(Continued from page 9)

Mowing Frequency

What about mowing frequency? In the classic mowing paper by Madison, it was suggested that a rest period every 7 to 8 days would benefit a turf mowed at 0.25" every day. If you accept that mowing is a physiological stress to the plant, then daily multiple mowing prohibits any potential recovery that might be realized during the day. While this practice might be useful from a functional standpoint, to maintain ball roll, is it a nightmare from a plant health standpoint?

It is widely thought that morning dew or moisture reduces the quality of cut. Back East it was common practice to pole the green in the morning with a flexible pole to remove dew, as well as stones and even golf spikes that could disrupt the mower. I don't know of many courses where this is practiced in Wisconsin. Depending on the day, would it be possible to syringe the green in the morning to knockdown the dew, allow them to dry and then sneak out to mow around 9 or 10 am? Again, this may sound crazy, but someone has to speak for the turf plant.

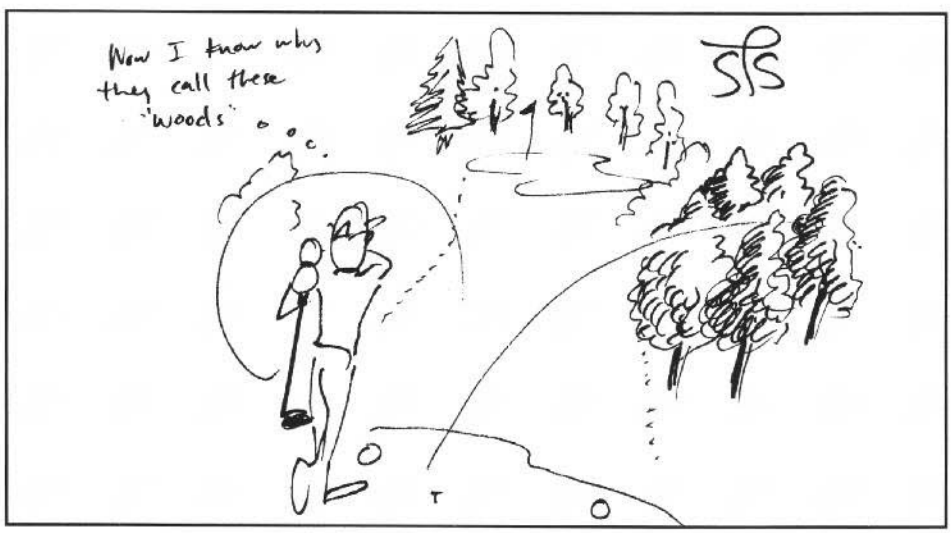
A Day of Rest. Following Madison's logic, one might consider resting the greens every 4 days. Now there's a radical approach! Could you maintain consistent conditions by not mowing every 4th or 6th day? Is the golfing season too short in Wisconsin to allow a green to grow from .125 to 156" or .110 to .124" over a two day period? What is the impact on plant health? Does this significantly reduce ball roll? I thought rolling might help us eliminate a mowing; I guess I was wrong. Now we're seeing multiple daily cuts plus rolling!

As I ask around, superintendents shudder at the thought of a day without mowing. One of the most highly regarded superintendents in the state indicated that if he rested the greens on Monday, it would take until Friday to get the speeds back to where they had to be. At some point we may have to consider either explaining the benefit of a day of rest to the golfers, or developing supplemental cultural practices such as rolling, topdressing or growth regulators to compensate for the day off. It is possible that more upright bentgrasses such as Putter, Crenshaw, Providence and Pennlinks may allow increased heights without lost speeds. In either case, it seems to me that something may have to give.

Ah Ha, Ball Roll

Every study that has investigated influences on ball roll (green speed) concluded that height of cut has the greatest influence. Reducing height on a Penncross/Penneagle green from .187" to .125 increased roll 2 feet, .156 to .125" about 8 inches and .125 to .09375" only 4 inches. Many of these studies as you might suspect were conducted under controlled conditions and on a surface different from yours.

