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Dear Ray,  
Although I am a relative newcomer to the ranks of Honorary Membership in the Midwest Association of Golf Course Superintendents, I doubt if any other such member can be much more pleased or proud. While age and increasing years of physical separation may cause me to "dis-remember" names, I shall never forget the attitude of friendliness, courtesy and professionalism exhibited by MAGCS members. My wife and I will be in Crystal Lake during the week of August 7-11 and I hope to see as many of my old friends as possible. Unfortunately, we could not schedule this trip during the week of August 21-25 -- the date of your 1978 Annual Illinois Turfgrass Foundation Golf Day. Of course, if you are playing at Roger LaRochelle's course (Flossmoor C.C.), he will be relieved to know that I will **not** be able to participate -- I'm sure that Roger would not appreciate me aerifying all of his fairways, roughs and an occasional green!  
Once again, many thanks for the renewal of an honor which I greatly respect.

**Paul M. Alexander, Ph.D.**  
Staff Agronomist  
Porter Brothers, Inc.

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Life is like a round of golf: as soon as we get out of one hole we head for another.

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A smile is a gentle curved line that sets things straight.

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### TREE WOUNDS: NEW RESEARCH INFORMATION

Many trees die prematurely because of inadequate or improper treatment of their wounds. Much of it is due to lack of understanding of the decay process in trees and what needs to be done. Perhaps the time is near when it will be possible for that to change.

The science of tree pathology emerged from studies on decay almost a century ago. Many of the concepts developed then have changed little over the years. But a lot of additional information has been added to the basic story of decay and the new expanded concept is more complete.

"This new, more complete, concept gives us a better chance to regulate and control decay," according to Dr. Alex L. Shigo, plant pathologist, USDA Forest Service, Northeastern Forest Experiment Station, Durham, N.H., and Harold G. Marx, Research Applications, Staff Assistant, USDA Forest Service, Washington, D.C., in their recently published report, "Compartmentalization Of Decay In Trees," Agriculture Information Bulletin No. 405, which can be ordered by mail from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for \$1.85.

The information in the Bulletin is based on 16 years of research by Dr. Shigo that involved complete dissections of approximately 10,000 trees, mostly deciduous hardwoods, at least 1,000 conifers, and 17 tropical species.

Previous research reports by Dr. Shigo have provided information on how to treat tree wounds.

A tree is considered to be wounded when its bark is broken so either its inner bark or wood is exposed to the air, Dr. Shigo has pointed out. When a tree is wounded, take these steps:

Remove dead and injured bark from around the wound with a sharp knife. Scribe wound in the shape of a vertical ellipse, if possible. Cut bark away from wound to form an interface of healthy wood and bark, even though this may enlarge the size of the wound.

Prune dead and dying branches to increase tree vigor.

Remove dead and fallen branches from the ground nearby. Such dead wood may harbor wood-inhabiting microorganisms that could infect wounds.

Thin out and remove less valuable trees nearby to reduce competition for nourishment in favor of the wounded tree.

Fertilize and water the tree properly to increase vigor.

Application of a wound dressing will not help the tree. Research has shown that the wound dressing provides no protection. However, if it will make you feel better, or you think the tree will look better, go ahead and do it.

The purpose of the present publication is to show how most columns of discolored and decayed wood associated with trunk wounds in trees are compartmentalized, the Bulletin says.

The Bulletin describes a system that makes it possible for forest managers to understand how most of these defects occur. There are 71 watercolor illustrations of what takes place, step-by-step.

When microorganisms invade tree stems through wounds, they do so in succession. Bacteria, nondecay fungi, and decay fungi are often intimately associated in their invasion process.

When microorganisms invade, they first surmount the chemical protective barriers set up by the tree and then move into the tree from compartment to compartment.

The wall formed by the cambium after wounding is the barrier wall. This wall confines the invasion to the wood present at the time of wounding. The new rings that continue to form are then protected from invasion unless new wounds are inflicted. When new wounds are inflicted at later times, multiple columns of defect develop.

