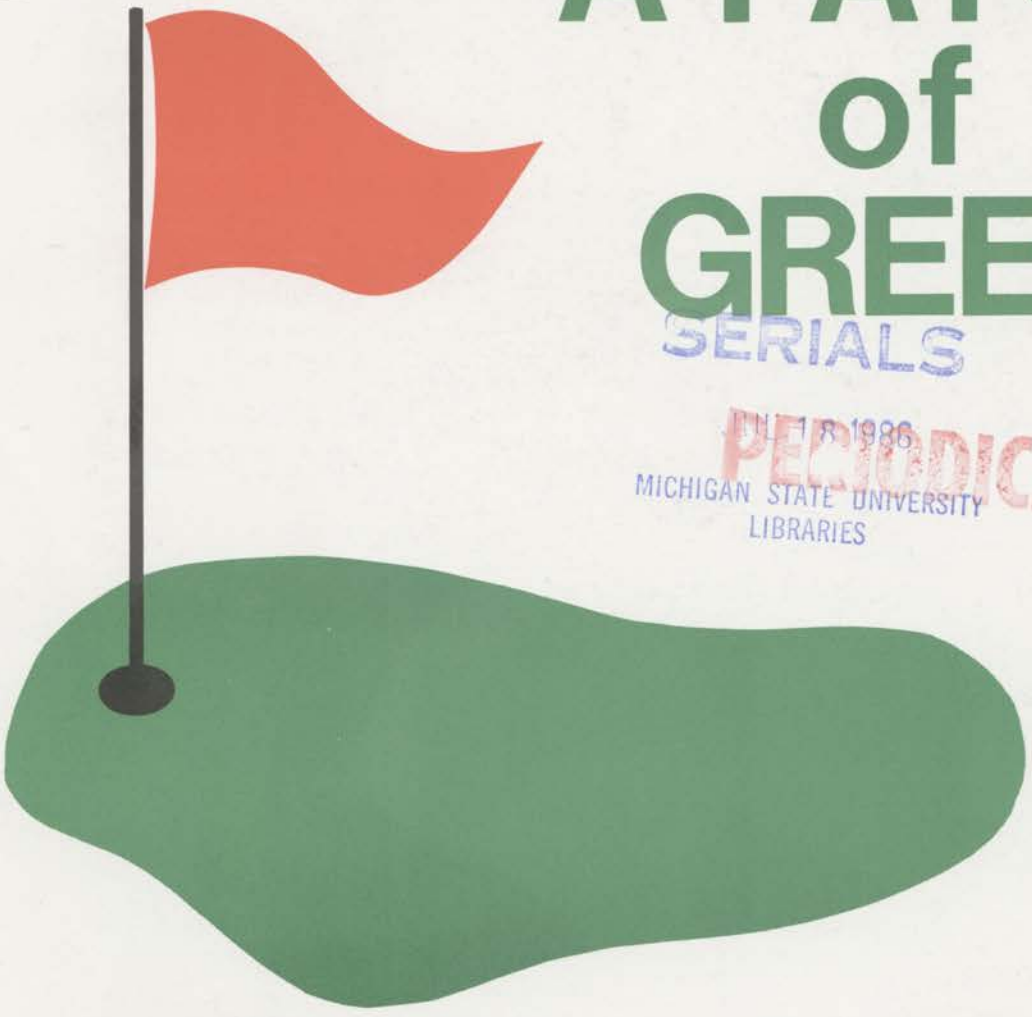
JULY/AUGUST 1986

51st Year

A PATCH of GREEN



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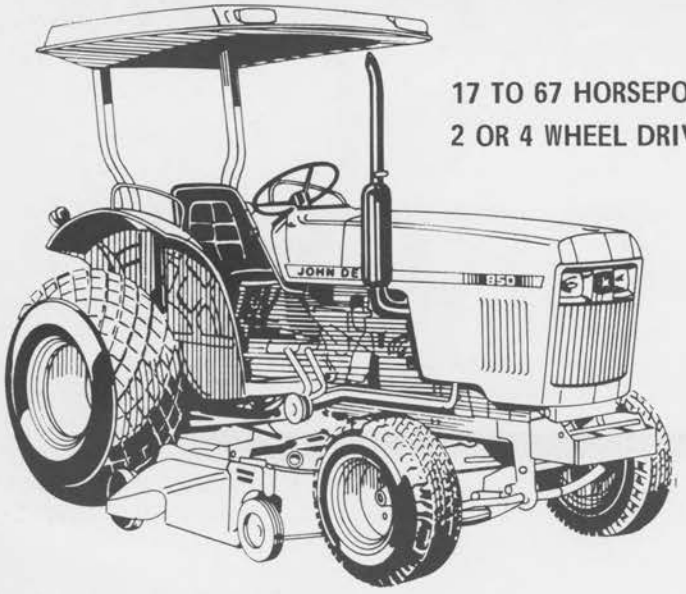

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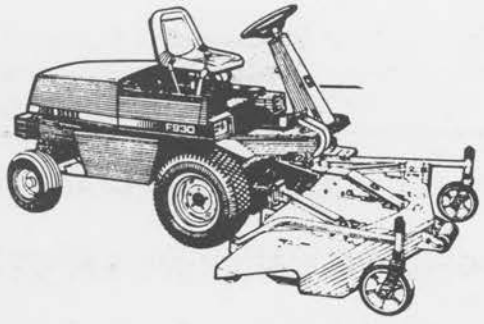


PRESIDENT'S MESSAGE

Kevin Dushane
Golf Course Superintendent
Bloomfield Hills Country Club

Congratulations to all members of MBCGCSA and their guests for the exceptional response in regards to the Special Olympics Day held at Pinewood on the Links in May. It was a magnificent day with a very worthy organization on the receiving end of over $3,500. This year's event was the sixth held for the Michigan Special Olympics and in those six years we have been able to contribute over $19,000.

It is widely known that our organization works many hours and raises large sums of money towards turfgrass research. Contributing our time and effort to a worthy cause outside of the turfgrass industry is above and beyond the call of duty. It shows we care about people. There is an intangible in our organization that makes all of this possible. Our desire to excel, the dedication, the comraderie and friendships, all of these added together make up that intangible and this is what makes us better superintendents and better individuals. We should all be proud of our accomplishments.