Under actual maintenance and playing conditions, Mario Tiziani, under the supervision of Dr. Kussow, did a study at Cherokee Country Club that monitored the variation in ball roll over a one month period. They found that the "faster greens" had the greatest day to day variation. Daytime drying increased roll if greens weren't growing rapidly and grain and spike marks significantly reduced roll. The conclusion I liked was that superintendents should not be concerned when roll varies 9 inches or less; this is more likely a result of natural forces rather than cultural practices.



The Big Picture

A closer look at all this information suggests that some of the pressure for "high speed" is self inflicted. In reviewing the literature from a search of the Turfgrass Information File, I came across several articles such as *Speed Kills* and *No Speed Limit*. Our esteemed editor back in 1985 penned a piece on the the obsession with fast greens entitled "What's Goin on Here?". It was decried, enough is enough! Ten years later, here I am wondering if we can expand the biological boundaries further? Or, is it up to our communication skills to explain what's what to our golfing community.

I know we can provide the demanding high speed conditions that our better golfers demand—at a price. We will have to learn more about new technologies. Will the new bentgrasses allow us to increase heights and keep speed? If so, how do we introduce the new cultivars into our existing greens? Is it worth planting new bentgrasses if they will be infested with annual bluegrass within 5 years (I've seen new greens not even one year old with annual bluegrass in them!) Will plant growth regulators be developed that enable us to maintain health, quality and speed? Will battery operated greensmowers influence ball roll? Will a winter hardy annual bluegrass be developed that does not produce seedheads under putting green conditions?

The Future

I am concerned that continuing to force conditions on biological systems developed 30 to 50 years ago (Penncross/annual bluegrass greens) will only increase the demand for energy intensive inputs such as pesticides. I know we can and do produce almost unbelievably consistent and fast surfaces, yet it comes at a price.

Environmental research tells us, for the most part, our system does not threaten the environment (it enhances it). I'm still concerned with the casual manner with which we continue to use the same practices with only slightly different tools. I wonder if it's time, before we are forced into it, to investigate practices that focus on balancing consistent, high quality conditions with maintaining healthy plants. I wonder if mowing is the practice to start with....

WHY NOT LET SCOTT(S) DO IT?

By Bruce Worzella

This is the question I asked myself when it came to applying my snow mold control to fairways last year at West Bend Country Club.

Early last fall, Wayne Horman approached me at a WGCSA meeting, informing me that Scotts was venturing into the application process of their FFII product. He wondered if I would be interested.

First, I would like to give you a little history of my snow mold program for the past three years on fairways. Around the first week of November, I have been applying a spray mixture of Terremec SP (chloroneb) and Terraclor 75% WP (PCNB). The rate for chloroneb was 2.8 oz/M, and the rate for the PCNB was 4 oz/M. Success of this program has been to my liking, but in this area, winter fungi pressure has not been real severe. The primary purpose for snowmold preventative applications is that neither I nor the membership needs an excuse for a possible devastating snowmold infection, especially because I took a gamble of not making a preventative fungicide application. Spring renovation is not a practice that we particularly enjoy at West Bend CC.

So why did I try the Scotts application. Convenience. Everyone knows that trying to find the perfect day in November to make a spray application is difficult. Also, I usually have my irrigation system drained for the season and have to use alternative methods to fill our sprayers. This takes more time. Additionally, you are never totally confident that the application was made at the last possible moment; the search for the text book day is frustrating. So I decided to let Scotts do it.

The FFII is a granular product with the PCNB carried by the fertilizer particles. The rate can vary, and I chose the

105 pounds per acre rate. That rate lays down .33 #N/M and 6 oz PCNB/M.

The price of the application seems justified for the convenience. The application equipment was smooth and precise. Finally, results this spring were very acceptable. Would my usual method have worked? Probably. Am I going to custom apply again this fall. Yes, as long as the cost stays justifiable.

Remember, I am not a Scotts sales person. Let Wayne Horman explain the program to you and you can then make your own decision.

Field Notes for Field Day and Other Noer News

By Tom Schwab, Manager
O.J. Noer Turfgrass Research and Education Facility

I just had my first big event at the Noer Facility. It was the equivalent to hosting a WGCSA meeting or big member/guest tournament. The event was the first ever Super/Pro fund raising tournament. The tournament teamed up club superintendents and professionals against other clubs' paired teams. This year they played the wonderfully conditioned University Ridge course.

