



Official Publication of the
W.M.G.C.S.A.



MAY/JUNE 1986

PRESIDENT'S MESSAGE **Kurt Thuemmel C.G.C.S.**

The March meeting, hosted by Don Fitz, at Cascade Hills Country Club, was well attended with 32 superintendents and assistants for our annual round table discussion. A big thank you to our educational Chairman, Fred Pastour and to Bill Madigan who assisted Fred with the planning and directing of this very informative meeting.

The response to the membership survey, that was mailed with the dues notice, was very good and will provide your board of directors with the direction that is needed for our association.

We will not meet formally during the month of July; however, Jeff Gorney has organized a fishing excursion on July 7th, and reservations are needed now, so the charter service can make arrangements. Everyone should have received notification. I certainly am looking forward to this event.

Golf Day will be held at Muskegon C.C. and the alternate course will be Spring Lake C.C. Details will follow later.

Many members of our association also belong to the Michigan Turfgrass Foundation. If you expect to stay current with today's modern golfcourse management techniques, and you are not a member of the Michigan Turfgrass Foundation, please consider some of the benefits you are missing.

- 1) Newsnotes - Published four times per year with up to date management techniques. One of the finest turfgrass publications available.
- 2) Michigan Turfgrass Conference - Sponsored by the Michigan Turfgrass Foundation and Michigan State University; held annually in Lansing.
- 3) Turf Hotline - Once a week; an updated recorded message is available pertaining to current turf problems around the state and recommended steps you, the turf manager, may make to correct potential turf problems.
- 4) Founders Society - By pledging \$200/year for 5 years, you will receive a classy looking pin. The important issue is not the pin however, but the commitment you are making to raise funds for turfgrass research of Michigan State University. The money you pledge is tax deductible.
- 5) Fall Turfgrass Day - On September 4th you will have an opportunity to view the latest turfgrass research being conducted at Michigan State University.

These are just a few of the reasons for joining M.T.F. My feeling is I can't afford not to belong.

Our next meeting is at Marywood G.C. on the 23rd of June. See you there!!

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MEETING SCHEDULE

June 23	Marywood Country Club
July	No Meeting
August 11	Hillsdale
September 8	Golf Day
	Muskegon Country Club
October	Annual Meeting
	Duck Lake C.C.
November	Fall Party
	Kalamazoo C.C.



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GREATER GRAND RAPIDS OPEN

Now that the golfing season is in full swing. I am sure that most of you are aware that Western Michigan will be hosting the first PGA Seniors Tour Event in Michigan. The Greater Grand Rapids Open is scheduled for July 17th - 20th, and promises to bring some of the all time great golfers to the area. I am not quite sure how or why the Grand Rapids Elks will be the host club, but I would like to take this opportunity to extend an invitation to any and all members and their guest attending the tournament to stop by. With Michelob and Coca Cola as two of the sponsors, there will probably be a cold beer or cola somewhere withing reach. If nothing else, we do have indoor plumb-ing for the wife or family, and probably a few chairs in the shade for a short rest.

All GCSAA membership cards will be honored at the gate... if you would like to purchase tickets for family, friends, club officals, etc., just call 616-453-2451 and identify yourself as a member of either the Western, Northern, Mid-Michigan, or Michigan and Border Cities and receive a discount rate courtesy of the Elks:

THURS	\$4.00 (Pro Am)
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SUN	\$10.00 (Seniors only/final round)

Week long passes \$23.00

Children 13-17 years old...half price at gate with student I.D.

Children under 12 years...free if accompanied by adult.

If you have any problems or questions, please feel free to call me, 616-453-0705, no promises, but we'll try.

MTF REPORT

Dr. Joe Vargus Visits Golf Clubs in Western Michigan

It was a interesting day viewing the new construction going on in Western Michigan.

Dr. Vargus, MTF Directors John Read and Jeff Gorney visited the following clubs: Green Ridge Country Club, Alpine Golf Links, Cascade Hills Country Club, Forest Hills Golf Club, Inc., Blythefield Country Club and the Elks Country Club of Grand Rapids.

Dr. Vargus was very helpful diagnosing some of the disease problems and making suggestions to the superintendents. Dr. Vargus took several soil samples back to MSU for laboratory test and promptly reported the results.

A return trip is planned for Muskegon and Ottawa coun-ties in June.

I appreciated the time and hospitality the superintendents gave us.

Sincerely,
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President

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POA: A WEED MAKES GOOD?

An annual blue grass that has long been thought of as the bane of golf superintendents may become their boon if a Minnesota professor has anything to say about it.

by George Eberl

"When elephants fight, the grass suffers." — Ovid

Comparing elephants to golfers and their carts may be unfair (whether to the elephants or to the golfers is a matter of individual judgement), but golf-course grass undeniably takes a beating each year. So it is that year after year agronomists conduct a quiet but dogged search for more durable grasses able to resist were as well as the perversities of weather.

Indeed, the United States Golf Association finances a variety projects in universities throughout the country as agronomists, botanists, and academics in related fields persist in their quests for an ideal grass for American golf courses.

We've come a long way from the bent/fescue grasses that are so well suited to Scotland's climate but not always adaptable to our own. The diversity of weather in the United States — ranging from the muggy warmth of Florida and other parts of the southeastern quadrant to the hot-and-cold extremes to the Midwest and the northeastern regions—has inspired an equal diversity in the use of grasses from our courses, from bermudagrass in the subtropical areas to bent and rye, among others, in others sections.

Oddly enough, some agronomists are looking now at a variety of grass that has been regarded as little more than an undesirable weed. Its name: *Poa annua*. It is hardly a household label, although it may be better known as annual bluegrass.

Golfers have known of it for years as the grass that sprouts little white seedheads in the spring, disappears during midsummer, then reappears once the nights turn cool in late August. They also know that when it is in season, there is no finer turf. It is dense, fine bladed, low growing, and it can be cut to extremely short heights.

In the hot, humid days of summer, though, it dies and leaves behind great bare patches that become infested with broad-leaved weeds. Most superintendents consider it a curse and spend vast amounts of time and money trying to kill it. But it persists. Others believe those who try to eliminate *Poa annua* are fighting the wrong battle, that agronomists should work toward selecting a better, more hardy strain. Dr. Donald White, of the University of Minnesota, is among its boosters.

It is said that if you were to pull out the correct drawer of Dr. White's desk in his office at the University of Minnesota, in Minneapolis, you would discover test tubes asprout with varieties of *Poa annua*. White smiles, suggesting that this may be a slight exaggeration, although he confesses a wide assortment of the genus *Poa* prospers in his laboratory.

What is the peculiar magic that has aroused such scientific interest that White made a presentation, "Sex *Poa annua*, and the Golf Course," to an auditorium full of golf superintendents in San Francisco over the winter?

The premise is simple; if *Poa annua* is hardy enough to endure in warm or cold climates, yet literally take over a golf course given half a chance, why not take advantage of its durability and put it to use as a basic grass? It becomes a botanical application of the principle, If you

can't lick'em, join'em.

At present, *Poa annua*, or annual bluegrass, may not be a panacea for the problem of long-suffering golfcourse grasses, but White is optimistic. He has been trying to develop a strain that eliminates the disadvantages.

Poa annua is found from the Equator to the Arctic Circle, although it is susceptible to extremes in temperature, generally behaving as a winter annual in the south, a summer annual in the far north, and a perennial in cool climatic regions. It is vulnerable to heat stress, and it tends to turn brown in the summer. Heavy watering can offset this tendency, but that increases maintenance costs.

White admits that *Poa annua* has some characteristics that will help him to develop a grass he believes will be suitable for greens as well as for fairways.

For those without a scientific bent, *Poa* is the genus, and *annua* is the species: the sub-species, or variety, that has White's undivided attention is *reptans*. *Poa annua* is a bunch grass, he explained, especially vulnerable to diseases, whereas *Poa annua reptans* is perennial and stoloniferous, a larger-than-life term that simply means that *reptans* is able to spread over a wider area by runner-like shoots and produce a more dense carpet of grass.

The sex element of White's research relates to reproduction through seeds. *Poa annua* seeds produce plants that are genetically different, suggesting that through laboratory breeding, specific strains may be developed that have particular features that make that strain desirable. In the case of *Poa annua reptans*, however, the stolons, or runner, produce grass that is genetically the same as the parent plant.

A nationwide collection of promising *Poa annua* selections is being gathered with the assistance of the USGA Green Section, which is scattered around the nation.