Ed Heineman and John Kirtland did an admirable job in organizing the Special Olympics Day. Also, a special thanks to all of the suppliers who purchased a tee for the tournament.

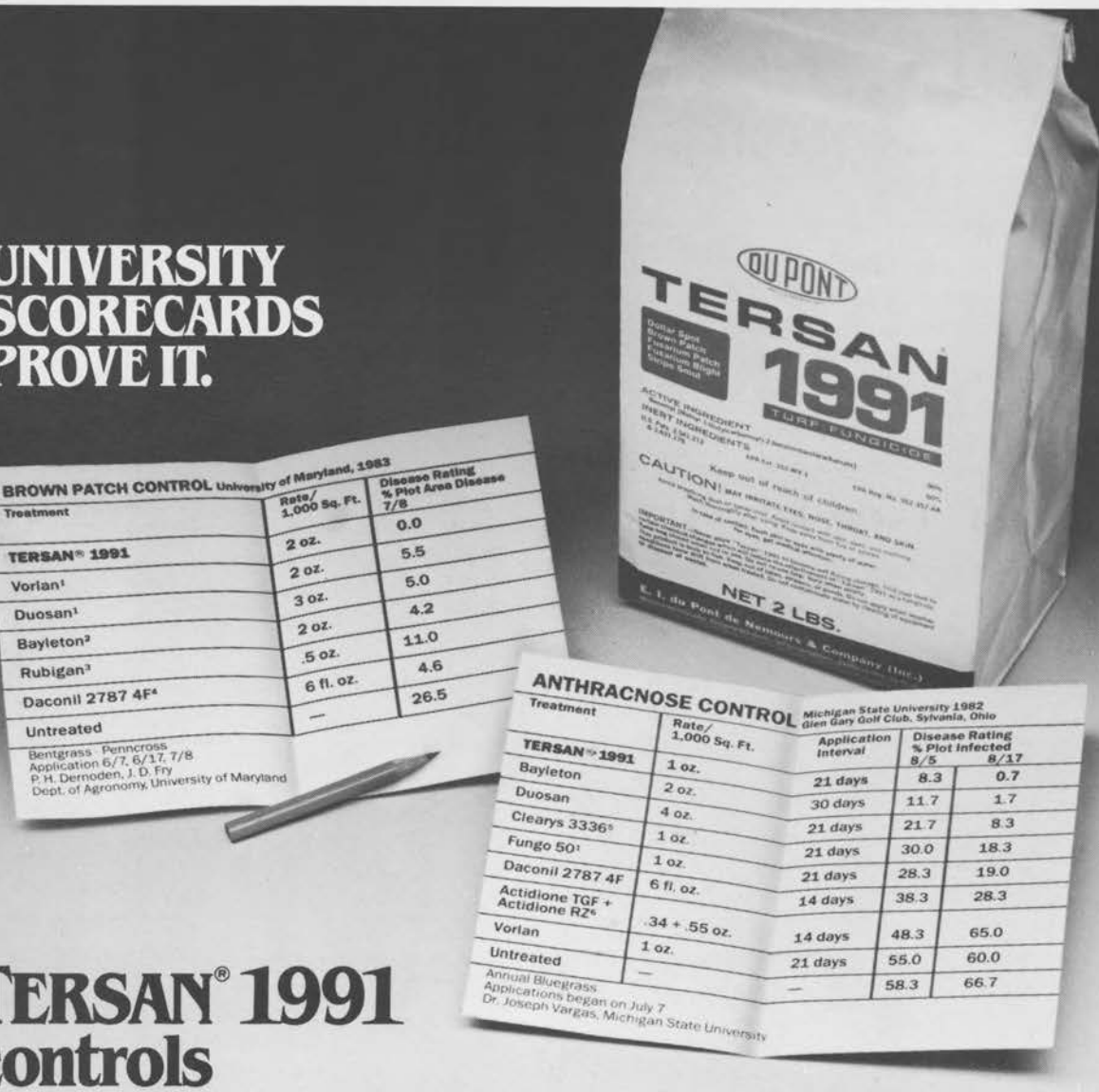
While I am on the subject of the suplliers I would like to express the appreciation of the MBCGCSA for all of the support they give to our organization. Over the years many of the suppliers have given much of their time and financial aid to many of the Border Cities' functions and they provide the support for the Patch of Green. I thank you for your help and I know it will continue for many years to come.

Please try to patronize the suppliers who are members of the MBCGCSA as they provide a valuable service to the golf course superintendent in the form of quality material and valuable turf-related information.

One final note. The annual picnic will be held in early August. The site and date will be announced in the near future. This outing gives all members an opportunity to have a day of fun and relaxation with their families and friends during a time of year when everyone is due for a break from the daily grind. For those of you who have never attended the picnic, I know you will be pleasantly surprised. Whether or not you have kids, the picnic is well worth attending. We hope to see you there.

Sincerely,
Kevin Dushane,
President, MBCGCSA

UNIVERSITY SCORECARDS PROVE IT.



TERSAN® 1991 controls brown patch and anthracnose better than the fungicide you are now using.

If you're not using TERSAN® 1991 fungicide you're not getting the best brown patch and anthracnose control. Test results, like these from Michigan State University on anthracnose and the University of Maryland on brown patch, prove nothing works better than Du Pont TERSAN 1991 fungicide against these two turf diseases.

Many new fungicides provide poor control of brown patch and anthracnose, especially under heavy disease pressure. Their extended spray intervals recommended for other turf diseases, such as dollar spot, are too long to provide adequate protection against brown patch and anthracnose.

TERSAN 1991 is well suited to handle the heaviest disease pressure. Its unique systemic activity withstands heavy rainfall and frequent watering for longer-lasting disease control. And TERSAN 1991 may be applied for anthracnose control either preventively or after the disease is already present.

Schedule TERSAN 1991 in your summer spray program. Apply it in tank mixtures or as supplemental applications from June through August, when brown patch and anthracnose threaten.

You'll get tee-to-green control that hits brown patch and anthracnose hard. Control that university tests prove works even under heavy disease pressure...TERSAN 1991. Only from Du Pont.