Most trees receive many wounds during their lives. Every tree has some branches that die. When the branches are small and the wounds close rapidly, very little internal defect follows. But when large branches die and healing is slow, trouble starts for the tree.

When new wounds penetrate old columns of decay, the decay process proceeds rapidly in the new column.

"In summary, the compartmentalization of defects in trees is a survival system that is effective most of the time—not all of the time," the Bulletin says.

"And after the tree dies, the powerful decay processes continue to decompose the wood. The decaying wood provides nourishment for a wide variety of organisms. The decomposed wood provides nourishment for new trees."

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### RAIN-GAUGE

It has often been the desire of the golf course superintendent to obtain a cheap, easy, and accurate method for measuring the exact precipitation in inches per hour from a sprinkler. The following method fulfills this desire.

#### MATERIALS REQUIRED

a - A number of No. 2 cans, or any similar type of circular container which has a diameter of  $3\frac{1}{4}$  inches. No. 2 cans are commonly used at grocery stores for peas, beans, tomatoes, etc.

b - One glass, or plastic, tube graduated in cubic centimeters (cc's) this tube costs about \$1.00 and can be purchased at most drug stores or surgical supply stores.

#### METHOD TO EMPLOY

1 - Place the sprinkler in its desired position.

2 - Use as many No. 2 cans as are required to extend from the sprinkler to the outer edge of the sprinkler coverage, place them approximately in a straight line and at 5 ft. intervals.

3 - Set the sprinkler in operation and run it for **EXACTLY 44 MINUTES**.

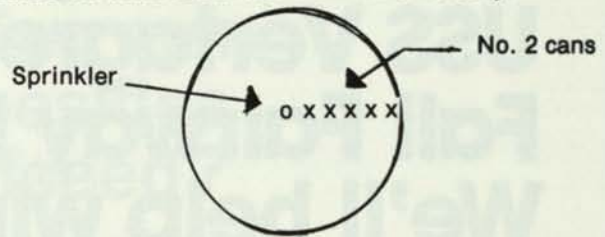
4 - Shut off the sprinkler and pour the contents of any single can into the cc tube, a reading in cubic centimeters will be obtained, but each cubic centimeter will equal 0.01 inches ( $1/100$  inch) of sprinkler precipitation **PER HOUR**.

#### EXAMPLE

If a reading of 37 cubic centimeters is obtained from a single No. 2 can after the sprinkler has been running for **44 MINUTES** then the area in which that can is located will receive exactly  $37/100$  inches of precipitation after the sprinkler runs for **ONE HOUR**.

By plotting the recipitation from each can on graph paper a true sprinkler precipitation curve can be

obtained. The above test should be conducted when there is no water distortion from wind velocity.



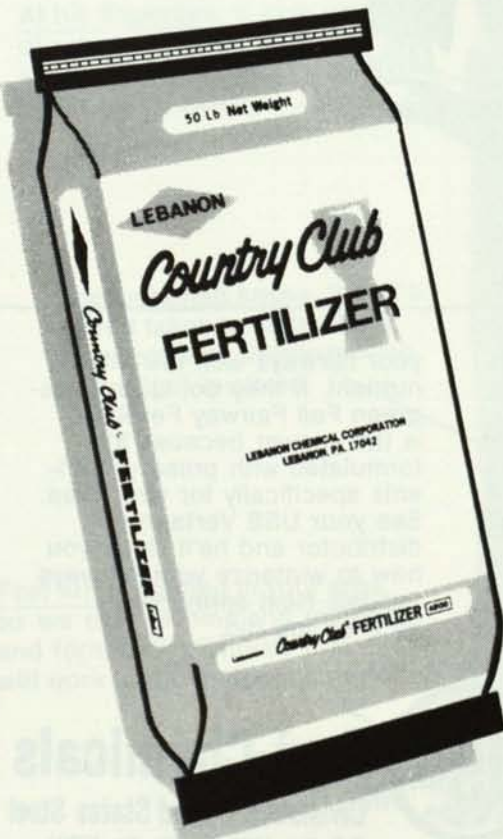
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your fairways lack this vital nutrient. If they do, USS Vertagreen Fall Fairway Fertilizer is the answer because it's formulated with primary nutrients specifically for your area. See your USS Vertagreen distributor and he'll show you how to winterize your fairways this fall. Next spring you'll be glad you did.