The selections are turned over to White, who tries to clone the desirable variety even as he studies its genetic characteristics.

Irony in the research is inescapable. Any deliberate future use of *Poa annua* as a major golf-course grass would have a rags-to-riches theme favored in the United States—*Poa annua* could become known legitimately as the weed that made good. It might not withstand the stomping violence of squabbling elephants, but it could become the best thing to happen to golfers and their favorite courses in a long while.

Credit: Golf Journal



DIAZINON ONE OF SEVERAL TOXINS MAKING GRASS GREENER

by Helen S. Edelman

It's been three years since Navy navigator George Prior, age 30 and in sterling physical condition, took a few weeks of vacation to relax and play golf in Arlington, Virginia.

"He started getting headaches and felt like it was the flu," recalled his widow, Liza, from her Langhorne, Pennsylvania home recently.

"After the third day, there were blisters the size of baseballs all over him. Then his skin came off and he oozed to death like a burn victim. There's just no other way to say it."

The diagnosis, made by Dr. Jonathan Lord of the Armed Forces Institute of Pathology: toxic epidermal necrolysis.

The cause: a fungicidal chemical sprayed on the golf course, according to Liza Prior's lawsuit against the golf course and the chemical company is currently pending.

Still litigating, Prior chose to withhold the names of the specific defendants in the case.

According to Prior, computer-enhanced aerial photographs of the golf course revealed the chemical "glowing" in large amounts on the fairways even where it wasn't sprayed and had been washed by rains.

"The same chemical was found on his shoes and golf balls," Prior asserted.

Conceding that the Prior case was extraordinary and his reaction extreme, Dr. Zane Gard, a San Diego physician specializing in environmental medicine, said, "The

problem is, when chemical are tested and put on the market, the standard used for acceptable levels is for healthy men between the ages of 20 and 30. What about women? What about children? What about unhealthy men?"

A survey revealed diazinon is not used at most Capital District courses, although Troy Country Club maintenance manager Mike Scesny did spray with diazinon up until two years ago.

The course managers say they have switched to other chemicals—which experts say may be equally toxic.

Richard Kupferman, a law student assisting Peter N. Skinner, chief scientist on diazinon research in the environmental protection bureau of the state attorney general's office, reported its use at the Saratoga Spa State Park Golf Course and at the Green Lake Park in Syracuse.

Jim Bone, assistant park manager in Saratoga, confirmed the use of diazinon but added the current plan is to "phase it out."

"We are using it limitedly and keeping a check on wildlife," he said. Scesny, licensed by the state Department of Environmental Conservations to do this own spraying in Troy, acknowledged he wears a mask and gloves to shield him from the chemicals.

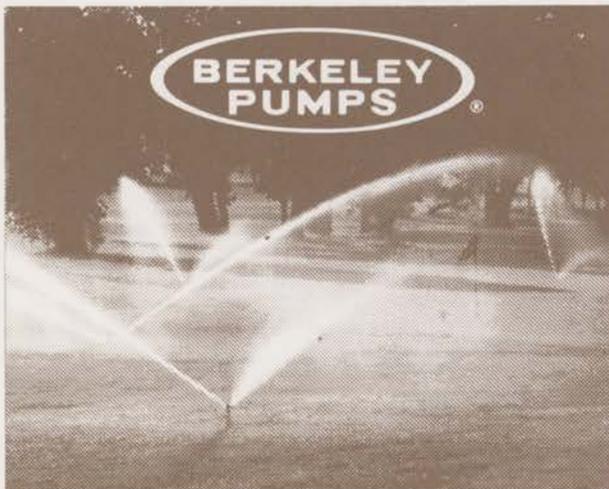
At Wolfert's Roost, maintenance manager Bill Stevens uses dursban in place of diazinon, he said.

"Contrary to popular belief, golf course maintenance people are not out to whoop the environment," he said.

Concerned about the welfare of golfers, Stevens said

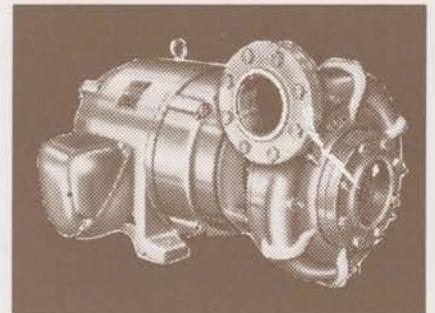
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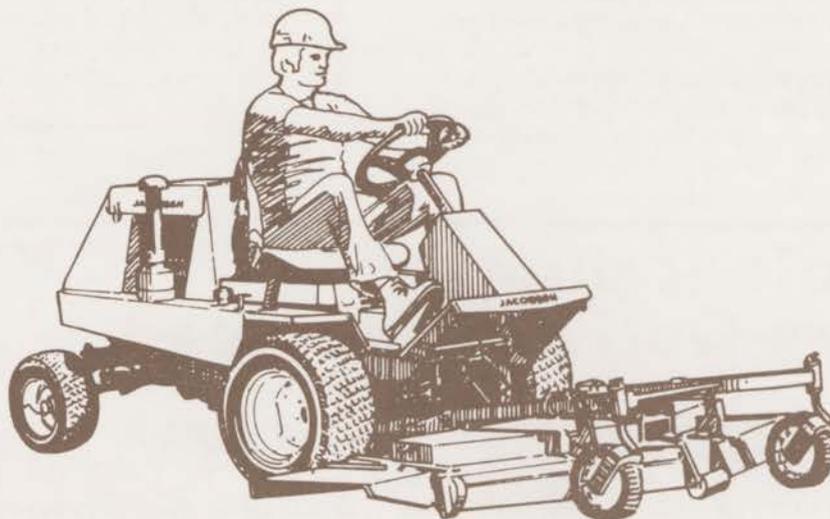
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(continued from page 5)

he posts a sign when chemicals are being applied and is careful not to spray during windy periods.

Golfers seem remarkably unaware of dangers nonetheless.

A member of the Troy Country Club, Steven Quillinan estimated he walks the 4 hour course two or three times a week during the summer.

"I don't know anything about pesticides, truthfully," he admitted. "My attitude is to support what will make a lawn healthier."

In Albany, golfer David Mader, who "plays all over two or three times a week," also was unfamiliar with problems of pesticidal sprays.

"However," he added, "now that I think about it, it bothers me."

Quillinan's brother, Joseph of West Sand Lake, added, "I realize that to play the kind of wellmanicured course we expect it must be chemically treated."

He added that he is not personally concerned about playing such courses because he sees fish swimming in ponds around the fairways, indicating to him that the danger of the toxins is "limited".

However, said Joseph Quillinan, he does stop short of licking the grass off golf balls, as many golfers do. Several other golfers mentioned this practice as "common."

Attorney Martha McCabe in Abrams' office said she is encouraged by the possible ban on diazinon, but pointed out numerous other identically classified chemicals.

Ridding golf courses of the one will not ensure golfer safety on the course," she warned.

The federal Environmental Protection Agency categorizes diazinon as "moderately toxic" and warns that it can cause death due to severely depressed respiration.

A dozen other chemical listed with diazinon similarly produce neurological impairment and can be absorbed by inhalation, ingestion and skin penetration.

In fact, testimony by Joseph Okoniewski, a staff member of EnCon wildlife pathologist Ward Stone's unit, specifically stated that dursban, the chemical used at Wolfert's Roost, "acts physiologically in a similiar manner to diazinon."

He added that dursban is more toxic to fish and more persistent than diazinon.

Warnings notwithstanding, at the Sagamore Resort in Bolton Landing, grounds manager Mark Graves petitioned the Adirondack Park Agency, a regulatory environmental agency handling such request, to use diazinon, among other chemicals including dursban, as part of a golf course maintenance program.

"You can't maintain a high quality course without chemicals," he asserted. "To have a perfect, carpetlike surface you have to have preventative programs. Otherwise, you get complaints from golfers."

The APA refused to grant the Sagamore permission to use diazinon, according to APA attorney Barbara Rottier.

"We are not picking on the Sagamore," she said. "Diazinon is highly toxic and it is simply not true that the chemical is safe when properly used."

Glens Falls attorney Robert Kafin represents the Sagamore in the dispute.

"We applied to use a maintenance program that is standard on golf courses throughout the Northeast," he said. "Anybody can walk into a store and buy diazinon. We were

going to do it under tightly controlled conditions, and the APA is violating state law prohibiting us. The exclusive right to regulate pesticides rests with the DEC.

Added Kafin, "Of course things die when you apply pesticide. That's the point of it. But if it's applied properly, that shouldn't happen."