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[1] Vorlan,*† Duosan, and Fungo 50—Mallinckrodt, Inc.
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[6] Actidione TGF and Actidione RZ†—TUCO Div. of Upjohn Co.

* Not labeled for brown patch control.
† Not labeled for anthracnose control.

With any chemical, follow label instructions and warnings carefully.

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CUTLESS AND EMBARK ON GOLF COURSE TURF

B.E. Branham

Cutless (common name - flurprimidol) and Embark (mefluidide) are two plant growth regulators (PGR's) which have recently found application on golf course turf. Cutless is not yet commercially available but is being tested under an experimental use permit. Embark has been available for approimately 8 years, but its use has been confined to low maintenance and commercial sites. While these materials are both PGR's, their uses on golf courses are completely different.

Cutless is a plant growth regulator that works by inhibiting gibberellic acid (GA) synthesis. GA is the plant hormone responsible for cell elongation and its inhibition by Cutless causes the observed growth reduction. The primary use on golf courses is as a selective herbicide, in that it seems to severely retard annual bluegrass while having a lesser effect on other turf species. Thus it may be possible to retard annual bluegrass to such an extent that it may be outcompeted by creeping bentgrass. Much more research is needed to determine the actual benefits of using Cutless. Currently, we don't have the data to determine how much annual bentgrass reduction we can expect with applications of Cutless. Studies to be initiated in the spring of 1985 should yield this information.

Mefluidide is a PGR with a completely different application. Mefluidide applications to annual bluegrass turf, when properly timed, yield excellent bluegrass seedhead control. Eliminating the annual bluegrass seedheads accomplishes two functions. First, the fairway looks better because most everyone finds the seedheads unsightly. Second, the rooting of the annual bluegrass turf is improved compared to untreated turf. This was shown by research carried out at the Ohio State University rhizotron†. Annual bluegrass plants treated with mefluidide continued to develop new roots whereas untreated plants began producing large amounts of seedheads with a concurrent stoppage of root growth. Thus mefluidide gives the annual bluegrass plants a physiological advantage by allowing root growth and mass to continue to develop in the spring of the year.

In addition, both flurprimidol and mefluidide offer another advantage due to their use. Treated plants develop a darker green color due to PGR treatment. The increase in green color is quite noticeable and lasts for up to one month. And by the way, some people even enjoy the reduction in mowing that results from use of these materials. It is not uncommon to see fairway mowing frequency drop to once every one to two weeks when using these PGR's. The benefits of reduced mowing in the spring when crews are not up to full strength can be tremendous.

In summary, PGR's are becoming an important management tool for golf course superintendents. The benefits of these materials are more than just reduced mowing and enhanced green color. Cutless may be useful as chemical to aid in the conversion of mixed species fairways to predominately creeping bentgrass. Embark can cause an increase in root growth of annual bluegrass and perhaps make this species less susceptible to summer heat and drought.

†Cooper, R.J., P.R. Henderlong, K.J. Karnok and J.R. Street. 1984. **The Effect of Mefluidide on Annual Bluegrass (Poa annua L.) Quality and Rooting.** Agron. Absts. p. 149.

Thunderstorms

by Mal Sillars

Thunderstorms are the result of a temperature imbalance in the atmosphere and usually take place when there is sufficient warm air. In Michigan that means late spring, summer and fall. However, at any instant, it is estimated that nearly 2,000 thunderstorms are in progress over the earth's surface. These storms produce some 100 lightning strikes per second. Every day some 45,000 thunderstorms develop, totaling nearly 16 million per year. About 1000,000 hit the United States.

Lightning is the biggest killer of all weather-related events. Since deaths usually happen in ones and twos, lightning is often overlooked as a significant danger. However, 25 years of records show that on the average more than 100 are killed and about 250 injured by lightning each year. During the years 1958 through 1983, 69 people were killed in Michigan, while 456 were injured. Only Florida reported more injuries during that time period, with 663. Studies show that most lightning fatalities occurred because the victim did not know, or chose to ignore, simple safety precautions.

Although lightning is the biggest danger from thunderstorms, injuries and death can also come from hail, high winds, flash floods and lightning-ignited forest fires.

A thunderstorm is defined as **severe** when it contains wind gusts of 60 mph or greater, or hail at least ¾ inch in diameter. With these storms comes the likelihood of downpours and frequent lightning. When there is the potential for such a storm a **SEVERE THUNDERSTORM WATCH** will be issued. That means watch, and listen. If a storm is imminent, a **SEVERE THUNDERSTORM WARNING** will be issued. That means take the proper safety precautions.

SAFETY TIPS

If you plan to be outside for a period of time, check the forecast to see if thunderstorms are expected. If possible, take a radio with you.

When a thunderstorm threatens, get inside a building or an all-metal automobile.

If caught outside, don't be the tallest item around.

CONTINUED PAGE 22

THOUGHTS FROM THE PAST PRESIDENT OF THE MTF

Bruce Wolfrom

As the most recent Past President of the Michigan Turfgrass Foundation, allow me a few lines to reflect on one of the finest organizations in the state of Michigan. I believe the Foundation simply stated, is people. People working together making sure that they are knowledgeable of the technical aspects of their industry. People firmly planted with the idea that knowledge is the key to success in any industry and knowing that sharing this knowledge is far better for the industry than any personal gain. If one of our members has reinvented the wheel, that design is shared with all. In the same way the Foundation disseminates all information produced by their research.

The personal gains are secondary. As the industry gains so do the individuals. I guess that's why when an individual becomes involved for personal gains he or seh doesn't seem to last too long. But when one becomes involved to help others in their profession that person seems to go all the way. This is true in any organization whether it be the Michigan Turfgrass Foundation or MBCGCSA. A great organization stays great for only one reason, its people.

This may sound idealistic, but I've found it to be true. Become involved whether it be attending a meeting, serving on a committee, serving on the board, joining the Founder's Society or participating in fund raisers. It's your industry. It's your future. Get involved.

I also want to thank all of the members of the Michigan and Border Cities GCSA for your support during my presidency of the Foundation. Your counsel and guidance were greatly appreciated. I feel confident with Mr. John Read as President the Foundation is in good hands and the work will be carried on in the tradition of sharing and growing. I also feel confident that MBCGCSA will continue its support of the MTF.

