

not vary significantly at lower soil depths among any of the treatments.

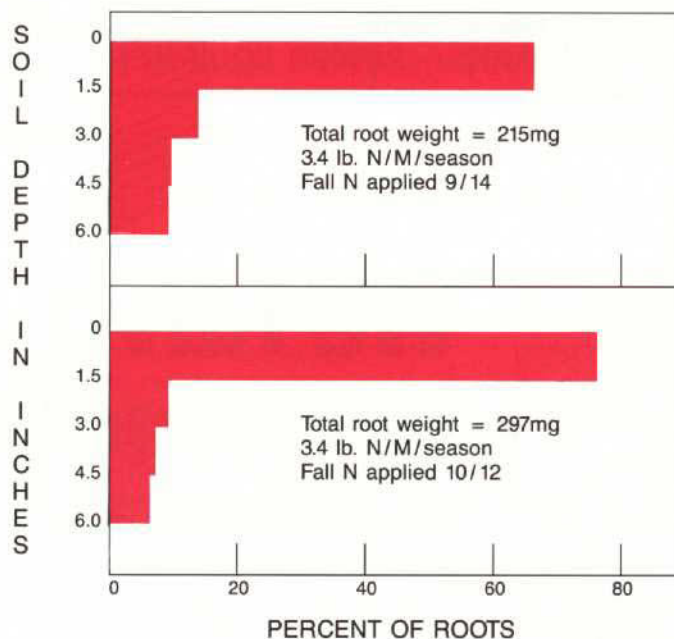


Figure 2. Bentgrass root profiles on November 29, 1988, for two different fall N treatments.

Root growth that occurred between October 31 and November 29 was markedly influenced by N rates and schedules. The bentgrass root systems actually appeared to decline during this time period when the annual N rate was 2.3 or 3.4 lb/M and fall N was applied September 14 (Table 1). At all three annual N rates, delaying fall N application, first to October 12 and then to November 15, progressively enhanced late season root growth and the effect increased with the annual rate of N application.

The data in Table 1 suggest that the best N treatment from the perspective of late season root growth was 4.6 lb. N/M/season in which 40 percent of this was dormant (November 15 application). This observation has to be interpreted cautiously because, as shown in Figure 1, total root weights on November 29 averaged 24 milligrams less for the dormant N schedule than for the late fall N

Table 1. Fall fertilizer N influences on bentgrass root weight changes between October 30 and November 29, 1988.

ANNUAL N RATE	FALL NITROGEN APPLIED		CHANGE IN ROOT WEIGHT+	
	RATE	DATE	mg	%
2.3	0.9	9/14	-120	-32.2
		10/12	-16	-6.5
		11/15	8	+4.6
3.4	1.3	9/14	-56	-20.7
		10/12	34	12.9
		11/15	21	10.2
4.6	1.7	9/14	20	8.9
		10/12	50	+28.7
		11/15	71	36.0

+ In a 1.4 inch diameter soil core taken to a six inch depth.

schedule. It is possible that by the time bentgrass root growth ceased in January or February root weights were essentially the same for the late fall and dormant N treatments.

The N treatment effects on root growth rates between October 31 and November 29 support some of the theory and recommendations regarding late fall N fertilization. Reductions in root weights that occurred when fall N was applied on September 14 likely reflect the deleterious effects of the surge in top growth brought about by this N application. It is somewhat surprising that this competitive effect of shoot growth on root growth persisted into November.

The October 12 N application had no significant effect on bentgrass topgrowth at any of the annual N rates (Pers. Comm. Dr. Wayne Kussow). This leads to the expectation that root growth would be enhanced at all three annual N rates. The fact is that late season root growth was not enhanced by late fall N when the annual N rate was only 2.3 lb/M. This is believed to relate to reports from other researchers that application of some N in September seems to increase responses to late fall N, particularly at low annual N rates. The present study suggests that this preconditioning of turfgrass for response to fall N can be achieved just as well by increasing the annual rate of N application.

SUMMARY

From the standpoint of bentgrass root development and late season growth, annual N rate and time of application are of equal importance. In this study, root weights were low whenever the N program resulted in surges in topgrowth in June and September and/or season average turfgrass color ratings were slightly below or at the minimally acceptable level of 7.0. These conditions prevailed at the 2.3 lb/M annual N rate in the so-called "normal" and "dormant" fertilization schedules. Applying N at times such that early summer and fall surges in topgrowth were avoided and at annual rates where color ratings averaged 7.3 to 7.5 favored bentgrass root development.

Delaying fall N application from September to October stimulated late season root growth providing turfgrass color ratings preceding N application were 7.5 or greater. This precondition was achieved by increasing the annual N rate from 2.3 to 3.4 or more lb. N/M.