The dangers to humans are equally poignant concluded Prior: "How can you measure human life against aesthetics?"

Credit: April 20, 1986 Albany (NY) Times Union



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PERSONAL FINANCIAL PLANNING by E.G. Berrigan

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Following is a check list, dealing with essential coverages and precautions, that will help meet GCSA members, or any group of business executives, evaluate their present financial posture and give consideration to bringing their present planning up to minimum standard and beyond.

- Make sure you have a will that has been prepared by a competent attorney. Do not leave your family at the mercy of the court system that moves very, very slowly and will never provide for your family as you would prefer.
- Request a complete description of the employee benefit plan supplied by your employer. Accurately determine the pension and insurance coverages you have so that a decision can be made whether complementary plans will be needed.
- Evaluate the long term disability insurance that is being provided by your employer, if any. Don't worry about the first few months of disability—rather, determine what income you will need if you are unable to work for an extended period of time, or permanently. Supplement the disability coverage supplied by your employer—if necessary. Points to consider: the waiting period, benefit period, can additional coverage be obtained a reduced cost through a

Group or Association plan? Note: GCSAA offers just this kind of supplementary coverage.

- Review medical insurance coverage as provided by your employer—closely. Points to consider: is major medical included: who is covered: wife, dependent children—if so to what age?
- Maintain from 3 to 6 months of earnings in a good money market account for unforeseen emergencies.
- Make sure you take full advantage of the IRA opportunities that are available today.

When these mandatory considerations have been dealt with, discretionary planning considerations can be given attention—whether these be equity, real estate or secondary business investments of some kind. Seek professional advice when investing.

It is important to keep abreast of the basic considerations that can affect your financial position. One good way of doing this is to subscribe to *Money Magazine* and other similar publications. Acquire a good feel for when your income is taxable and what you can expect from Social Security. Remember that most employers are motivated by tax advantages—a factor which does not often apply within a non-profit, tax exempt club environment.

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Credit: Tee to Green

Excuses Actually Received by Teachers in Schools Via Notes from Home

Dear School: Please accuse John from being absent on January 28, 29, 30, 31, 32, and also 33.

Please excuse Kianna from being absent yesterday. She was in bed with gramps.

I had to keep Billie home because she had to go Christmas shopping because I didn't know what size she wore.

Please excuse Johnny for being, it was his father's fault.

Mary could not come to school because she was bothered by very close veins.

Chris will not be in school cuz he has an acre in his side.

John has been absent because he had two teeth taken off his face.

Excuse Gloria. She has been under the doctor.

Lillie was absent from school yesterday because she has a going over.

My son is under the doctor's care and should not take physical ed. Please excuse him.

Carlos was absent yesterday because he was playing football. He was hurt in the growing part.

My daughter was absent yesterday because she was tired. She spent this weekend with the Marines.

Please excuse Joyce for P.E. for a few days. Yesterday she fell off a tree and misplaced her hip.

Please excuse Ray Friday. Friday from school. He has very loose vowels.

Please excuse Blanche from Jim today. She is administering.

Please excuse Petro from being absent yesterday. He had dia dya diah, the s... .

George was absent yesterday because he had a stomach.

CREDIT: TRAVELER'S INSURANCE

**MANAGEMENT PRACTICES AFFECTING BENTGRASS
PUTTING GREEN SPEED**
by Clark Throssell
Ass't. Professor, Purdue U.

Putting green speed is a familiar and much discussed topic among golfers and golf course superintendents. With the introduction of the Stimpmeter in 1977 by the United States Golf Association, putting green speed could be measured rather than relying on the subjective judgements of golfers. The Stimpmeter was introduced to aid golf course superintendents in achieving a uniform speed among all greens on the course.

Unfortunately, the intended use of the Stimpmeter and the actual use are quite different. Instead of using the Stimpmeter to help achieve uniformity in speed among greens, Stimpmeter measurements are often used to force an increase in speed. The speed measured on a golf course is often compared to the guidelines established by the U.S.G.A. and to speed measured at other local courses. The prevailing opinion is that faster greens provide more of a challenge to the golfer and are better greens. Therefore, golf course superintendents are under increasing pressure to provide faster greens for play.

Faster Greens are Better Greens?

Before discussing putting green management and speed we should consider the notion that faster greens are better greens. A high quality putting green will have many attributes, one of which is a reasonable putting green speed. Each golf course should decide what is a reasonable speed for the greens, based on the the desires of the members, the amount of play the course receives, the money and equipment available to maintain the greens

and the superintendent's knowledge and experience. In addition to a reasonable putting speed, a high quality green should be uniformly turfed and free of disruptions from disease or insects. The green should have a high shoot density of the desired species and individual leaves and tillers should be oriented vertically to eliminate graininess. Also, the green should offer some resiliency to shots played to it. Each of the attributes mentioned above contribute equally to a good golf green. To emphasize putting green speed at the expense of the other components of a good golf green would be a poor management strategy resulting in the diminished quality of the green.

With the above caution in mind we will proceed with a review of the results of a study conducted at Penn State University to determine the effect of management practices on putting green speed. All experiments were conducted on creeping bentgrass turf and speed was measured using a Stimpmeter.

Lower Cutting Height—Faster Green

Of all the factors evaluated, mowing height had greatest impact on speed. Three mowing heights, $\frac{2}{32}$, $\frac{3}{32}$ and $\frac{6}{32}$ inch, were tested on a season long basis. A seasonal summary of speeds is shown in Figure 1. Examining Figure 1 it can be seen that as mowing height is lowered putting green speed increases. Putting green speed increased from an average of 7 feet 10 inches at $\frac{6}{32}$ inch mowing height to 9 feet 11 inches at $\frac{3}{32}$ inch mowing height to 10 feet 5 inches at $\frac{2}{32}$ inch mowing height. For each $\frac{1}{32}$ inch change in mowing height putting green speed will change by approximately 8 inches in the opposite manner. An increase in mowing height will cause a decrease in speed while a decrease in mowing height will cause an increase

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in speed. It is very tempting to lower the mowing heights to increase putting speed. Extremely low mowing heights should be avoided. At extremely low mowing heights shoot density will decline, weed encroachment will increase and the turf will be very susceptible to any stress.

Speed Fluctuates Day to Day

Another interesting aspect of Figure 1 is the variation in putting speed from week to week. Speed will fluctuate from season to season and even day to day. These fluctuations are thought to be due to climatic and weather changes. It would be unreasonable to expect putting green speed to remain constant through an entire week, let alone an entire golfing season.

Regular mowing is an important tool in developing and maintaining a high quality putting green. Over a three month period it was found that as the number of mowing per week increased from three to seven, putting green speed also increased. However, with each increase in the number of days per week the turf was mowed the amount of the increase in putting green grew smaller. The practical significance of this is that a decrease in mowing frequency for 7 to 6 days a week will have a very minor long term effect on putting green, except on the day the green is left unmowed.

Double mowing is a common and effective way to increase putting green speed for a tournament. The maximum effect of double mowing is seen after 3 consecutive days of double mowing. When comparing single vs. double mowed research plots, 1 day of double mowing increased speed 4 inches, 2 consecutive days of double mowing increased speed 6 inches and 3 consecutive days of double mowing increased speed about 8 inches. After 3 consecutive days of double mowing further consecutive days of double mowing only served to maintain the 8 inch gain in putting green speed. The day double mowing was stopped, the 8 inch gain in putting speed was lost. If double mowing is to be used to increase speed for a tournament, to achieve maximum effect, double mowing should begin 2 days prior to the start of the tournament and continued for the length of the tournament.

Added Nitrogen = Minus Speed

Nitrogen fertility management is another key aspect of putting green maintenance. When trying to decide on the proper nitrogen level, putting green speed is one of the factors that should be considered. The relationship between nitrogen level and putting green speed is that for each pound of actual nitrogen applied per 1000 square feet during the season putting green speed will decrease approximately 4 inches. The decrease in speed is due to increased growth stimulated by nitrogen fertilization. The increased growth increased resistance to a rolling golf ball, causing a decrease in putting green speed.

Aerification and Topdressing

Aerification and topdressing are two common practices necessary for proper putting green maintenance. Each practice has a dramatic effect on putting green speed. As expected, aerification without being followed by topdressing caused a decrease in putting speed. Aerification with ¼ inch diameter tines decreased speed 2 inches and aerification with ½ inch diameter tines decreased speed 5 inches. The decrease in speed due to aerification lasted 28 days when the aerification was not followed by topdressing.