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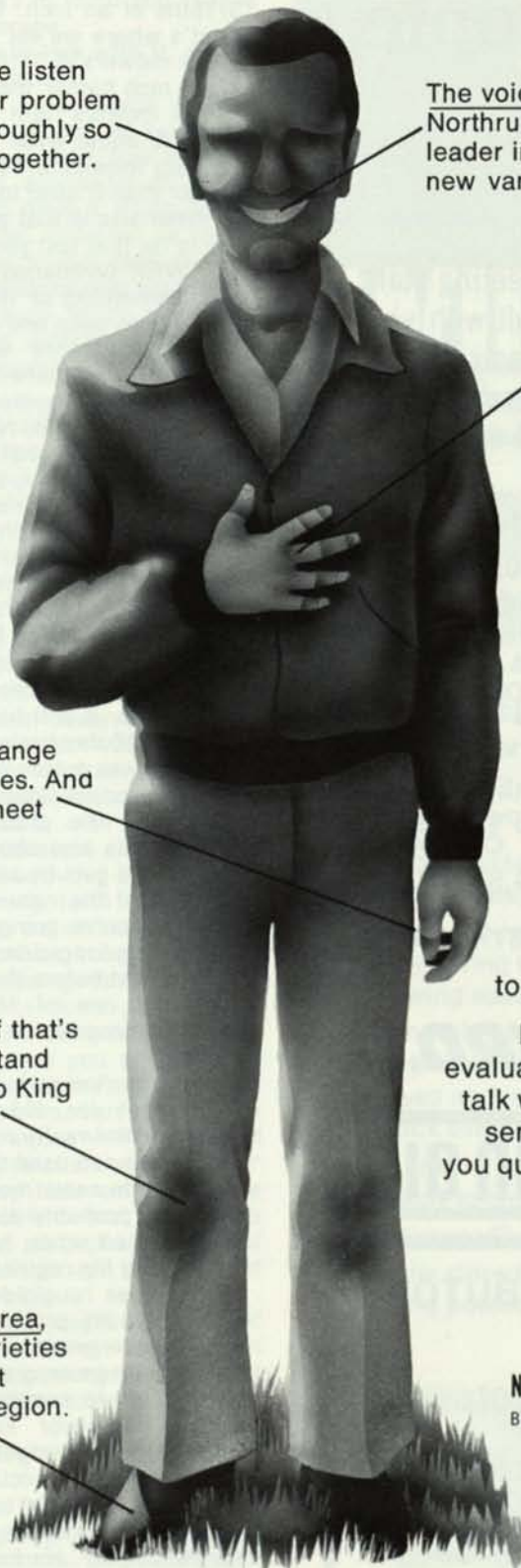
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**QUESTIONS AND ANSWERS  
AT C.D.G.A. ANNUAL SEMINAR 1978**

1) What is the difference in the height of cut between the old series four mowers as we know them where the individual walks behind a single unit and the new triplex type of mowers where an individual rides and has three units in front of him?

ANSWER (Williams) We always used to think of cutting greens in the Chicago area to an extreme of 3/16ths of an inch. We cut greens down to 3/16ths. That's where we set the mower. With the new riding green mowers at 3/16ths, you're actually cutting about 1/8th inch higher than that so we have to set the new triplex mowers right next to 1/8th of an inch today in order to equal what the 3/16ths used to be with the walking mower. 3/16ths today with the rider is much higher than it used to be.

2) What size is that plastic container that the sponges are in for that test you showed?

ANSWER (Williams) It's a plastic bread box or cake box, something of that order, about 12 inches long, four inches deep and about eight inches wide.