In the morning all the teams met out here at the Noer Facility. So I had to make sure the place was clean, well groomed and all the dandelions mowed down. We took the teams for a tour of the building and then to all the plots that were related to golf turf research. It was a great opportunity to introduce the golf professionals to all the varied research that takes place at the Noer Facility. I think many of them left with a new appreciation for the science of turfgrass management.

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The day to really get an appreciation for turf research is at the annual Wisconsin Turfgrass Association Summer Field Day. This year it's being held on Tuesday, August 15th. The permanent site for Field Day is the Noer Facility so you can actually see and hear about all the research being done here. This day not only explores golf turf research but also highlights home lawn, athletic field and production related turf studies.

A major portion of the day is dedicated to a trade show, where you can learn about the equipment and products used in the turf industry. These exhibitors have made Summer Field Day what it is today. They have always been strong supporters of turf research and education. We are expecting over 60 exhibitors this year who will be anxious to tell you about the latest innovations.

The day will also include a silent auction, a putting contest, some surprise entertainment and as always a great lunch. We would be very pleased to see you at Field Day, whether it is your first or fourteenth appearance. We promise an educational and fun experience. If you do not receive your registration in early July, or if you have questions, please feel free to call 608-845-6536 .

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Some new studies are starting to take shape at the Noer Facility. Two important ones are being funded by you, the WGCSA. They are the Putting Green Management Systems (PGMS), and National Turfgrass Evaluation Program (NTEP). The studies are on 5000 square feet of native soil green and 5000 square feet of USGA green. Each 5000 is divided again to support half PGMS and half NTEP trials. That way they cover both studies on both types of construction.

The NTEP looks at 28 different cultivars of bentgrass in a green situation. The PGMS will look at high, medium and low intensity management regimes. It will also look at those regimes on three distinctly different bentgrass cultivars. The studies will be producing good information by Summer Field Day. They will have pertinent information for virtually every golf course in the state.

Another new study you will want to see is the Kentucky Bluegrass fairway cultivar evaluation. These cultivars are being maintained at a 3/4 inch mowing height to see if *Poa annua* or other weeds are creeping in at this height. They also investigate if the grass would be fine textured, upright and dense enough to fit on your fairways.

Six new studies will be under construction at Summer Field Day. They are an NTEP for perennial ryegrass, a NTEP for Kentucky bluegrass, use of a so called "miracle product" called Natures Nutrient to maintain Kentucky bluegrass, a thatch management study, a prairie demonstration and an ornamental grass demonstration.

The ornamental grass demonstration is being coordinated with a Madison landscape nursery, C/R Stephenson Company. They will be helping set up the study with two goals in mind. One goal is to set up the study in a natural setting. This way we can observe the grasses as they would actually be used in a landscape. The other goal is to use many of the less common varieties along with the common ones. We'll have more information to help you use more varieties.

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(Continued on page 15)

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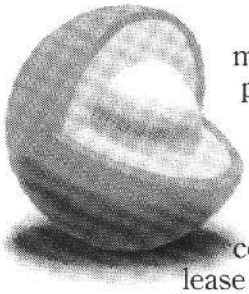

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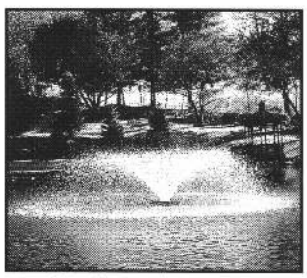

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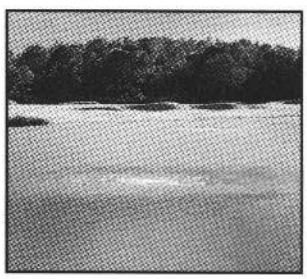

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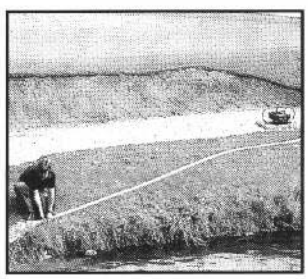

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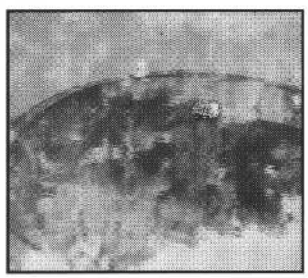

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(Continued from page 13)

The Noer Facility just came one step closer to acquiring the 20 new acres. It had been reported to you before how we need this land to expand Summer Field Day, do lower maintenance turf studies (roadside, airstrip, athletic field) and expand our other landscape plant study. This will provide more research and education to the users of the Noer Facility.