Light and heavy topdressing, following aerification, decreased speed up to 5 and 9 inches, respectively, for

8 days following topdressing. After eight days light and heavy topdressing increased speed up to 6 and 15 inches, respectively, for the next 21 days. Possible reasons for the increase in speed measured 8 days after topdressing are that it took several days for the topdressing to work through the turf canopy down to the soil surface and over the 8 day period excessive top dressing was picked up and removed by mowing.

Although aerification and topdressing initially cause a decrease in speed this does not mean these practices should be discontinued. Both aerification and topdressing are essential to maintaining a high quality putting green. The information presented here should be used to schedule aerification and topdressing operations when a short term decrease in speed will not be too disruptive to play. Topdressing is often used to increase putting speed for a tournament. If topdressing is used for this purpose schedule the topdressing application 8 to 10 days prior to the first day of the tournament so the maximum benefit of the topdressing is realized.

Some of the common management practices and their effect on speed have been discussed here. Uniform speed among all greens should be the goal of superintendents when using the Stimpmeter. If there is a demand for greater putting green speed it is important to remember that many factors affect speed and the over-all management of the greens should be designed to increase putting green speed. It would be poor management to rely solely on a single management factor to alter the speed. Although there have been on long term studies on greens managed to maximize putting green speed, it appears that most management factors that increase speed diminish the quality of turf grown on the green.

Credit: Bullshead



FOLIAR FEEDING — FRIEND OR FOE?

by James H. Boyce
Consultant, Agronomist
Ottawa, Ontario, Canada

The answer to the question posed in the title of this article can be quite simply stated—it all depends on how you use it—a not unfamiliar factor in determining whether a particular deed will make a friend or an enemy. There can be no denying that liquid fertilizers applied as sprays can be quite useful in the turf maintenance program provided they are properly applied at the correct time and for the right purpose. Neither can it be denied that the indiscriminate and prolonged use of such fertilizers can result in utter disaster. It was the observation of several such disasters on a number of golf courses in the province of Quebec during the late summer of 1984 that prompted the preparation of this article. Recently acquired information that the promotion of the spray application of fertilizers is about to be greatly increased has emphasized the urgency of the situation and made it essential that the information contained herein be placed before the turf managing public at the earliest possible date. It is hoped that it will help turf managers to avoid similar catastrophies in the futures.

It is universally accepted among turfgrass agronomists that the most important part of the grass plant is the part that we do not normally see — the root. If a deep, healthy root system can be maintained in a turf, the top will pretty well look after itself, with minimum assistance from the turf manager. Unfortunately many of the practices that we

follow particularly that of close mowing, tend to reduce the development of the root system, thus making the turf susceptible to all forms of environmental stress and requiring maximum attention by the turf manager to nurse the sward through stressful times. Hot weather worsens the situation because it further causes root reduction.

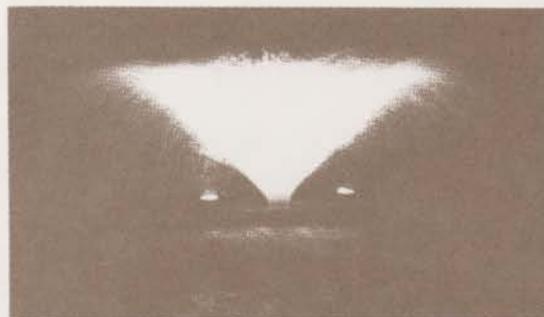
If a person injures an arm and has it placed in a cast or a sling for an extended period, the muscles in that arm become atrophied and the arm withers to the point that, when it comes out of the cast or sling it is practically useless, because of disuse, and it requires much exercises and properly physiotherapy to restore the tone and strength of the muscles. If a grass plant is continually fed through the leaves it has no further use for roots and because of this disuse the roots wither and die to the point that they become non-existent. We haven't discovered how to exercise or apply physiotherapy to roots so the plants must get along without them until root-regeneration time in the cool fall weather. Unfortunately it is usually too late by the time cool weather arrives since a turf without roots is unable to withstand any other environmental stress be it heat, drought, disease or any of the many other things that can happen and usually do occur during our stress-filled summer months. The result is dead turf and the consequent necessity of replacing it either by seeding or by sodding.

There are many advantages to the spray application of fertilizers, not the least of which is the fact that one can apply compatible pesticides, fungicides, herbicides, wetting agents and other materials along with the fertilizer thus reducing significantly the total amount of labor that would

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be involved in applying each of these materials separately. This is what appeals most of turf managers who are charged with the responsibility of growing the best possible turf at the lowest possible cost. This in turn is responsible for the continuous use of liquid fertilizers in spray form by otherwise excellent managers who do not realize what they are doing to the root system of their turfed areas. The resulting damage will occur on any turf continuously treated in this manner but appears first on intensively managed areas such as putting greens where extremely close mowing has already reduced the amount of root development to the bare minimum required for survival. The damage is usually sudden, frequently overnight, and what the day before was a beautiful piece of turf is suddenly yellow to orange in color and quite dead in appearance. The amount of money required to replace this turf soon used up any that was saved in making multiple applications in a series of one-spray treatments. The amount of revenue lost in reduced play, lowered public opinion and loss of memberships are incalculable.

(continued on next page)



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Root reduction in foliar feeding is further influenced by the fact that nutritional imbalance is created by more rapid absorption of nitrogen than of phosphorus. The role of the latter element in root development is well known.

The question arises as to when foliar feeding may be practiced to the advantage of the turf. Since the response of turf to foliar feeding is much more rapid (often overnight) than it is to dry applications to the soil it is most frequently used as a "shot-in-the-arm" treatment when the turf must be prepared quickly for a particular event or time. It is also useful when the need for an element, particularly micronutrient, is acute. In the case of heavily compacted or water logged soil conditions, foliar application of fertilizer will help sustain the turf until these conditions can be corrected.

In short, use foliar feedings to nurse turf through trying and stressful circumstances. But make sure the backbone of your fertilizer program is based on the application of dry fertilizers balanced to the particular fertility re-

quirements of your soils, as determined by quantitative analyses, and **never under any circumstances** use foliar applications continuously in fall and early spring when root development should be at its peak.

Continuous and exclusive use of liquid fertilizers in spray form will eventually result in the destruction of turf, first on the greens, then on tees and finally on any other turfed areas treated in this manner on a golf course. Even lawn-type turf is not immune to the "no root syndrome" caused by exclusive use of foliar feeding which will ultimately result in less of turf and costly re-establishment practices.

Editors Note: These observations by Dr. Boyce are well in line with research results reported by Norman MacLeod in 1958. A University of Massachusetts Master of Science Thesis entitled "A Comparison of Liquid and Solid Fertilizer for Turf" was among the first in the United States to be presented in response to questions raised by oil dealers who wanted to spray liquid fertilizers on turf in the "off season".

Credit: The Bull Sheet, Jan '86

Leadership Myths

Leadership myths abound and tend to discourage potential leaders from taking charge of their lives and careers - advises Warren Bennis and Burt Nanus in their recent book, entitled *Leaders*, on the subject. Following are some of their comments from a recent magazine article on the book that seeks to dispel these myths.

MYTH ONE - Leadership is a rare skill. Nothing can be further from the truth. While great leaders might be rare, everyone has leadership potential - as everyone has some ability to run, act and paint. There are literally millions of leadership roles throughout the country that are being filled by average Americans more than adequately. Also, people may be leaders in one organization and have quite ordinary roles in another. The truth is leadership opportunities are plentiful and within the reach of most people.

MYTH TWO - Leaders are born, not made. Wrong. The truth is that the major capacities and competencies of leadership can be learned and we are all educable. Nurture is far more important than nature when it comes to leadership.

MYTH THREE - Leaders are charismatic. Some are, most are not. Over 90% of our leaders of today lack John Kennedy's beguiling "grace under stress" image. In reality, it works in the opposite direction - charisma results and develops from effective leadership, not the other way around.

MYTH FOUR - Leadership exists only at the top of an organization. This is obviously false and results because the media often only focuses on the top of organizations. The larger the organization, the more leadership roles it will have. Different forms of leadership are found at every level within an organization.

MYTH FIVE - The leader controls, directs, prods and manipulates. This is, perhaps, the most damaging myth of all. Leadership is not so much the exercise of power itself as it is the empowerment of others. Leaders lead by pulling not pushing, by inspiring rather than ordering, by creating achievable expectations and rewarding progress toward them rather than manipulating, by allowing people to use their own initiative and experiences rather than by denying or constraining their experiences and actions.