3) In your work with anthracnose is there any indication that there may be a resistance developing in the organism to systemic?

ANSWER (Vargas) No, I have not seen any indication of that but from what we've seen on the other diseases we've worked with, resistance to Tersan 1991, Fungo 50, Cleary's 3336 it's just around the corner. We are going to get to a time when the systemic fungicides will no longer control anthracnose.

Are there any other fungicides?

ANSWER (Vargas) Yes, we have tested a group of fungicides and have found that Tersan LSR applied on a 7 to 10 day basis and Daconil 2787 applied on a 7 to 10 day basis will also give control of anthracnose. The problem is, it will be more expensive because you're on a 7 to 10 day basis.

We've never gotten a decent test where we've had this Rhodia product Chipman 26019 in and, hopefully, if it will solve the problem and we can replace 1991 because it's also about a three to six week fungicide. Provided it gets by all the EPA's tests.

Because of the nature of systemic fungicides, sooner or later you're going to wind up with resistance. By alternating fungicides you're going to delay the length of time that before that's going to occur.

4) Would one of the doctors comment on Bruce Sering's program of 24 applications. Isn't that rather high?

ANSWER (Vargas) It depends on when the season starts, but yes, I'd agree that seems a little high. However it's really not that high if he uses all contact fungicides and used them for a six month period and if you include snow mold treatment. That seems a little high, he probably also had in addition to that a two week period when he put on pythium fungicides in addition to his regular dollar spot and brown patch and anthracnose fungicide. Yes, in answer to your question, I would probably think it's high but I would rather have green grass and a lot of fungicides than not to have green grass.

He alluded to something about how he overspent his budget. I never knew of a superintendent who overspent his budget to grow green grass who ever lost his job. But I could name a whole list of men who didn't spend their budgets, who lost grass and lost their jobs. Bruce was wise the way he did it. He asked for the money. He found a way to get the money and he sprayed. The only thing the membership remem-

bers is that they had green grass all summer when a lot of other courses didn't have green grass all summer.

COMMENT (Williams) I think you should remember one of the things Bruce said before is that you shouldn't compare golf courses and one of the things about Glen View is the fact that they've got a river running right through the middle of the course - the Des Plaines river - for high humidity. They've got a forest preserve around them so they have very poor air circulation. With those factors in mind you realize why he sprays more than the average.

5) If we adopt "Poa" and want to live with it, do we need an automatic sprinkling system?

ANSWER (Vargas) I don't think the research is there to really give an answer. Maybe a year or two years from now I'll have the answer but right now the only thing I know is that with an automatic irrigation system your superintendent will have a much better chance of controlling the moisture. Whether he needs to put more on for anthracnose or put less on, it's going to be a lot simpler with an automatic system for him to do that. We really don't know which way we're going to go yet but simply, an automatic irrigation system is the easiest way to regulate the water on a golf course.

COMMENT (Williams) Just to add that today you have a tremendously difficult time getting people to work during the night time hours. We operate our irrigation system usually between 3:00 a.m. and 5:00 a.m. During that two hours we can irrigate the entire golf course and we dispense with the guttation water that's on the blades at that particular time and we really feel we help control the fungus in that way.

6) What about sand top-dressing greens?

ANSWER (Dr. Turgeon) I guess I've adopted a rather cautious wait and see attitude toward sand top dressing. My concern arises out of observations from work done in northern Michigan as well as some experiences in Ohio regarding hydrophobic sand conditions and some rather unknown, or at least unexplained, problems associated with pure sand media. I think the approach to sand top dressing frequently at lightrate is feasible with dry sand. That's intriguing and whether it's a long term benefit and solution to some of the problems we encounter now, I think we have to be a little cautious about that. One thing for certain sand top dressing isn't anything that's brand new. All one has to do is probe some greens and look at the history of what's been applied topically over the years and where you encounter a sand layer two/three inches below in the profile, often times that's where you see problems. But it seems to me if one wants to take the risk and embark on a pure sand top dressing program you're stuck with that for life. You can't change your mind later on. Otherwise you've built in an internal problem that cannot be rectified and will definitely cause problems in terms of internal water movement within that soil profile, root growth across interfaces and so on.