The land is owned by the UW Foundation, which gave us the original 13 acres. The Foundation has been reluctant to give up the 20 acres because they think University Ridge may build another 18 holes and need this land some day.

The University of Wisconsin Division of Intercollegiate Athletics (DIA) just wrote to Wayne Horman, President of the Wisconsin Turfgrass Association, explaining how the DIA is doing a long range development plan for the University Ridge Golf Course. The plan has two key components; to maximize the efficiency of the existing golf course property, and an analysis of options for developing adjacent land owned by the University of Wisconsin Foundation. The important part of the letter states, *"Our assumptions relative to the second component include continued, and even expanded, involvement of the research personnel of the O.J. Noer Turfgrass Research and Educational Facility. Further, the Department is well aware of the need of the Noer Facility's request to expand the research area by approximately 20 acres immediately north of the existing holdings. The function of this important research operation is important to the continued growth and efficient operations of golf courses in Wisconsin as well as University Ridge. Therefore, as we meet with the successful bidder the land requested by the Noer Facility will not be included in the development of the Master Plan."*

This letter let the UW Foundation know that the UW Division of Intercollegiate Athletics has no plans to expand onto these 20 acres, which should free up the Foundation to do what it does so well. That is to help expand good research and education, which the addition to the Noer Facility certainly will do.

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Lastly I would like to tell you about a meeting I had a month ago with an equipment manufacturer. It was so unusual after coming from a relatively low budget golf course operation. A representative from John Deere in Beaver Dam and his secretary made an appointment to meet with me one Tuesday. When they arrived we sat down and they set a John Deere catalog in front of me. We went through every page to see what I needed. John Deere generously loaned us $113,000 of equipment to use at the Noer for the next two years with a promise to stop back again.

Two weeks later a representative from Jacobsen heard this story. I was then sent a catalog from Jacobsen. The problem is we are 13 acres and only need so much equipment. There is also Reinders, Wisconsin Turf, and Hanleys that have helped out with the equipment every year. Even Tiziani Golf Cars brought out a Yamaha this year.

The meeting with John Deere was so unique as is the support from the other manufacturers. I have spent more time this spring reading new operators manuals when what I have been used to is making trips to Farm & Fleet for more duct tape and bailing twine.

Why We Have Professors

By Monroe S. Miller

It surprises even me that it took this long — over thirty years — to answer completely what seems an easy and obvious question. You would think everybody knows why we need professors.

I should be the last one to even be thinking about this question. After all, I have lived in Madison since 1964 (except for two years in the Army when I was a resident of a Saigon suburb) and Madison has LOTS of professors. We have emeritus professors, former professors (usually people who switched careers to make more money), and active, working professors on the UW-Madison campus.

It is common for Madison area residents, especially the Madison westsiders and Middleton citizens, to have a professor as a neighbor. When I lived on Tomahawk Trail, only a block from my golf course, Dr. Jack Berbee lived next door. He was a great guy — still is — and a regular sort of fellow who had an excellent career in the Plant Pathology Department. His son was one of the best employees I've ever had; ask Mike Lee about that.

You'd guess a west side club like mine might have a number of professors as members, and we do. Over the years I have gotten to know them as golfers, not renown faculty members like many of them are. They have been awfully nice to me, extending respect for what I know and what I do. Once incident in particular tells a lot about them, and it pleases me every time I think of it.

A while back — quite a while back, actually — the dean of the medical school was elected to our board of directors. Dr. Peter Eichman was a professor of neurology, too, and he really likes to play golf, despite a physical handicap. When I was introduced to him for the first time, I shook his hand offered something creative like "it's nice to meet you, Dr. Eichman."