Everyone can identify and grow into leadership roles. ■



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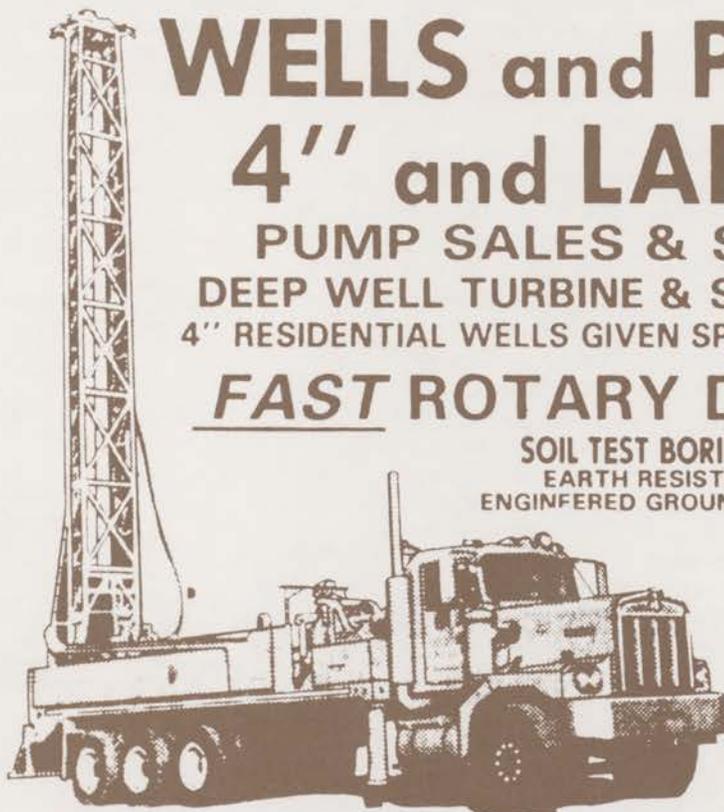
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THE EFFECTS OF HERBICIDE FORMULATION AND ENVIRONMENT ON WEED CONTROL

by David J. Wehner
University of Illinois

Weed control continues to be one of the most important of turfgrass maintenance. Understanding some of the factors that affect herbicide performance will make it easier to do an effective job of weed control. The purpose of this article is to present information on how herbicide formulation and environmental conditions influence herbicide activity.

The death of a target weed is preceded by a chain of events that starts with the application of the herbicide. After herbicide application, the herbicide must be absorbed by the plant, move through the plant to the site of action and then disrupt the metabolism of the plant. Herbicide formulation and environmental conditions can influence any or all of these events. For our discussion, we will assume that the correct amount of herbicide has been applied to the turf and that spray drift, volatilization, leaching, and photodecomposition of the herbicide were minimal resulting in an adequate level of herbicide to kill the weed. Furthermore, the discussion will concentrate on post-emergence broadleaf weed control. Preemergence herbicides must be applied prior to weed germination so environmental conditions at the time of application are less of a concern.

Herbicide absorption, the first step necessary for weed control, can occur through both the leaves and the roots. Herbicides such as 2,4-D and MCPP are absorbed through leaves while preemergence herbicide such as bensulide and benfalin are absorbed by the roots. The mechanism by which the herbicide is absorbed or diffuses through the foliage depends on the nature of the herbicide molecule and formulation. Some herbicides enter through the cuticle of the plant while other herbicides enter through the stomata of the plant. The cuticle is made up of waxes which are nonpolar, meaning that it is resistant to the penetration of polar substances such as water. Ester formulations are more effective in controlling certain types of weeds that have a very thick covering of wax like wild onion or garlic because esters are nonpolar and can penetrate the wax.

All herbicide formulations contain wetting agents and surfactants that help reduce the surface tension of the spray droplet on the leaf so that the droplet can spread out and the herbicide is exposed to a larger surface area through which it can diffuse. It is generally not necessary to add additional surfactant or wetting agent to herbicide formulations since the manufacturer has done extensive tests to determine which surfactant is best and has added this to the formulation. Mowing the turf at the correct height maximizes the surface area that is able to intercept the herbicide spray and also gives more surface area for diffusion to occur. Hairs on the leaf surface can either increase or decrease herbicide entry into the plant. If the hairs prevent the droplet from contacting the cuticle, then uptake is reduced; if the hairs intercept and retain more droplets on the surface of the plant, they can increase herbicide penetration.

Air and soil temperature will affect the rate at which the herbicide can diffuse through the cuticle or the root surface. Temperatures that are optimum for growth of the plant will be optimum for the diffusion process. Under very high

temperatures, the herbicide droplet can dry before the active ingredient has had a chance to enter the plant. High humidity can aid herbicide diffusion because the droplet dries at a slower rate. Plants under water stress close their stomata and thus diffusion through the stomata is slowed. Of course, rainfall immediately after herbicide treatment will wash the material off the leaf surface and reduce plant uptake.

Once the herbicide is absorbed, then it must move to the site of action within the plant. The translocation of herbicide molecules depends on the movement of food through the plant since the herbicide is carried in the phloem or food conducting cells. Food production, or photosynthesis, occurs in the presence of adequate light and moisture. Thus, herbicide translocation will be slowed if the plant has been severely damaged, then photosynthesis will not occur and herbicide translocation will suffer. It is important to apply the proper rate of herbicide so that the leaves are not "burned off."

Finally the herbicide reaches the site in the plant where it disrupts metabolism and causes the death of the plant. Plant metabolism is highest when the plant is actively growing and thus, herbicide activity will be highest during this period also. Young, actively growing weeds will be easier to control since they have a high level of metabolism and, because they are small, will require less herbicide to be killed. Once some weeds reach a certain level of maturity, metabolism and growth has slowed so that they are difficult to kill.

In summary, the best weed control will occur when the weeds are actively growing since absorption, translocation, and activity of the herbicide will be greatest. It is necessary for each turfgrass manager to make field observations as to when the weeds are actively growing in his area. Absorption of the herbicide can be increased by using an ester formulation, however, because esters are more volatile than amines, the danger to ornamentals is also increased. Proper rates of application and techniques are critical to successful weed control.

Credit: The Bull Sheet



*"If you knew you had to replace your divots,
Herbert, why didn't you do it?"*

ROUNDS PLAYED SHOWS GAIN IN 1985

Fourth quarter 1985 results of the rounds played survey showed an increase of 2.1 percent over fourth quarter 1984. Year-to-date 1985 rounds were up a healthy 5.6 percent over 1984 figures. The year-to-date increase is a marked increase over the previous two years when rounds played rose 2.5 percent in 1984 and 2.2 percent in 1983.

The rise in rounds for the fourth quarter is about the same as the previous two years. Rounds increased 3.5 percent in 1984 and 2.0 percent in 1983.

The Northeast experienced the largest decline with 13.1 percent. Strong gains were evident, however, in the South and West. The Mountain region courses showed the largest percent increase at 15.2 percent.

For the United States as a whole in the fourth quarter of the reporting clubs, half experienced increased play while the other half had decreased play. Year-to-date 1985, 72 percent of reporting clubs had increased play, while 20 percent were down.

FLORIDA FIRM TO BUY AND RUN 500 PUBLIC COURSES by Charley Stine

A Florida corporation to own and operate a chain of up to 500 public golf courses is being put together by Poinciana resident Scott Krause.

He projects a chain of courses with consistent policies and personnel trained by a central source. He envisions

"a lot better services" and "a little higher green fees" than the average public or semi-private course.

Krause, 54, is a man with the credentials to undertake such an ambitious program. He owns a golf course in suburban Milwaukee and it past president of the Golf Course Association, a national group of owners and golf courses. He is a Class A PGA professional and a member of the National Golf Foundation advisory staff, being a frequent speaker at NGF seminars.

He is an occasional guest editorialist for *GOLFWEEK*.

Krause is putting the final stages of his plan together this winter. He has incorporated under the name of Golf Clubs of America and has placed his Wisconsin course, Muskego Lakes Country Club, in the corporation as its initial asset. Muskego Lakes includes 250 acres of surrounding land for real estate development.

Krause is seeking the initial private investors necessary for legal requirements, then plans a public stock offering.

The key to his plan is to acquire the company's courses by stock issue rather than wholly by cash. He says that plant solves major problems now inherent in the sale of golf courses.