COMMENT (Williams) For that you could also go over to Glencoe Golf Club where Ken Quandt has been on the program for a couple of years now and he has a lot of good information for anyone interested in the sand top-dressing program.

7) You mentioned nitrogen, how important is phosphorus in growing "Poa"?

ANSWER (Vargas) Anthracnose is a problem and you need to control it if you're going to grow annual bluegrass. And, we really don't know. We have spent

continued on next page



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so long doing research on creeping bentgrass and Kentucky bluegrass and in trying to grow annual bluegrass under those regimes, I don't think we know. I have a feeling that phosphorus is probably important. We probably need it. How much? Research is going to have to bear out. Just like - what's the formula ratio that all of you use pretty much in your fertilizer when you go to complete fertilizer - something like a 4-1-2 3-1-2? You fertilize your Poa with that don't you? You know where that came from? Creeping bentgrass research! Is that the best ratio for annual bluegrass? I don't think anybody knows. There's another piece of research that needs to be done. How about the potassium? You asked about phosphorus. How about potassium? I'd like to see some of the people in this room go back to some of the organizations, whether it's OJ Noer, USGA or the golf course superintendents and at least spend an equal amount of money on research to grow "Poa" as those organizations are spending to try to kill it. And for all the money that has been spent you still can't kill it and you still can't get rid of it.

If you want to get rid of Poa the way chip cal always did - take it out in a hurry - you don't have to buy chip cal - shut the faucet off in the middle of the summer. It'll die, if that's your objective. It'll die and then go in there and overseed. You don't have to do it chemically.

COMMENT (Dr. Turgeon) I think there's no question that phosphorus is an important element in sustaining plants including Poa annua. With regard to phosphorus fertilization, that's going to be mitigated by the phosphorus supplying power of the soil. Soil is a highly buffered system. You have all kinds of things in there including residual phosphate supplies that can be released under natural conditions to sustain the requirements of a fickle plant population. So your phosphorus fertilization program is a function of how much the soil can supply in addition to what you have to supply.

In many intensively cultured turf grass systems where you're dealing with essentially unbuffered systems, i.e. sand media unbuffered systems, then what you supply through fertilization is even more critical since you don't have the buffering capacity of the soil to compensate for what you do or do not do in your cultural program. Yes, you need phosphorus fertilizer and if you're on essentially pure sand or high sand media it's going to be even more important. Now, the question of phosphorus and Poa annua basically has been a hot one over the years because of the interaction between phosphorus and arsenate. In other words you can overcome in effect arsenic uptake by plant supplying phosphorus because there's a competition for uptake. So in your Poa annua control program utilizing arsenate materials it was important to de-emphasize phosphorus in the fertilization program so as not to obscure the effect or reduce the effect of the arsenate. The plant still had a phosphorus requirement but you're trying to minimize the amount of phosphorus injected into that system so as not to prevent the arsenic pickup which you're depending on for control. But when we talk about "Poa" annua culture, yes, we need phosphorus and it has to be supplied in sufficient quantities to sustain those plants particularly where you have an unbuffered system in which you're trying to grow those plants.

When you talk about resurgence of Poa annua from seed germination that is particularly where phosphorus is important and if you're dependent upon



that, phosphorus is even more important in the fertilization program.

8) Dollar spot can be treated efficiently on a curative basis, can anthracnose be treated as well?

ANSWER (Vargas) No, I don't think so and the reason I don't think so is - with dollar spot you can see the infection coming, you can see a few spots, you can curatively treat it. Anthracnose - we know that plant is infected early in the spring, throughout the summer and yes, you probably could get lucky and go on the basis if I get two night times with the temperature above 70 I'm going to spray. If I get five days in a row with the daytime temperature above 85, I'm going to spray. You've got to be lucky though. I think you're going to lose some grass trying to play that game. No, I don't think you can treat anthracnose today on a curative basis without losing some grass. You have to be on a preventative basis.