His reply spoke volumes: "Call me Pete." At Blackhawk, I guess, he sort of wanted to get away from the duties and hassles of building a new hospital and administering the medical school and the concerns about his patients. He simply wanted to be known by his first name. I was impressed then and all these years later, it still sets him apart from others.

In my own case, there are professors in my family. My great uncle was a professor of music at the University of Minnesota, and my youngest sister — Dr. Virginia Miller-Hamre — is a faculty member at a Chicago college. My oldest daughter is into the second year of her PhD program — Minnesota again — and can see the day when her dream to be a professor will come true.

Neighbors, friends, family and work — no matter where I go, it seems, there are college professors.

All the Madison area superintendents, as well as those elsewhere, have had their lives profoundly affected by college professors. It seems impossible that Drs. Love, Worf, Newman and Koval are retired; that notwithstanding, the respect and gratitude and even affection extended to these men is rare. They were our teachers; they conducted research to help us solve our problems and as the years went by their Extension activities kept us sharp and current. When we were in trouble, their phones where the first to ring. Their career purpose was a noble one, indeed.

Obviously, professors are in one of the really special careers in our society. There is little question about what they do and why they are important and why we need them. Three separate events this past winter, taken together, focused on what may actually be the biggest thing they do for us. They were good reminders.

Dr. Dan Potter, an entomology professor from the University of Kentucky, travelled to the GCSAA conference to give a lecture and share his research about black cutworm control with us. It was a fascinating lecture to listen to — I took nary a note. I was too busy listening.

It was a story of how an observation — golf course superintendents noting cutworms often reappear a short five or so days after treatment - led to some experiments involving where cutworms lay their eggs. This led to the discovery that the eggs were always deposited on the grass plant leaf blade tips. Mowing greens (or tees) each day removed almost all of the cutworm eggs, leading to an experiment to determine where they were coming from when they would reappear. Surprise! They crawl on from surrounding turf! That also explained why insecticide applications often last for such a short period.

The next step was figuring out how far these larvae would crawl. Potter and his grad student also found out that some rough grasses like those used for surrounds are resistant to cutworm damage. The upshot of this wonderfully interesting research was that

by mowing, depositing clippings a distance away from the green or tee, and sodding surrounds with resistant varieties, a golf course superintendent could nearly eliminate insecticide use for cutworm control.

It seemed to me Professor Potter did more than research — he thought through a problem with logic, did some studies, followed them with some more thinking about the next stop. His thinking was driven with concern for us and his interest in control methodology that did not use insecticides. His curiosity also drove this research project. It was a beautiful story to hear.

Less than two hours after that, in the same lecture hall, I listened to Dr. Frank Rossi lead the assembled superintendents through the sensibility and practicality of understanding what Rachel Carson's Silent Spring has brought to our places of business. Although I am highly prejudiced, I think Frank might have been the only one, or one of the few, who could have given a conciliatory, open minded lecture like this one. Or at least few could have done it better.

Frank did not defend the weak science or poor data or any of the other shortcomings of this book, but neither did he dismiss Carson as an irrelevant old spinster who happened to be an excellent writer. He suggested some of her insights were valuable, even legitimate.

Silent Spring marked the beginning of the environmental movement. It caused a lot of changes that Frank gently suggested were necessary — the right-to-know rules, environmental impact considerations of all kinds, and scores of other equally obvious things. He reminded us how Silent spring has inspired us to posture ourselves as environmentalists "in our own right." In the time since this book, we have become better educated, have better trained staff members, and have learned to appreciate the value of public relations.

Frank emphasized how we must continually change our behavior or be regulated to an extreme. Research into all the unknowns of our business must go on, another of what Rossi thinks is a legacy of Silent Spring. Carson's words have put us under scrutiny, made us more accountable and diligent. He emphasized his agreement with Carson that we must share the earth's limited resources, learn to cooperate and not dominate.

Frank's efforts impressed me. He is more thoughtful and deliberate on these matters than any of us, or at least he is more articulate. And who more than Frank would be so unabashed to speak so bluntly with such eloquence? I was proud of him — Wisconsin guy, you know — but also grateful for the influence he was having on me, a positive influence. My guess was others were reacting the same as me. That he is able to be that influential at such a young age must be respected.