TURF MANAGEMENT

Peter H. Dernoeden
Extension Turf Specialist

ABOUT THATCH AND ITS CONTROL - Part 1

Thatch is the layer of dead and living grass tissues that lies above the soil surface. The definition of thatch can be further sub-divided to include mat and the organic fraction. Mat refers to a few millimeters of the upper soil surface containing both soil and organic matter; whereas, the organic fraction refers to decomposed plant and animal tissues lying below the mat. The term thatch generally includes the distinctive, above ground layer of dead, decomposing or living tissue as well as mat and organic fraction. It is the above ground, organic layer however, which is most troublesome in the management of many turfgrass species. Some turfgrass species, such as tall fescue and perennial ryegrass however, do not develop thick thatch layers.

The thatch layer largely consists of crowns, stolons, rhizomes, roots and leaves either living or dead and in various stages of decomposition. It is the stem tissues (i.e. crowns, rhizomes and stolons) that contribute most to thatch build-up. This is because stem tissues contain high quantities of decay-resistant substances including phenolic compounds, waxes, lignin, cellulose and hemicellulose. Decomposition of thatch is largely dependent upon microorganisms. Fungi initiate the decay process and are later joined by bacteria and larger organisms such as nematodes, mites and earthworms. In addition to reducing thatch layers, the decomposition process also releases nitrogen from organic matter and produces gums and humus, which help to improve soil structure and the cation exchange capacity (i.e. nutrient holding capacity) of soil.

Many factors are responsible for the development of excessive thatch layers. The primary factors include the use of vigorously growing species and cultivars, excessive nitrogen fertility, pH extremes, poor drainage and the use of certain pesticides. Because microorganisms are responsible for thatch decomposition, it is obvious that factors retarding microbial activity will cause thatch to build up. Among the most important inhibitors of microbial activity are some types of pesticides, pH extremes, poor aeration and low levels of nitrogen fertility. Pesticides are perhaps the most potent inhibitors of microorganisms. Although the effects of pesticides on soil microflora are not well understood, several studies have shown that the use of some herbicides (e.g. calcium arsenate), fungicides (e.g. benzimidazoles, thiram, maneb and cadmium), insecticides (e.g. chlodane and dieldrin) and nematicides (e.g. fenamiphos) are associated with thatch build-up. Thatch and soil pH directly affect microbial activity, with most rapid thatch decomposition expected to occur at a pH of 6.0. Frequent, light applications of limestome to acidic thatch and acidifying fertilizers or iron sulfate applied to alkaline thatches will improve microbial activity. Soil compaction, waterlogging or any other factor contributing to poor aeration will also be inhibitory to microbial activity. Wet soil conditions are particularly harmful because toxins are produced during decomposition of thatch under low oxygen levels, which are harmful to microorganisms. Low nitrogen fertility is detrimental because nitrogen is required by microorganisms for decomposition to occur. When large deviations occur in the carbon to nitrogen ratio of thatch, decomposition is hindered, but can can be corrected with light and frequent applications of nitrogen. Conversely, high nitrogen fertility results in the production in stem and root tissues at a rate exceeding the capacity of microorganism to decompose dead tissues and thatch layers build up.

A great deal of time and money are devoted to clipping removal for the apparent reason of preventing thatch. In fact, clippings do not create or add significatly to thatch because they consist of 75% to 85% water and contain little cellulose or lignin. Furthermore, clippings contain nitrogen (3% to 6%), phosphorus (0.5% to 1.0%) and potassium (1% to 3%) and when returned to turf will provide a 4-1-3 fertilizer. It has been estimated that catching clippings removes 1 to 2 pounds of nitrogen per 1000 ft2 annually from turf. Removal of clippings however, is recommended where thick layers of thatch exist. This is due to the need for clippings to be in contact with soil to break down rapidly. Clippings should also be removed when wet and heavy enough to bury the turfgrass canopy.

A decline in the quality of turf is often associated with thatch build-ups. As well maintained turfs grow older, more stem and root tissues are produced. Developing stems will elongate more as thatch develops, producing even more decay-resistant compounds. As more tissue is produced, more remains above the soil surface and in extreme cases most stems and roots of living plants become restricted to the thatch rather than the soil. Without the insulation accorded by soil, plant tissues become more prone to injury from environmental stresses. This is further aggrevated by the hydrophobic nature of dried thatch, which repels the infiltration of water to the underlying soil. Thick thatch layers also provide a favorable microenvironment for some fungal and insect pests. Hence, as thatch layers deepen, several environmental and biological factors begin to interact to cause deteriora-

CONTINUED PAGE 20

Do You Remember – 40 Years Ago?

1946. The country was getting back to reality, World War II was over and people were ready to play golf again. This was the beginning of a new era for golf courses and golf course maintenance. People started to demand better quality turf, cut lower, faster greens and watered fairways. Big things were happening - new chemicals were coming on the market. 2-4D, a herbicide developed during the war and by accident found that it would control broadleaf weeds was introduced and DDT was found to be a very effective golf course insecticide after being developed to control the malaria carrying mosquitoes in the South Pacific islands during the war. New mowing equipment was being manufactured again after the halt of production during the war. Budgets were increased and things were booming.

1946 is the year that Andy Bertoni took his first Superintendent's job at Barton Hills Country Club, also the year Roger Gill started his first day in school. Willie Smith was superintendent at Red Run Golf Club, Dutch Buettner was superintendent at Plum Hollow, Bob Sutherland was head greensman at Meadowbrook and Kevin Dushane wasn't even a glimmer in his Dad's eye yet. Clarence Wolfrom was starting his 15th year as superintendent at Maple Lane Golf Club. George Prieskorn, Sr. was general manager of Burroughs Farms in Brighton and Harold Prieskorn, his brother, was the superintendent.

Also 40 years ago, Jack Lorenz was busy getting his "land-legs" back after serving over 4 years in the U.S. Navy. He then started making his mark in major league baseball, eventually playing third base for the Philadelphia Phillies. Later, in the early 60's, he took over as superintendent of Grosse Ile Golf & Country Club.