"Sellers fear repossession," he says. "They also have a concern with income taxes payable on funds received, including problems associated with the new IRS imputed interest rules which effectively dampen attractive financing."

"For buyers, even though the course may make a healthy cash profit, there is the cost of debt service on a large, fixed asset with little depreciation available due to the nature of the property."

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Debt service would never be an issue with Golf Clubs of America, Krause said, because course acquisitions would never be leveraged.

"What is lacking in the golf course industry," says Krause's 24-page business plan, "is cohesive management along with marketing which will produce proper rates of return on invested capital. Given these two necessary ingredients, experience has shown that a company such as the one envisioned will be able to solve the concerns of buyers and sellers and could expand as rapidly as it could assimilate the many properties which would be available to it."

Krause says he already has 15 courses which are available for acquisition under the plan. He says he will not take on more than four in the first year, however, so as to be able to stock them with trained personnel.

The business plan says, "If past history is any indicator, many fine properties will be available at prices which do not reflect potential revenue and will produce, if properly managed, returns on equity of at least 25 percent per year. Further, given a large multiple-facility firm such as envisioned, economics of scale in purchasing, labor and management plus development of land surrounding these properties should increase such returns still further...in addition, plans call for internal divisions to market golf merchandise, computer services and franchising to both owned and nonowned facilities."

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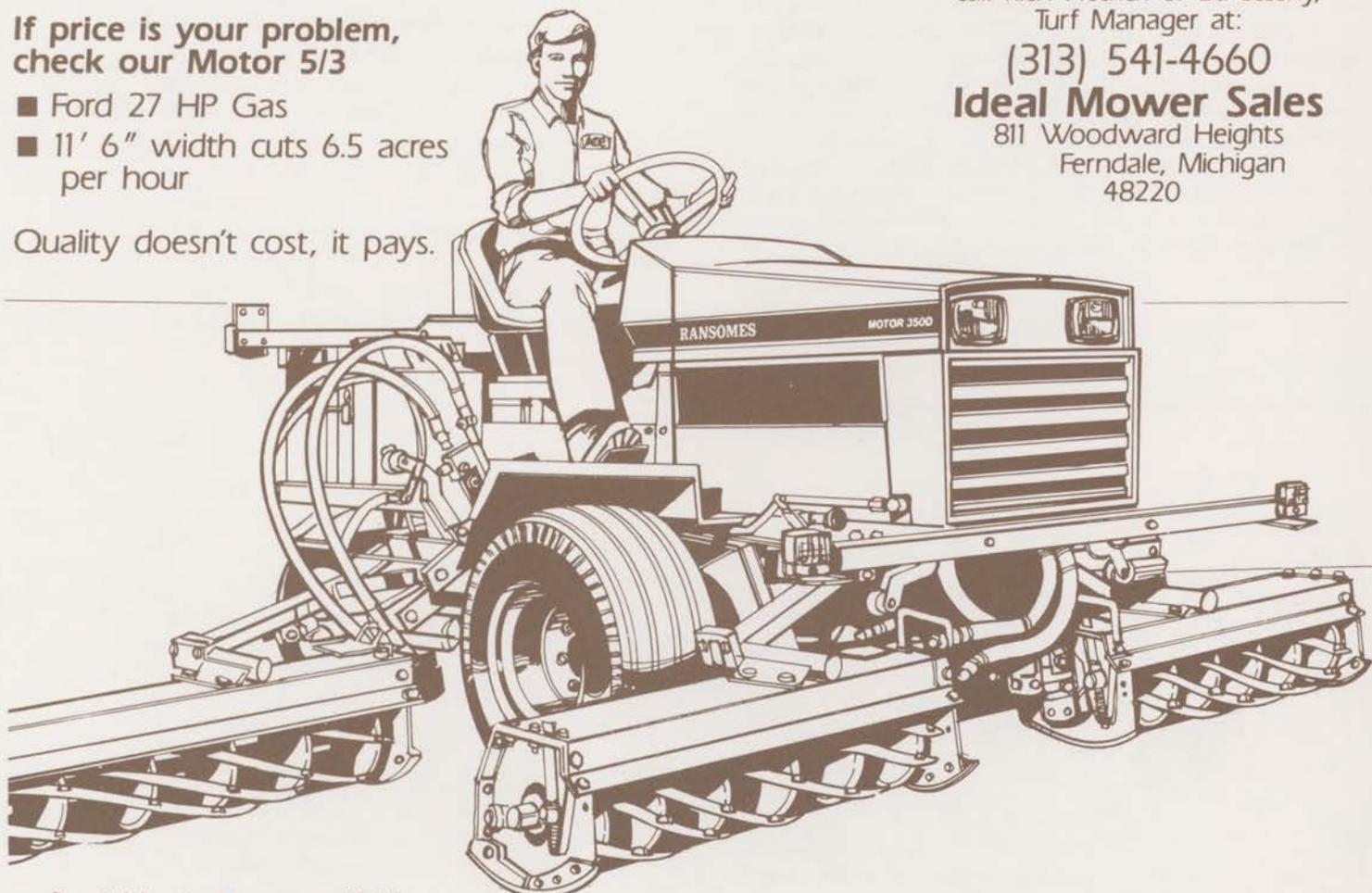
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It's largest shareholder is the University of Minnesota, who recently committed itself to another large purchase of stock,

PHYTON-27 was designed in the mid-1970's by two research scientists while they were employed by the University of Minnesota. Field testing started in 1977 at a number of locations throughout the United States by Dr. Marvin Whitehead. Source Technology Biologicals, Inc. began marketing PHYTON-27 in 1984.

PHYTON-27 is a new departure from the other materials on the market used to inject elms, and has many significant qualities. 1) It is fungicidal, vs. fungistatic, which means it actually kills the Dutch Elm Disease fungus within the tree; other products only allow the fungus not to grow or reproduce. 2) A simple, low trunk injection is only required vs. the below ground root flare injection because it translocates throughout the tree so well. Thus, wounding of the tree is decreased substantially, as well as the labor needed to perform the injection. 3) Because of the nature of its composition PHYTON-27 does not burn or harm the plant itself. In fact, because of its broad spectrum activity, most trees show a marked improvement in health and vitality following injection.



LET ME GIVE YOU A LITTLE TIP... YOU'RE STANDING TOO CLOSE TO THE BALL... AFTER YOU HIT IT.

Finding Your Job Personality

Companies across the United States are warming up to the hottest diagnostic tool around, typology – the science of determining people's different personalities through testing. People with different personalities have vastly different ways of receiving and processing information.

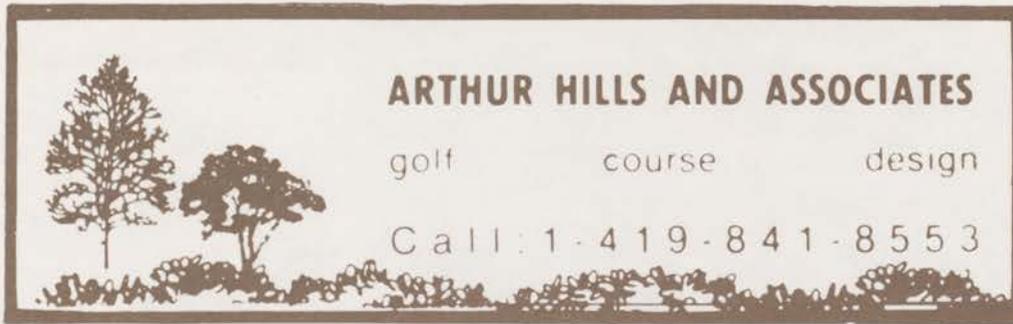
Typologists claim that those who have attained the greatest professional satisfaction are the ones who have chosen jobs suited to their own personality type. Unfortunately, most people are not that self-aware that they can identify their personality type. As a result, many often end up pursuing careers that are not particularly well suited for their personality. That is why tests have become invaluable tools for career counselors.

People can be classified into one of the four following types: INTUITIVE TYPES – who view the world through a wide angle lens, are interested in the big picture and often ignore the accompanying details; SENSING TYPES – on the other hand, enjoy precision work and are more patient executing mundane or trivial tasks; THINKING TYPES – base their decisions on logic and are often uncomfortable dealing with people; FEELING TYPES – are more concerned with how their decisions will affect others.