Prior to departing for San Francisco, I had xeroxed Professor Kussow's Wisconsin Soils Report article that was going to appear in the March/April 1995 issue of THE GRASS ROOTS. I had proof read it before leaving, an easy job with Wayne's writing, but wanted time to read it carefully for content.

You will remember it — "Managing Potassium in Putting Greens". In that piece, Wayne asks a question, proposes an answer and then shares either research results or his own theory. It is an intriguing trip through the mind of a Soil Science professor as he works his way to a rational and reasoned recommendation that involves soil test K levels, annual applications, N:K ratios and the like. It was a lesson in logical thinking, and at the end of the article I was smiling. How lucky we are to have him in our corner, thinking about our problems. And he does this in every issue of THE GRASS ROOTS. And in the research he does and in the classrooms where he lectures and from the podium when he speaks.

That's what professors do so well and might be why we need them the most — they think through problems and map out solutions or ways to get to a bottom line answer. They are able to put tremendous resources into their thinking — a lot of education, libraries, colleagues in and tangential to their field, some inherent patience, discipline, exceptional intelligence and a big intellectual curiosity. We might be able to handle a few of those items, but usually not all of them. Their work is different from ours — we tend to spend a lot of time problem solving, too, but for more practical and immediate problems. And make no mistake — we are indeed good problem solvers.

I contend that it takes a different kind of person to sort out the details, design experiments and think through ways of dealing with the cutworm problem, for example, than it does for keeping a crew of twenty employees motivated and focused and moving on a hot summer. I didn't say harder, just different. We need professors to do specialized thinking for us, the kind of thinking we are not necessarily trained to do or particularly interested in doing. We need them looking at the big picture AND studying the smallest and minutest molecular details.

They are our security blanket for today; they hold a good bit of our future prosperity in their labs, in the research plots and in their minds. Without them and their independence, we aren't going to get far or improve very much.

God bless them all! ^/

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Nitrogen Release From Natural Organic Turf Fertilizers

By Jeffrey K. Barlow

Selection and effective use of natural organic turf fertilizers requires knowledge of the rate at which microbial action converts the organic N to inorganic N. This process, hereafter referred to as organic N mineralization, is influenced by a number of factors. One is the composition of the fertilizer. As a general rule, the more complex the organic compounds present, the slower their rate of decomposition and release of inorganic N. Fresh plant and animal residues, with their sugars and amino acids, decompose more quickly than organic materials that have already undergone some degree of microbial decay.

Level of microbial activity per se is another important consideration. Microorganisms, like all living biota, require a moist environment and are temperature responsive. The optimum temperature for microbes thought to be instrumental in organic fertilizer decay is around 90° F. Also of some concern is the microbe population. Although actively growing turf teems with microorganisms, there exists the view that heat sterilized natural organic fertilizer decomposition is delayed by the time required for the population of microbes to build up. Presumably this is not true for non-sterilized fertilizers.

A final variable in N mineralization is particle size of the natural organic fertilizer. Microbial attack is viewed as a surface phenomenon. If so, then the anticipation is that smaller particles, because of their greater amount of surface area per unit weight or volume, decompose more quickly than do larger particles.

The purpose of the present study was to examine how the various factors mentioned above influence the rate of organic N mineralization from different types of natural organic fertilizers. To do this, the fertilizers listed in Table 1 were applied at the rate of 1.5 lb N/M to the surface of 50 g of an 80/20 sand-peat mix contained in incubation funnels. A moisture content of 14.7% was established by adding water and then applying a 20-cm suction for five minutes.

The incubation funnels were enclosed in plastic bags to retard drying and incubated at 68° or 90° F for periods of 7, 14, 28, and 42 days. At the end of each incubation period inorganic N was extracted with 40 ml of 0.004 N CaCl2 solution. Inorganic N (nitrate + nitrite + ammonium) was determined by way of steam distillation and titration.

