biological activity. These are a natural for turfgrass. They are based on sound research concerned with slow release of all nutrients or applications of soluble compounds in very small quantities. Call this "organic" turf management and adopt the new definition as proposed by The Lawn Institute.

Modern development of turfgrass fertilizers has resulted in products that simulate the slow release process of natural and synthetic organics - sulfur coated ureas, IBDU as examples. Also, present use of ureas and even nitrate and ammonia com-

pounds is directed towards applications of small amounts frequently so as to provide nutrient release that is quantitatively small and continuing. These practices are highly compatible with any "organic turf manage-

ment program.

Chelated forms of some nutrients, such as iron, are available. These slow release nutrients meet criteria for "organic" turf management. Wetting agents also serve to enhance soil biological processes and as such, improve soil physical and chemical properties that are of benefit to fine turf.

A good biologically healthy soil is the best of all known media for the decomposition of all sorts of organic compounds, including pesticides. These chemicals are known as biodegradable. This is an ongoing process which in time changes toxic substances to harmless compounds. The only limitation in this regard is caused by an overload of pesticides - more accumulated in the soil than the organisms can handle at any given time. Thus, it is critically important not to over use any pesticide. In so doing control will be less satisfactory, residues will accumulate to the detriment of both turf and biological populations in the soil. Limited prescribed use of pesticides is not harmful to beneficial soil organisms and should continue to be an important well accepted part of turfgrass management.

The time has come for a new definition of "organic" turf management; one that places emphasis on approved practices for the enhancement of soil organisms and the culture of fine turfgrasses.

CREDIT: GREENMASTER

Ballad to a Golf Course

*"A golf course is a pretty thing.
It needs a lot of care. It's hard to
keep it lookin' good with all that
wear and tear.
Mow the greens, and fairways too;
It's an all day job.
Water, spray and aerify;
and then wait for the mob.
Now golfers are peculiar guys,
it seems they do no wrong.
It's always cause the green's not right,
that makes their putt too long.
The green's too soft, the tee's too hard.
That's always what they say.
No matter what you do for them,
it messes up their play."*

Credit - Iowa GCS Reporter



Preparing for Turf Stresses in 1989

by James M. Latham, Director
Great Lakes Region, USGA Green Section

Golf course superintendents must have more opportunities to learn than anyone in golf or in the turfgrass industry as a whole, and rightly so because there are so many facets of the game which demand their attention. In the gentler days, greens were everything as long as a golfer could drive a peg into the tee and the fairways were cut once or twice a week. Those days are gone forever and some Turf Advisory Service visits today are more involved in bunker quality than putting quality. What a fine compliment to those superintendent's turf managing abilities.

Even so, we still do not know how to grow grass without leaves. Ultra close mowing does a great job of defoliation which reduces the photosynthetic potential of the turf. It is necessary, then, to determine the minimum TRUE mowing height for the turf species and cultivar involved. Some cultivars were selected under a quarter-inch height of cut. Bench settings are the published part of the story and vary from machine to machine. The only gauge we have is the consistent trueness of line and the drag on a ball as it rolls after being struck. Putting consistency is greatly enhanced by light and frequent topdressing, the control of fertility and good water management. Fertility control should be the most easily managed factor. We have the information on nitrogen release patterns of most sources and should be able to plan accordingly. Every nitrogen component of blended fertilizer must be taken into account when programming applications through the growing season, since their conversion to nitrates may depend on soil temperature, soil moisture and soil air (the source of oxygen needed for the conversion of ammoniates to nitrates). Vargas has pointed out the depletion of soil oxygen after sulfur application to near-anaerobic soils. Its conversion to sulfate depletes the soil oxygen further and then anaerobic bacteria convert the sulfates to sulfides which results in the formation of black layer. He suggests the application of nitrates as a source of oxygen for the anaerobic bacteria. This nitrogen, of course, will be lost as a gas through the process of denitrification under anaerobic conditions. Would not the same oxygen demand occur during the nitrification of ammonium nitrogen in the soil? The point here is a constant need for a supply of oxygen in the soil for these and other biological processes in the soil. This is a reason why high sand content greens performed so well last summer. Water percolated through the profile readily, pulling air into the non-capillary pore spaces as they drained.

These are fine points, to be sure, but as long as we are dealing with defoliated turf we need all the help we can get. There are few black or white options. For instance, at what point does shade become a limiting factor? Or, how much wind movement is necessary across a putting surface for best moisture and heat dissipation?

It is now mandatory to exert maximum control of the controllables. Sand quality is easily determined by sieving and particle size distribution can be specified. This is a simple and direct situation. The success of straight, uniformly sized sand topdressing has been widely demonstrated since Madison proposed it in 1974. Organic additives are another story, and are bothersome.

Peat bothers me because of the tremendous variation possible in the sources. The amount of detrimental non-organic material can vary widely within a very small area in a "mine". Clay, silt and very fine sand content can be amazingly high in peats that "look" and "feel" good. The only judge of quality is a rather detailed laboratory test. In construction, quality control is possible because purchases are in large, checkable lots. In year-to-year topdressing, though, some change is inevitable.