Again, one of those fairways I showed you was treated and came back in two weeks but does the membership remember the 30 or 40 weeks of green grass you gave them? No, the membership remembers the two weeks they played on brown fairways when the guy right across the street had green fairways. That's why I don't think you can afford to take that chance.

9) What about overseeding programs?

ANSWER (Vargas) We had a symposium at the University of Illinois which most of the people in this room attended. Dr. Joe Deutsch made a good point when he said "for every dollar's worth of Kentucky bluegrass seed you buy you get one nickel back in grass plants in an overseeding program. For every dollar's worth of creeping bentgrass you buy, you get one dime back." Then he went into ryegrass and I hate to say that because everyone will rush for ryegrass and I think we have many questions about ryegrass. He did say with ryegrass it was around 70 or 80% as I remember. So to answer your question, I guess I'm enough in favor of "Poa" that I think you ought to leave it alone and learn to manage it.

Going to an overseeding program, especially with something like seaside, I think you're getting 7 cents back on every dollar spent. Put that money into fungicides and I think you'd be far better off. I'm not sure seaside itself would ever compete with "Poa" but that's just my personal opinion. The other thing, if you get the membership convinced to play on a little harder fairways in the summertime where you're cutting back on the water and you want to go to bentgrass you're probably going to get somewhere around 70 to 80 percent bent, but, people still basically like nice, soft, lush fairways and if you're going to do that you're not going to be able to push the "Poa" out and bring the bent in.

COMMENT (Williams) I've already stated that my program is spot seeding with overseeding with a combination of bent and the newer perennial ryegrasses. We're spending about \$2000 a year on seed even with spot work and it would cost well over \$6000 to go into a total program. We tried that years ago just seeding alone by itself and we really did not get our money's worth.

10) In talking about budgeting for Poa annua. We've got these numbers of diseases that we're working with today that we can budget for. One disease that stands out is Pythium. It's a little hard to budget for that because the chemicals that control Pythium are three or four times as expensive as most of the regular fungicides. Can you give us a little insight as to the speed of the activity of Pythium?

ANSWER (Vargas) You ought to have at least one treatment on hand. What it's going to cost you to treat the golf course once ought to be in your shed. When Pythium occurs, you put that treatment on. You may not use it next year, you may not use it the year after but somewhere, in the first year, you've got to have it in your budget. It's expensive and if the weather continues for two or three weeks you're going to have to go back to your green chairman or the green committee and say we need more fungicide but I think the problem is one of communication. You go to your green chairman or your board and say "This is what we need to have on hand. We may need it, we may not need it. Now if one spray takes care of it, fine, but we may have two or three weeks of persistent, hot weather, may I come back to you, if we have this unusual occurrence or may I spend the money next year, we'll take it out of next year's budget or we can find some other way to scrape that money up. "I think if you present it that way, they're going to say "sure, we don't want grass to die."

COMMENT (Schwartzkopf) We have spent considerable time on the cultural maintenance practices used for Poa annua. Dr. Vargas referred to some research work that has been done in the past. The USGA over a period of years has spent over \$50,000 in research on Poa annua at Michigan State. That material will be published in a book which will be mailed to all USGA member clubs within the next 60 to 90 days. One copy will be addressed to the golf course superintendent and one copy to the chairman of the green committee. The primary authors of the book are Dr. Beard, Dr. Vargas, Dr. Turgeon, Dr. Paul Rieke and the USGA Green Section. If you have not received your copy by the Fourth of July, please contact me.

---

Dear Ray,  
A sense of humor aids to ease the pressure of summer stress, I'm sure you'll agree.

#### POA HUMOR

Since Poa is the subject,  
We've all been speaking of.  
To treat it with a vengeance,  
Or treat it with a love.  
It's here to serve a purpose,  
And when it's good we're glad.  
But there's been times and seasons,  
When it's made us mighty sad.  
The answer lies somewhere between,  
Destroy it if you must.  
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Catch a Greyhound bus.

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