The friendly suppliers in the year 1946 were Hiram F. Godwin co., the Worthington (now Jacobsen) dealer, C.E. Anderson Co. was the Toro dealer located in Ferndale, Lawn Equipment Corp. of Royal Oak, run by Art Fellman and Holly Bradshaw - Burt Bradshaw got back from the service in time to help them move to their new location on 11 Mile Rd. in Royal Oak - and Bob Kirkpatrick was on the staff as a salesman. By the way, did you know that the Lawn Equipment Corp. is celebrating their 60th year in business? Gordy's hair looks like he's been there for all of them. Ideal Mower, headed up by Walter Beutikofer was a prominent supplier of green and fairway mowers, representing the Ideal Mower Company. 1946 was the year that

CONTINUED PAGE 15

Random Thoughts That Surfaced While Changing Cups

By William B. Stevens, CGCS

After changing cups on the same greens for over 15 years, the mind starts to wander . . .

I HATE CHANGING CUPS!

Why is the number of rocks encountered while changing cups in direct proportion to how close the golfers are?

What law of nature states the number of no-shows and tardy employees is related to the importance of the tournament and the earlier tee-off time?

Why is it when you borrow or lend equipment it inevitably breaks down?

What law is it that makes the severity of machinery breakdown in direct proportion to the importance of the job and the time limit allowed?

Hoes does equipment and pump house know when it is a weekend?

How does disease know when it is the first day of a three-day weekend?

WHY ARE THESE GREENS SO HARD?

How come there are so many ball marks on the greens when every golfer swears that he repairs his and two other ball marks?

Ever notice that it is usually the same golfer who complains about poor playing conditions and who complains that the course is closed due to wet conditions or renovations?

Would reverse psychology work on this same golfer, for example a cart sign "PLEASE DRIVE CARTS THROUGH WET AREAS?"

I wonder how many golfers would hit a ball at an unaware worker, if that worker was his son or daughter?

Ever notice when mowing fairways, golfers will never hit a ball when you drive towards them, they wait until your back is turned and driving away?

Why do golfers feel the need to walk or drive in front of maintenance equipment?

THERE MUST BE AN EASIER WAY TO CHANGE CUPS!

Due to budgetary restrictions, the brakes on maintenance equipment are usually the last thing repaired, much to the surprise of the above golfer.

Why is it usually easier to get clubs to spend $500 to repair an old piece of equipment, when a new one costs only $1000? (This is hypothetical as there are no machine for $1000!)

Most members join a golf club for golf, otherwise they would join a social club; so why is it when money gets scarce, the golf course budget is the first to get cut?

We have streamlined our operation enough so that April 1, we are only 6 months behind our regular yearly maintenance!

Why is it you can search for something you need and after you finally buy one, many others become available?

WHY CAN'T SOMEONE INVENT A HYDRAULIC CUP CUTTER TO FIT ON THE BACK OF A CUSHMAN?

Ever notice early in the morning while going to work, a traffic light will turn red on you for no reason and will remain red until another car approaches the green light from the other direction?

Ever realize the Catch-22 we are in? We try to pay some of our help what they are worth so we can help them and as soon as we do, they realize that aren't starving and have lives besides work, so they don't want to work overtime?

Why don't we take summer vacations? I took a week this year, and probably lost less turf than if I had been on the job. Are we irresponsible if we take time off? Should our jobs be in jeopardy if we take time off? Would members tolerate being told when they could take their vacations? This is too touchy a subject to be dicussed here.

The most original excuse by an employee for taking time off was used twice by the same person within a five-year period. He probably doesn't think I've caught on so I expect to hear it again soon. He needed time off because his wife was three months pregnant and had six months to live. (Please note the woman is healthy and too old to have children.)

Why is it that the practice green, which has the most holes, is usually the hardest and rockiest (is that a word?) green when changing cups?

OH MY ACHING BACK!

Why is vandalism in direct proportion to the desire of showing off a good course?

Ever notice salespeople seem to come in groups? No one for weeks, then everyone at the same time. It is almost like they have a secret meeting to decide who they are going to see. (Please don't take offense guys.)

This is a fill in the blank. Did you ever notice a is like a policeman, never around when you need one?

Why does the boss always show up wjen something goes wrong that you don't want him to see?

Ever notice how things come back to haunt you? I instituted the policy that each Director write an article for the **Collaborator**, now I'm paying for it!

THE HECK WITH IT, I'LL LET MY ASSISTANT CHANGE CUPS FROM NOW ON!

Finally an alternative.

Toro's new Greens Aerator can help you aerate your greens faster than the leading competitive machine. But that's not the only advantage. Toro also outdistances the competition by adding **greater horsepower**, **heavy duty construction**, and a modular design for easy servicing. All that you need to make one of your seemingly longest tasks in golf course maintenance a whole lot shorter.

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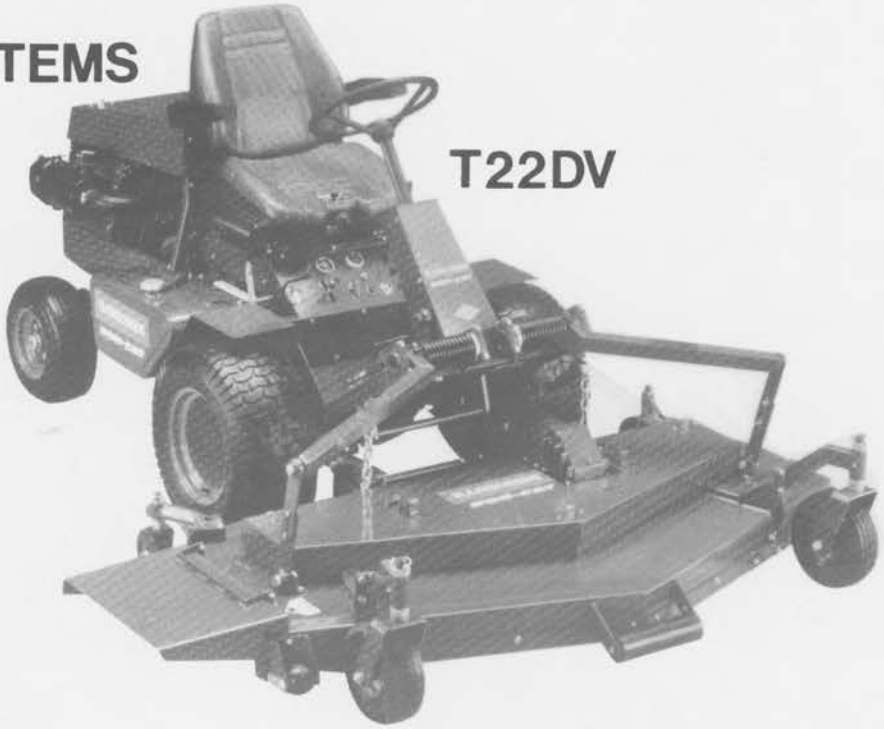

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Ferndale, Michigan 48220

1946, CONT.