We cannot argue with the success that many superintendents have had with sand/peat topdressing, even though an 80/20 mix is not 80/20 after the little peat balls are dragged or mowed off. (Perhaps that loss is beneficial). Variability here is seldom checked, making straight sand topdressing more and more palatable.

Research projects and experiences during the 1988 season have clarified a few points for 1989 consumption:

1. Regardless of the weather conditions in May and June, Summer Patch treatments should begin when soil temperature at a 2" depth reaches 65°F. A second application should follow in a month. The Michigan State trials showed Rubigan, Bayleton and Banner to be very effective fungicides. Dr. Vargas feels that Banner may also be effective with slightly later applications.

2. Dr. Shearman at Nebraska believes that on days when it is evident that syringing will be needed, it should begin just before noon so that the water droplets on the turf will dissipate the heat via evaporation during the period when solar radiation is at its peak. This will reduce the amount of heat reaching the turf, thus minimizing heat buildup.

3. Relative humidity levels are extremely important as the temperatures rise and when the soil is adequately moist. Evaporative cooling is minimal when atmospheric moisture is high, so general irrigation may be more harmful than beneficial. Daytime hand watering (or just syringing) the high spots when needed is a better idea. Making wet soil even wetter has no cooling effect — it just reduces the soil oxygen supply. Even the most sophisticated irrigation system is incapable of solving all the water problems on undulating terrain. That's when quality management shows its value.

In the future we must give more consideration to the grass plant as a whole and its interactions with the rest of the environment. The more that we reduce any factor limiting growth, the better the turf can withstand the cultural stresses which we inflict. That future is now.

THE TEN CARDINAL SINS OF GREENS CONSTRUCTION

by
David W. Gourlay
Director of Golf Operations
Beacon Hall Golf Club
Aurora, Ontario

1. Using a rootzone medium with poor physical properties.

It is highly unrealistic to expect the turfgrass to perform to its potential if one or more of the physical properties is limited. Laboratories test the infiltration rate, moisture retention rate, pore space distribution and bulk density value to insure they meet your specific requirements. Turfgrass grown under ideal physical conditions will recover from stress at a higher rate than turfgrass grown under less than ideal conditions.

2. Using a rootzone medium without correcting and chemical deficiencies.

When looking at the chemical make-up of your rootzone medium, remember the word balance. In other words, avoid planting the turfgrass without correcting any chemical imbalances. It is always harder to correct any deficiencies after the turf is established. Avoid using calcareous sands if possible. These sands are usually extremely high in calcium which raises the pH of the rootzone to an unacceptable level. Also, in areas of acid rainfall, the calcareous sands will break down, and a deterioration of the physical properties will occur.

3. Using sphagnum peat moss.

Sphagnum peat moss is hydrophobic, relatively undecomposed, and has only a very limited amount of microbial activity in it. Being hydrophobic, it is extremely difficult to blend into the medium. Once blended, it has been shown to plug up the non capillary pore spaces (air space) due to its fibery nature.

4. Not including the apron in the green's construction.

Always include the apron in the construction of the green. A 90 degree edge should be included to insure adequate moisture retention in the apron, as a wicking action from the heavier soil around the perimeter will dry out the apron. This will help to avoid hand watering in the hot summer months.

5. Using improper drainage stone.

Use only $\frac{3}{8}$ " - $\frac{1}{4}$ " of clean, clear pea stone in the drainage system. The purpose of the pea stone is to insure water drainage away from the rootzone medium, and to create a perched water table. Without the pea stone, the dry subsoil will draw water out of the rootzone medium which will lower the water retention of the mix.

6. Using a roto-tiller.

Never use a roto-tiller to on site mix your amendments for rootzone medium. A uniform medium can never be produced by this method. This procedure also produces a double-perched water table in your green's profile. The top roto-tilled medium has to become saturated before any water enters below into the untreated medium. This creates a more complex management program.

7. Sodding a new green.

Never sod a new green unless the sod is grown on **exactly the same rootzone medium** as the green. Sodding using a different growing medium will also produce a double perched water table.

Seeded greens can be put into a higher level of playability faster than sodded greens, at a considerably lower cost. Believe it or not!

8. Using uncertified, or inappropriate seed.

Always use the highest quality seed available. Also use the variety of seed that best performs in your particular region. The reasons are all too clear.

9. Poorly designed greens.

Two main problems in the design of greens are: making them too small to withstand the expected traffic, and secondly, putting too much slope on the green.

The most popular size of green is between 5,000 square feet and 7,500 square feet. Seldom are smaller greens able to achieve the same degree of success in turf quality as larger ones.

The slope on the pin positions should not exceed two percent. With the high standards in green speed, a slope of more than 2% will not stop a rolling ball.