None of the above classifications relate to intelligence, nor is one necessarily better than the other. To help identify your personality and without looking at the Answer Table at the right, circle the word in each of the following pairs that appeals to you the most. Don't deliberate, go with your first reaction:

		Answer Table
1. firm	warm	(T/F)
2. theory	practice	(I/S)
3. construct	invent	(S/I)
4. benefits	blessings	(T/F)
5. convincing	moving	(T/F)
6. statement	concept	(S/I)
7. determined	committed	(T/F)
8. facts	ideas	(S/I)
9. practical	imaginative	(S/I)
10. justice	mercy	(T/F)
11. thoughts	emotions	(T/F)
12. literal	symbolic	(S/I)

Tally how many answers you had in each of the four type categories. Your highest score will indicate your dominant mode of thinking and reacting. This is only a mini-test and not a full-fledged analysis. ■



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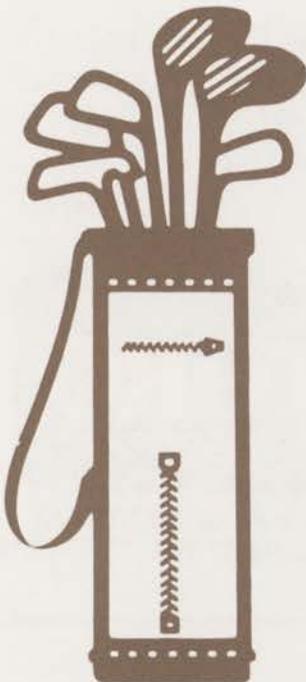
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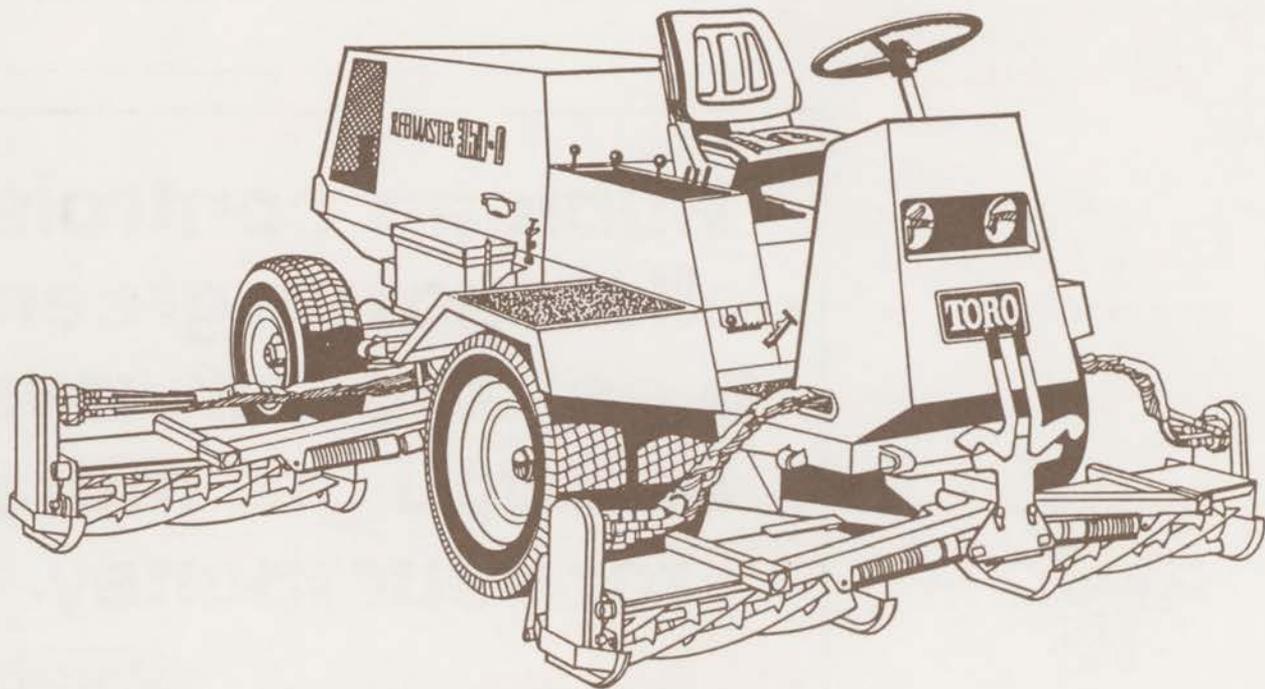
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Mauget Tree Injectors control Dutch Elm Disease, Bronze Birch Borer, Diplodia Tip Blight on pines, Cytospora Canker on Spruce and nutrient deficiencies.

**FOR MORE INFORMATION
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Home:(616) 453-6652

PERSONAL GLIMPSES

Chrysler Chairman Lee Iacocca on success:

The ability to concentrate and to use your time well is everything. Since college, I've worked hard during the week and, except for periods of crisis, kept my weekends free for family and recreation. Every Sunday night I get the adrenalin going by making a list of what I want to accomplish during the coming week.

I'm amazed by the number of people who can't seem to control their own schedules. Over the years, many executives have said to me with pride: "Boy, I worked so hard last year that I didn't take any vacation." I always feel like responding: "You dummy. You mean to tell me that you can take responsibility for an eighty-million-dollar project and you can't plan two weeks out of the year to have some fun."

A new High K 15-0-30 fertilizer from ProTurf®



Now, you can provide potassium to meet the needs of your greens, tees and fairways with Scott's, High K fertilizers, which use potassium sulfate as the safe, effective source. Now there are two particle sizes to suit your application needs.

Ask your ProTurf Tech Rep for details.



Jim Bogart
Executive Technical Representative

ProTurf Division
O. M. Scott & Sons

5779 Ten Mile Road NE
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Telephone: 616/866-9389

To Keep Your Course In Classic Condition, Use These High-Quality Products from NOR-AM

- **NITROFORM® SLOW-RELEASE NITROGEN**
Releases by slow bacterial action to provide consistent 38% nitrogen.
- **TURCAM® INSECTICIDE**
Controls a wide range of turf and ornamental pests.
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Controls certain annual grasses and broadleaf weeds in ornamental turf.
- **DEL TIC® INSECTICIDE**
Gives fast knockdown and long-term control of fleas, ticks and other pests.



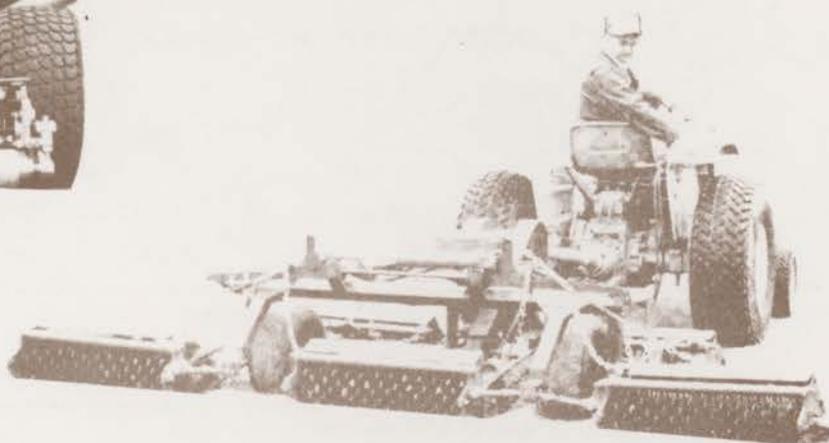
- **ACTI-DIONE® TURF AND ORNAMENTAL FUNGICIDES**
Controls a broad range of diseases on turf grasses and ornamentals
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Controls pythium and phytophthora
- **PROXOL® 80SP INSECTICIDE**
Controls white grubs, sod webworms, cutworms and armyworms in fine turf.