Frank Forier started at Terminal Sales Corp. as a salesman, later to become the Executive Vice President of the company and now with Benham Chemicals.

We as superintendents today are very fortunate to have many of these highly experienced and dedicated suppliers still serving us today.

In 1946, the Detroit District Golf Association, now called the Golf Association of Michigan, printed the annual report as they do today. Some of the interesting facts submitted cy Cleve Helferick, then Green Chairman for the Detroit District Golf Association was as follows:

Average Greens Budget was $24,320
Average height of grass was 4"
Average height of fairways was 1 1/4"
Only 25% of the clubs cut greens daily
Average rate per hour for maintenance men was $1.12
Average Greenkeeper's salary was $3.650.00
The Detroit District Golf Association contributed $2,250.00 for a Turf Research Scholarship at Michigan State College
Dr. James Tyson headed up the Turf Research at M.S.C.
PMAS was used to control crab grass
Joint meeting between the Detroit District G.A. AND THE Michigan & Border Cities Golf Course Superintendents Assocation was held on June 18th at the Detroit Golf Club. Dr. Fred Grass from the U.S.G.A. Green Section, Dr. G.O. Mott, Turf Research man at Purdue University and Mr. A.L. Brandon, Secretary Treasurer of the Greenkeeping Superintendents Association of St. Charles, Ill. were the guest speakers. Club Presidents, green chairmen and superintendents were invited.
Caddies were paid $1.50 for 18 holes, .75 for nine
Annual dues for members averaged $200 per year
D.G.C. had 31,753 rounds of golf
Pine Lake Country Club had 6,307 rounds
Detroit City Courses charged green fee rates of $1.00 for 18 holes and .50 for nine holes.

Well that concludes my report on our professional happenings of 40 years ago . . . I hope this will be of interest to our readers. Look for another report of 30 years ago, *1956*, in our next issue.

Respectfully Submitted
Clem Wolfrom

MEETINGS FOR 1986

Mole & Muskrat Control	July 21	City of Ann Arbor
Geese Control	August 4	
Joint Meeting/NW Ohio Dr. Joe Vargas - MSU	Sept. 16	Tecumseh GC
Cart Path Maintenance (Round Table Dicussion)	Sept. 22	St. Clair Shores
MTF Golf Day	Oct. 6	
C.H. Wolfrom Classic & Annual Meeting	Oct. 22	Maple Lane GC
GCSAA "Golf Course Design II"	Nov. 4,5	Lansing

TURF TIP: Aerification

Aerification, along with its temporary disruption of the putting surface, is often misunderstood by the average golfer.

The aerification process involves the removal of cores of soil roughly the size of a finger. If the soil on the green is of desirable quality, the cores are then broken up by verticutting and returned into the holes on the green by dragging. If the soil is of undesirable type, the cores are removed and fresh topdressing added to fill in the holes.

This process helps the turf in many ways. Aerification relieves compaction caused by heavy traffic; promotes deeper rooting, thus a healthier turf; and helps relieve localized dry spots. After aerification, water and oxygen move through the soil more easily, while allowing carbon dioxide and other toxic gasses to escape from the soil. The ability of the green to hold a shot is also improved.

Because of the many benefits of aerification, it is an important management tool in helping to provide for improved putting conditions.

A FIELD DAY IN AUTUMN

An erratic Sun in a peek-a-boo disguise,
Allowing impish clouds to doodle in the images in the sky,
Rousing a gnawing wind to cycle in full stride,
And take over the day on rueful ride;

The Autumn Wind takes pride in leaping.
Impelling a wary Sun and fatty clouds into fleeing,
And toppling bottles of chemicals with a splash,
With pamphlets cartwheeling across the grass;

White groomed tables stained from this go-around;
Vendor's playing catch-up with all the papered ground,
Fetching literature with a straining arm,
Only the member-guest's remain poised and calm.

Frank Paladino

Developing an Equipment Replacement Program

by Jerry Cheeseman, Director,
School of Golf Course Operations
Lake City Community College,
Lake City, Florida

Because most facility managers must work within a predetermined budget, the accurate forecasting of maintenance and capital costs a year or more in advance is extremely important.

Many facility managers do not have a complete inventory list of their equipment. A large number are not involved in any kind of planning process for replacing their worn-out equipment. Present conditions, the trend toward increased mechanization grounds maintenance and just good management principles warrant a stronger degree of attention in this area.

Managers need a systematic method for programming equipment replacement. Many of them utilize sound mathematical formulas to project the time and cost of replacing machinery. Other managers make replacement decisions using acquired common sense.

There are three basic approaches to replacing equipment:

- Estimate the use-life for each unit of equipment when that period has expired, replace the unit.
- Replace the equipment when its maintenance cost becomes too high compared with the original cost, the cost of replacement or both. This method involves keeping records of labor and parts required to repair each unit. Facilities with cost accounting services can use this method efficiently.
- Continue to repair and use old equipment as long as possible. This method is usually more costly in the long run, and the appearance of the facility may suffer.

Record Keeping

The planning process begins with building a record keeping system using accounting ledger or journal sheets with several lined vertical columns. The number of column headings depends on the data considered valuable, but at least the following six should be listed in the order given: **Equipment, Serial Number, Date Purchased, Original Cost, Equipment Status** and **Life Expectancy in years.**

All equipment is classified based on common usage - utility vehicles, tractors, mowers, etc. These categories along with each piece of equipment within each category, are listed in the left hand column of the ledger sheet. Include the serial number next to each unit name. Serial numbers can be copied directly from the equipment inventory. If there is no inventory, one can be made while the replacement program is being developed. It will also be helpful to list the purchase date and original cost of the equipment under subsequent headings.