10. Treating a new green like an old green.

New greens generally require more fertilizer than older established greens. Be aware that the added fertilizer and water can lead to added disease. Caution must be used to maintain a proper balance in turf management. As the turfgrass becomes established and a healthy micro-organism population is achieved, the turf management on these greens becomes faster.

Credit: GREENMASTER

Southwest Lawn & Landscape
November 1988 Page 22

by Bob Morris

High Temperatures are Gone But Not the Damage

"We recently took an infrared thermometer (the gun-shaped heat sensor that measures surface temperatures when you aim it at an object) into the field when air temperatures were hovering around 105 degrees F. Aiming that thing at nearby surroundings produced some interesting results.

"Bare, dry soil subjected to these air temperatures and light intensities climbed to 145 degrees F, just slightly below the surface temperatures of asphalt. Gravel has a temperature similar to that of asphalt. On the other hand, turfgrass and leaf surface temperatures of some nearby shrubs measured a cool 95 degrees F, ten degrees cooler than the air temperature and forty degrees cooler than bare soil."

Credit: Bull Sheet

"Could I buy you a drink?" he asked, by way of striking up a conversation.

"No thank you," she said, "I don't drink."

"What about a little dinner with me in my room?"

"No, I don't believe that would be proper," she said.

Having had no success with the subtler approaches, the young man pressed directly to the point: "I am charmed by your refreshing beauty, mademoiselle, and will give you anything your heart desires if you will spend the night with me." "Oh, no, no, monsieur, I could never do a thing like that."

"Tell me," the young man said, laughing, "don't you ever do anything the slightest bit improper?"

"Oui," said the French girl, "I tell lies."

EPA Official Says Courses Won't Fall Under New Worker Standard

EPA officials have confirmed that golf course workers will not be included under the final provisions of the Farm Worker Protection Standards (FWPS) that would require training and limit re-entry for many chemical application activities covered by FIFRA.

"The opinion of the agency at this time is that trade groups will not be included," said Bob Bierlarski, a member of the EPA's Office of Pesticide Policy staff. He later explained that educational and safety programs operated by trade groups like GCSAA already provide the type of protection that the FWPS would afford agricultural employees. He noted,

however, that some elements of the rule — most notably re-entry limits — may affect golf courses within the next decade.

The proposed new standards would put a time limit on re-entry into treated areas, mandate cholinesterase testing of workers and require additional training for employees involved with application. Recent signs from Washington had indicated that EPA might have been considering a reversal of its initial decision not to include golf courses under the rule. However, it now appears unlikely that re-entry standards or any other part of the FWPS will be applied to golf courses in the near future. ■

Recertification Requirements Outlined

July 1, 1989. If that date has a familiar ring to certified golf course superintendents, there is a good reason. The new requirements for renewal of CGCS status will become effective on that day. Superintendents whose five-year certification date falls after July 1 will need to have accumulated 15 Continuing Education Units (CEUs) by the time they recertify.

In addition to the GCSAA seminars and GCSAA-approved conferences and seminars that have always been available, superintendents may also choose from a variety of college correspondence courses in turfgrass management and related topics to meet renewal requirements. Correspondence or independent study courses can be particularly helpful in

accumulating the 15 CEUs required for recertification when travel opportunities are limited.

To assist in locating appropriate correspondence courses, the GCSAA Education Department has compiled a list for superintendents to use as a guide to universities throughout the United States and Canada that offer study in turf-management-related topics. The list includes names and addresses of institutions granting credit by correspondence, as well as costs, time limits and number of credit hours the classes earn. Superintendents may request a copy of the list by calling the education department at 913/841-2240 or 800/472-7878. ■

Official GCSAA Business Card Redesigned

As the result of member requests, a new official GCSAA business card has been designed and printed on top-grade bond stock. Also, certified members now have the option of ordering cards with the CGCS logo that incorporates the GCSAA logo.

Even though the changes have resulted in a slight price increase, we hope the new design and better quality paper will meet with member approval. Cards are \$30 for a block of 250 cards or \$40 for a block of 500. If you would like to order the new business cards, please use the form and address below. ■

(NO PHONE ORDERS. ALLOW 4-6 WEEKS FOR DELIVERY.)

BUSINESS CARD ORDER FORM

Clearly print or type information as you want it to appear on your business cards

Name _____ CGCS ☐ Yes ☐ No

Title _____

Club _____

Address _____ Home Address _____

City _____ City _____

State _____ Zip _____ State _____ Zip _____

Club Telephone (_____) _____ Home Telephone (_____) _____

PLEASE SEND: ☐ 250 cards for \$30 ☐ 500 cards for \$40 FOREIGN DELIVERY: Add \$3 for surface mail, \$7 for air mail

METHOD OF PAYMENT: ☐ Check Enclosed ☐ American Express ☐ MasterCard ☐ Visa

Card # _____ Exp. Date _____ Signature _____

SEND FORM AND PAYMENT TO: Golf Course Superintendents Association of America, 1617 St. Andrews Drive, Lawrence, Kansas 66046-9990