NOR-AM
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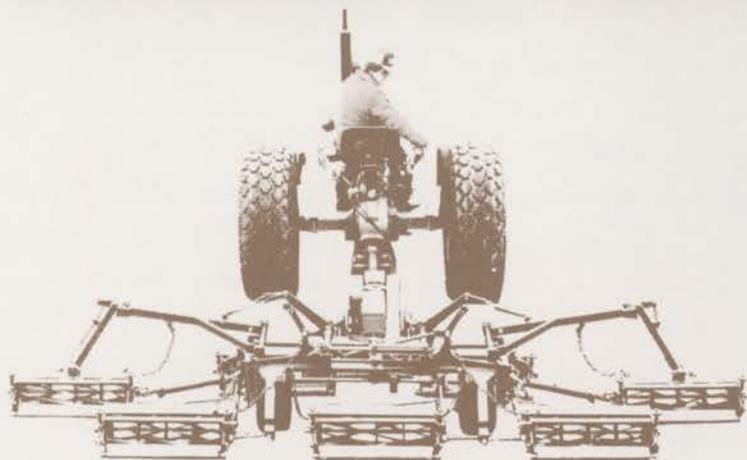
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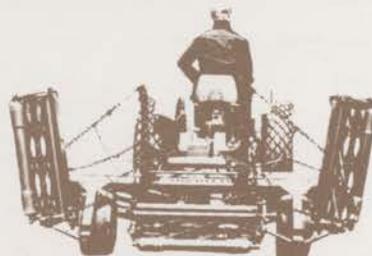
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- Positive drive with no wheels and gears.
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- Choice of 4-5-6-7 bladed reels.
- Produces a consistent uniform cut.
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APPLICATION FOR MEMBERSHIP

**WESTERN MICHIGAN GOLF COURSE
SUPERINTENDENTS ASSOCIATION**

(A NON-PROFIT MICHIGAN CORPORATION)

Date _____, 19 _____

Class A \$30.00 Class B \$20.00 Class D \$35.00 Honorary

Name _____
(First Name) (Middle) (Wife) (Last)

RESIDENCE

(R.F.D. or street and number) (Residence Phone No.)

(City or Post Office) (State) (Zip)

Name of club or employer _____
Address _____
Business Phone No.: _____ Residence Phone No.: _____

Exact title of your present position
EXAMPLES: (Sup't. of Grounds) (Sup't.-Manager) (Sup't.-Pro) (Ass't. Sup't.) (Other)
I have been employed at my present position for _____ years. Prior to this I had been employed as follows: (Please state type of work engaged in)

Send my mail to: _____ _____
Home address Business address

Each application MUST be signed by two Class A members of the Association who will certify as to reliability of the Applicant.
Attested _____ Address _____
Attested _____ Address _____
Applicant's signature _____

PLEASE RETURN COMPLETED FORM TO THIS ADDRESS
Chris Fochtman
7632 Alpine Ave., N.W.
Sparta, MI 49345

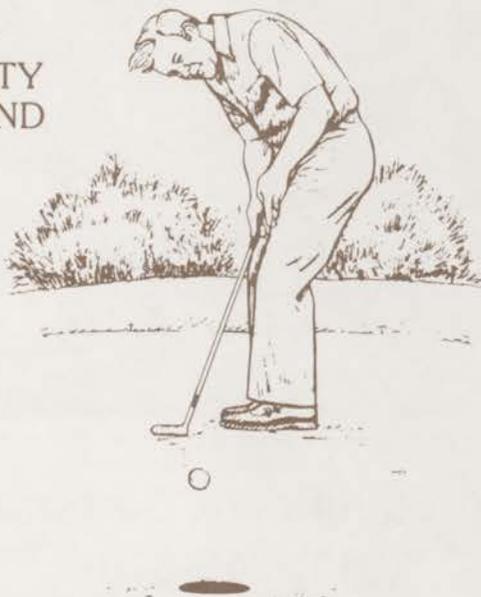
WESTERN MICHIGAN GOLF DAY

FOUR MAN BEST BALL
(Best Two of Four, Full Handicap)
September 8, 1986 at Muskegon Country Club

PROCEEDS WILL GO TO
 MICHIGAN STATE UNIVERSITY
 TURFGRASS RESEARCH FUND

**Team Prizes &
 Prizes For
 Individual Events:**

LONGEST DRIVE
 CLOSEST TO THE PIN
 and MORE!



ENTRY FEE: \$240.00 per team
 Includes:

1. Golf 8:30 a.m. Shotgun*
 1:30 p.m. Shotgun*
 (Anyone that plays in the morning shotgun will be able to play Spring Lake Country Club in the afternoon, you will have to pay for your cart.)
2. Buffet Lunch between Shotguns
3. Golf Carts
4. Refreshments on the course
5. Hors d'oeuvres - cocktail hour
6. Dinner (7:30 p.m.)

*Entry deadline is August 30, 1986 - Entries will be limited to the first fifty teams.
 In case of inclement golfing weather, the lunch and banquet will still be held.

Sponsored by the Western Michigan Golf Course Superintendents Association.
 Please have each team member's club pro sign the entry blank to verify the handicaps.

ENTRY BLANK

Team Members

Handicap

Pro's Signature

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

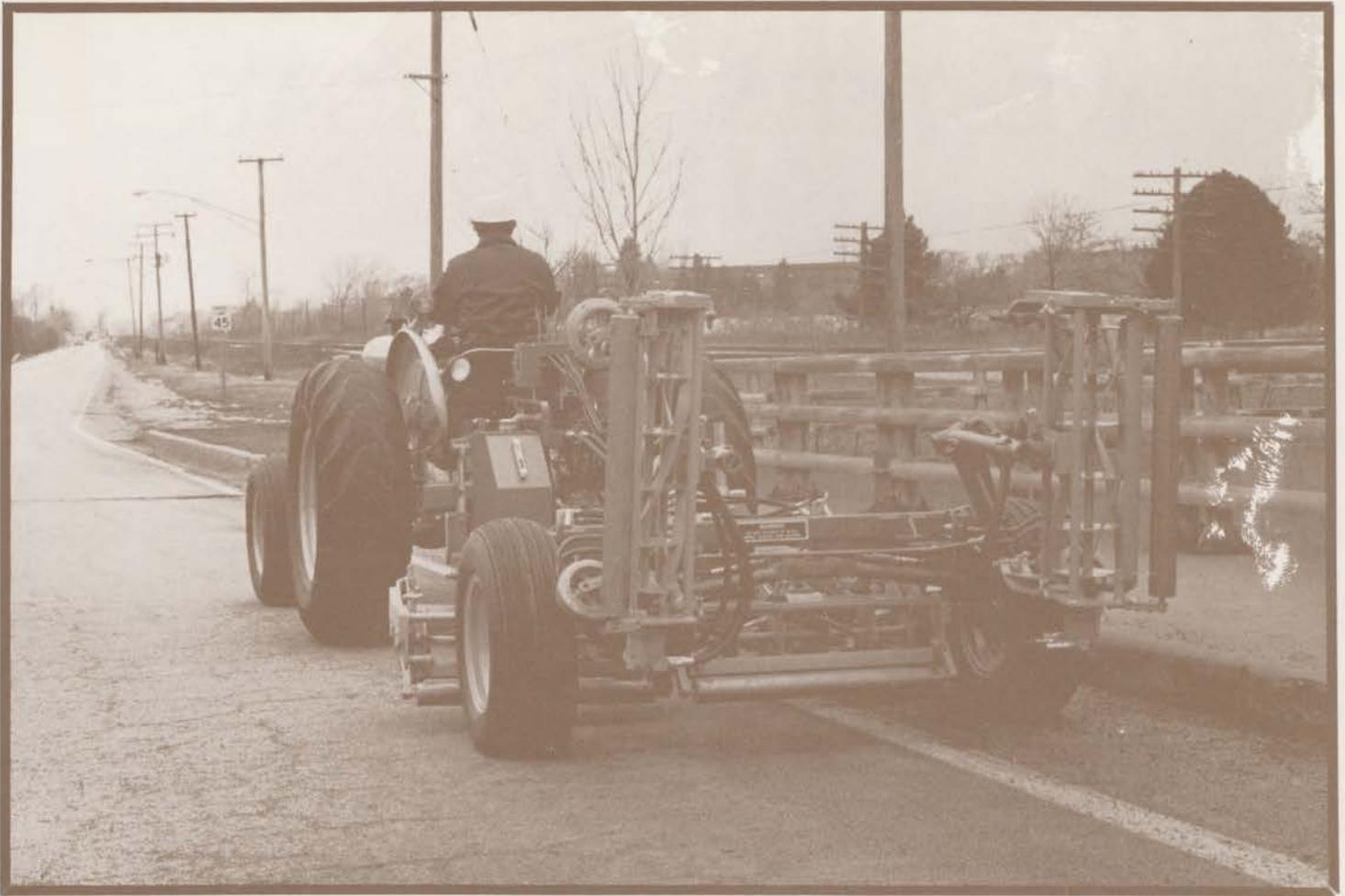
**Make checks payable to
 W.M.G.C.S.A.**

Mail to:
 Chris Fochtman
 88 King Blvd.
 Sparta, MI 49345

_____ 8:30 a.m. Shotgun

_____ We would like to play Spring Lake C.C. in the afternoon.

_____ 1:30 p.m. Shotgun



For demonstration call:

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(313) 348-8110

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P.O. BOX 500 (313) 348-8110



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