Determining Equipment Status

When first developing the replacement program, the current condition of each unit should be noted and this information should be used as a basis for determining the remaining life expectancy.

When evaluating the mechanical condition of equipment, it is a common mistake to use too many rating levels, which causes confusion. Keep rating limited and simple, there could be a fine line between ratings of fair and poor. Four ratings should be considered when evaluating equipment: excellent, good, poor and inoperative.

Estimating Life Expectancy

A universal life expectancy for any unit of grounds maintenance equipment cannot be easily established because of the various factors involved in determining how long a unit will function effectively before it costs more to keep it than to replace. Facility managers have suggested the following factors to consider when establishing equipment life expectancy:

- Quality of original equipment
- Selection of the proper unit for the job
- Sound preventive maintenance program
- Competence of the mechanic
- Proper training of equipment operators
- Proper supervision of equipment operators
- Adequate storage facilities

RESEARCH REPORT Poa annua–Bentgrass Competition

by A. D. Brede
Assistant Professor Turfgrass Management
Oklahoma State University

Over the past few months since the beginning of the Poa Annua/Bentgrass project with the Minnesota GSCA, we have made significant progress in the establishment of experiments that will give us an insight on the nature of the competition between these two species. Our aim in this experimentation has been to examine the competition between Poa annua and bentgrass, with hopes of providing information to the golf course superintendent of how to better maintain their putting greens.

In June, 1985 we finished preparation of a large field experiment designed to determine if mature Poa annua gives off any type of toxins that may be affecting bent growth. In 1984 we established a source green, with plastic underlying a traditional sand-based putting green area. A 3,000 sq. ft. area of Penncross was established next to an equal sized Poa annua area. Thre strains of Poa annua were examined: two strains were obtained as sprigs from two older Oklahoma golf courses and a third strain was obtained as an annual, seeded form from the seed fields of Oregon.

Water from these two sources flow into holding tanks and from there the fluids are pumped to individual plots in a test green where the effects of the fluids are examined. There are actually 16 test greens, all built in a Purr-wick fashion to allow for the buildup of toxins. We have a total of four treatments under test in the test greens: 1) water from the Poa annua, 2) water from the Poa annua that has been filtered through chemical-removing activated charcoal, 3) water from the Penncross bent area and 4) water from our irrigation system as a check.

The experiment has been in operation for four months now. An electronic controller, which monitors soil moistures in the test greens and orders the appropriate fluid, has been functioning flawlessly since that time. Although we have been taking data regularly from this area, there have been no striking observations to date. Perhaps the effects of the Poa annua will accumulate and increase over time. We'll keep you informed on the progress.

We have also begun and completed a series of experiments with Poa annua seedling germination in the growth chamber. In this series of tests we used one basic technique: we planted 100 Poa annua seeds on a moistened blotter, allowed the seeds to germinate, flipped the blotter over and then germinated 100 bentgrass seeds on it. In doing this, we were trying to assess the impact of germinating Poa annua on germinating bent.

Our results to date have been quite fascinating. We have found that Poa annua does indeed excrete somt type of chemical compound during germination that can stunt bent germination. In fact, the effect of one single Poa annua seed on 100 bent seedlings could be detected. The stunting is usually in the vicinity of 10 to 50% reduction in initial growth of the bentgrass seedling. Sometimes the reduction is too small to be readily noticed by the human eye, but by carefully measuring hundreds of bent seedlings, the trend was confirmed. The stunting was not present when we heat killed the Poa annua seed or when we applied activated charcoal around the germinating Poa annua. This suggests the presence of a metabolic chemical given off during the germination process. Our next series of growth chamber tests is slated for December and will examine the effects of germinating Poa annua on mature bentgrass tissue.

In September we began another field experiment to follow up on some of the work we performed last fall on overseeding bent into Poa annua and vice versa. This technique is similar to one described in the next issue of Grounds Maintenance magazine by this author.

As you can see from the above information, we are zeroing in on the effects of Poa annua on bentgrass. We plan to continue these tests for at least another year and then begin a series of studies to try to find the casual agent involved in Poa annua/bentgrass competition.

Michigan Room Report

The Michigan Room at the 57th International Golf Course Superintendents Conference and Show in San Francisco was a big success. Craig Roggeman, Steve Vasher and I were the hosts this year. Again, this year we were open four nights, which says a lot for the support we get to be able to have had it open for so many nights.

The room would not have been a success without the donations of money, snacks and time made by all. This year all associations in Michigan contributed both money and people to work which made the room that much better.

The room is designed as a meeting place for all from Michigan to get reacquainted with old friends and to offer a place for delegates to meet and talk to our candidate for the Board of Directors - Jerry Faubel. Jerry was the top vote-getter and was elected to the Board of GCSAA.

Again, I would like to thank all who helped out this year. Members, vendors and the other three associations working together made this suite one of the best rooms ever and helped Jerry Faubel win election to the Board of Directors of GCSAA.

Thanks All, Jon Maddern

Printer's note: This article was submitted in January, 1986 and got lost in the shuffle. Its untimely addition to **The Patch of Green** hopefully reminds the reader of the adage "Better late than never."

tion of stand vigor, density and quality. Furthermore, roots growing in thatch rather than soil are more prone to injury from some herbicides. Also, preemergence herbicide and insecticide activity declines because they are more readily decomposed when bound in thatch. Thatch also impedes the movement of fertilizer and limestone into soil, increases the likelihood of scalping and can delay spring green-up.

Despite the aforementioned, harmful effects of excessive thatch, a modest thatch layer is beneficial. Moderate levels of thatch provide resiliency, which reduces the physical impact of traffic on turfgrass plants and underlying soil. Resiliency therefore improves wear tolerance and decreases the potential for soil compaction. Resiliency also reduces injury to athletes and improves the holding ability for approach shots on golf putting greens. A moderate thatch layer improves the environmental stress tolerance of turf by moderating soil temperature and reducing evaporation of water from soil. The presence of thatch may also provide some protection from injury due to excessive use of pesticides and from soluble salts. Finally, as was previouslt noted, the degradation of thatch improves soil structure and therefore improves the water and nutrient holding capacity of soil.