RESULTS AND DISCUSSION

Fertilizer Properties

The amount of information that manufacturers are required by law to place on bags of natural organic fertilizers is minimal. To extend our knowledge of these fertilizers, the products used in the present study were subjected to various types of analyses. General properties of the fertilizers are shown in Table 1. The first three, Milorganite, Hou-Actinite and Flororganic, are sewage sludge products. Sustane is composted turkey droppings plus pine bark bedding. The 5-3-1 fertilizer is a Spring Valley product consisting of a blend of Milorganite and chicken manure compost. Hynite and Lorganic-8 are leather scrap products. The Hynite is palletized ground leather scraps and Lorganic-8 is a liquid fertilizer made by solubilizing leather scraps and removing the metals used in the tanning process.

TABLE 1. General characteristics of the natural organic fertilizers used.

Fertilizer	Physical state †	Organic matter Δ	Moisture content	Total N content As is	Total N content Oven-dry	Inorganic N
		%				
Milorganite 6-2-0	R	71.0	10.6	5.64	6.24	0.74
	G	71.0	10.1	5.82	6.41	0.72
	F	73.4	23.0	6.08	7.48	0.86
Hou-Actinite 5-2-0	R	67.1	5.2	6.26	6.58	0.67
	G	61.0	3.9	5.54	5.76	0.58
Flororganic 6-3-0	R	71.6	8.1	5.51	5.95	4.90
Sustane 5-2-4	R	47.4	9.3	4.74	5.18	0.54
	F	43.8	11.5	4.10	5.06	8.76
5-3-1	R	65.9	10.2	5.28	5.82	5.43
	R(1)	65.9	10.3	5.38	5.88	5.15
	R(2)	65.3	9.1	5.38	5.87	5.26
Hynite 11-0-0	R	87.8	8.1	11.66	12.60	1.22
Lorganic	L	97.7	—	7.81	—	0.46

† R = regular grade; G = Greens grade; F = fine; R(1) = 1% mold culture added; R(2) = 2% mold culture added; L = liquid.

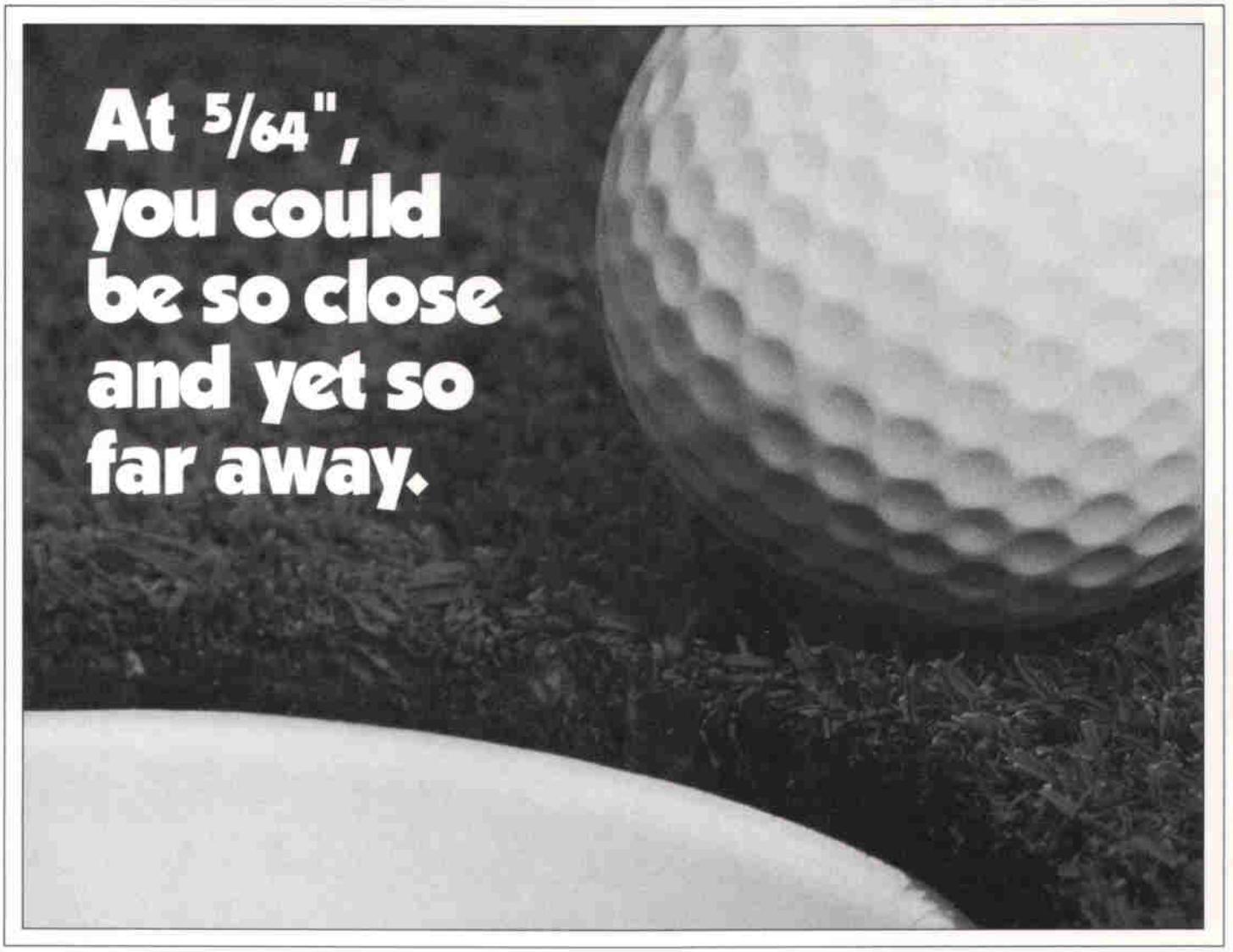
Δ Determined as weight loss upon ignition at 600°C.

§ Percent of total N.

The first thing to notice in Table 1 is the wide variability among the fertilizers in their organic matter, moisture and inorganic N contents. The Lorganic-8 is essentially 100% organic while Sustane contains only about 45% organic matter. Moisture contents of the fertilizers as they came from the bag ranged from 3.9 to 23%. Inorganic N levels were less than 1% in the sewage sludge products but were as high as nearly 9% in the fine grade Sustane. Past analyses have shown Sustane to contain as much as 24% inorganic N. Clearly, this wide variability in inorganic N content will have an impact on the rate of turfgrass greenup by the various natural organic turf fertilizers.

Because of their plant and/or animal origin, natural organic fertilizers contain virtually all of the essential plant nutrients. These are not reported because the amounts are typically too low to permit listing under existing fertilizer laws. They can, however, become significant with repetitive, long-term use of a particular fertilizer. As shown in Table 2, the fertilizers studied do vary considerably in their plant nutrient contents. For example, even though Milorganite and Flororganic are both sewage sludge fertilizers, the Flororganic contains 4 times as much Ca and nearly twice as much S as does the Milorganite.

(Continued on page 21)



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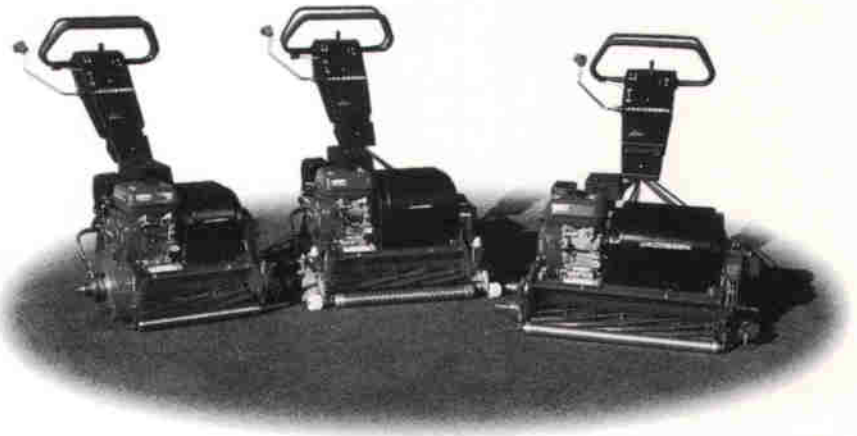

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