ABOUT THATCH AND ITS CONTROL - Part 2
(THATCH CONTROL METHODS)

In general, when thatch layers exceed ½ inch a control program should be initiated. Where thatch layers exceed three inches in depth, consideration should be given to re-establishment by removing thatch with a sod cutter, tilling the soil and re-seeding or sodding. There are two basic approaches to thatch control, biological and mechanical. Successful control programs integrate both approaches. The biological method employs cultural practices that enhance decomposition processes. This begins by choosing species and cultivars that are less prone to produce thatch. For example, thatch seldom becomes a problem in bunchgrass species such as tall fescue and perrenial ryegrass. There also is variation among cultivars: Common-type Kentucky bluegrasses (e.g. South Dakota, Park and Delta) are less thatch prone than vigorous cultivars (e.g. Glade, Touchdown, Cheri and Baron). Proper use of nitrogen fertilizers and maintaining thatch and soil pH near 6.0 are also a part of biological thatch control programs. Of greatest benefit however, is topdressing using the same type of soil underlying the thatch. Topdressing is beneficial because it brings microorganisms from soil in direct contact with thatch.

Mechanical thatch removal is the most common method of control. The process of thatch control however, is greatly accelerated when mechanical and biological methods are integrated. Mechanical cultivation is best achieved with a vertical mower or verticutter and core aerification. Hand raking is often attempted and may help prevent thatch formation, but is not effective in removing enough organic matter to be beneficial where a thick layer exists. Cultivation

equipment that slices, forks or spikes also do not adequately reduce thatch and could actually cause some surface compaction. Vertical mowers or verticutters are machines having a reel equipped with blades that dig through thatch producing grooves in soil. To be effective, these machines must be able to penetrate thatch 1/8 to 1/4 inch deep into soil. A core aerifyer is equipped with hollow spoons or tines, which remove soil plugs about 1/4 inch in diameter and 2 to 3 inches deep. Core aerifyers remove some thatch, but more importantly they create large pores for air, water, limestone and fertilizer to rapidly enter soil and speed the decomposition process.

Because cultivation is injurious to grasses, it should be performed during environmental periods coinciding with vigorous growth (i.e. spring and fall for cool season grasses and early summer for warm season grasses). the frequency of cultivation will depend on thatch depth, but is generally performed once or twice annually. Deep verticutting a thick thatch often causes severe injury to turf. Severe injury has occurred when turf is unable to recuperate within ten days. Hence, frequent but shallow verticutting is preferred in thick thatch. In using a verticutter, it may be necessary to transverse the turf area several times in different directions. The loosened organic material should be removed after each pass. For best results, turf should also be aerified. Following aerification, verticutting is performed to physically remove organic matter and to grind the soil cores. The ground soil cores (i.e. topdressing) should then be dragged or matted into the turf and the dead organic matter raked off. This is also a good time to apply limestone and fertilizer and to overseed if necessary.

Below, the detrimental effects of thatch are reviewed (Table 1) and biological and mechanical approaches of thatch control are outlined (Table 2).

TABLE 1. Some detrimental effects of excessive thatch.

1. Decreased environmental stress tolerance.
2 Decreased water infiltration or development of a hydrophobic barrier to water infiltration.
3 Loss of nitrogen due to volatilization.
4 Decrease movement of fertilizers and limestone into soil.
5 Increased disease and insect problems.
6 Reduced effectiveness of insecticides and preemergence herbicides.
7 Increased injury potential from preemergence herbicides
8 Reduced seed germination and seedling survival when overseeding.
9 Increased scalping and poorer mowing quality.
10 Slower spring green-up.

TABLE 2. Biological and mechanical approaches to thatch control.

1 Measure thatch pH and adjust thatch and soil pH

CONTINUED NEXT PAGE

THATCH, CONT.

to a range of 6.0 to 6.5.

2 Use less vigorous, rhizomateous and stoloniferous species and cultivars.
3 Avoid excessive use of nitrogen fertilizers.
4 Use pesticides wisely.
5 Topdress using soil of same type underlying the thatch layer.
6 Monitor thatch and begin mechanical removal when layers exceed ½ inch depth.
7 Core aerify ana mat soil from plugs back into thatch.
8 If possible, coordinate aerification with vertical mowing practices during vigorous growth periods of the turf.
9 Slicing, Spiking and forking will not adequately reduce thatch layers and may increase surface soil compaction.
10 Remove clippings when wet and heavy or where excessive thatch layers exist.
11 Improve water infiltration by soil modification or by improving surface and/or sub-surface drainage methods.

THUNDERSTORMS, CONT.

Don't take shelter under a lone tree. Find a low area under a thicket or in a ravine.

Get off from metal objects such as tractors, golf carts and motorcycles. Put down golf clubs and take off spiked shoes. Stay away from metal antennas and fences.

If you are part of a group caught out in the open, spread out, keeping several yards apart. Because of side flashes, several people can be struck with just on lightning bolt.

If you feel an electrical sensation and your hair starts to stand on end, get down! **Do Not** lie on the ground. Ground currents can kill just as well as a direct hit. Drop to your knees and bend forward, putting your hands on your knees.

Avoid using the telephone, except in an emergency and stay away from appliances and plumbing. Lightning can strike power lines and soil pipes and follow them right into the house.

Don't panic. These rules are to keep you safe, not to make you worry. Your chances of being hit are about 1 in 800,000; (We play the Lottery and **expect** to win with about the same odds) remember what to do and enjoy the majesty of it all.

SEEKING POSITION AS SUPERINTENDENT OR ASSISTANT SUPERINTENDENT - Stephen J. Meyer, 5030 Cooley Lake Road, Pontiac, Michigan 48054. (313) 681-2466. Age 29. Eight years total experience on golf course maintenance, five years as an assistant. Presently assistant superintendent at Knollwood Country Club, West Bloomfield, Michigan. Graduate of Michigan State University with B.S. Degree in Soil Science. Major in Turf Management. Emphasis also in Botany, Horticulture and Landscaping.

Awards include Evans Scholarship, GAM James D. Standish Achievement Award, GCSAA Scholarship and TUCO Scholarship. Have Michigan pesticide license.

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