Editor's Note: Mike is a May, 1989, graduate of UW Turf and Grounds Management Program. While in school he was employed for two years at the Cherokee Country Club. He is currently working for Rod Johnson at the Sheboygan Country Club.

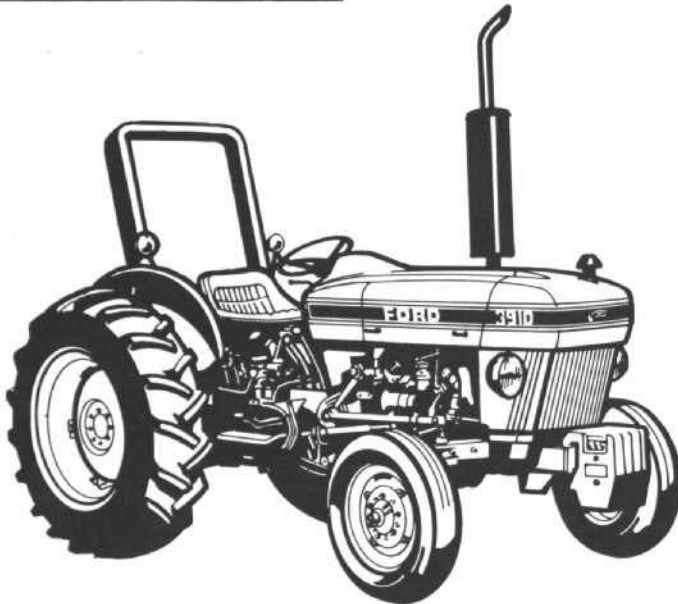
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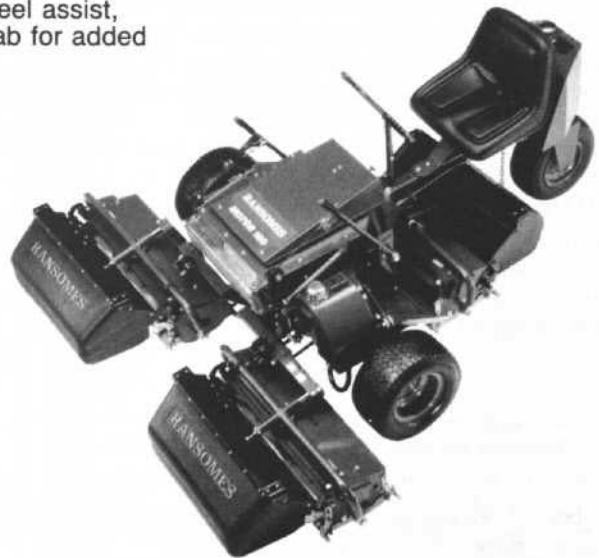
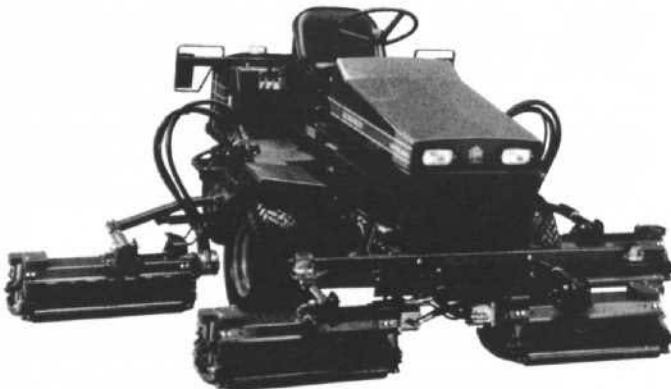
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Improving Weather, More Prosperity

By Monroe S. Miller

We're living in a historic time in golf right now, a time the likes of which has only been seen twice before.

A lot of new golf courses are being built in America and even more are needed. The National Golf Foundation estimates we will need to average 400 new courses each year to meet the demand from new players. Although that is a big number, it isn't without historical precedence.

In the 1920's, when many of our own golf courses were built, there were 4,500 courses built over a 10 to 12 year period. It happened again in the 1960's. That was the second boomtime for golf course construction in the U.S.

This information came to me in a press release from the NGF. Also included were current statistics from the 1989 edition of the NGF's GOLF FACILITIES IN THE U.S. on the number of golf courses in our country — 13,626 — and on the number of golf facilities — 12,582. The report distinguishes a golf facility from a golf course in noting that a golf facility may include more than one golf course.

The report broke national stats down on a state by state basis. Those results were surprising. Wisconsin, despite our short golf season, ranks 10th in the nation in the number of golf courses (415) and 10th in the number of golf facilities (397).

Those are impressive numbers. Equally impressive were the other states in the top 10. New York was 3rd, Michigan finished 5th, Ohio ended up 6th, Pennsylvania ranked 7th and Illinois was 8th. I would have guessed more southern and western states in those spots.

Wisconsin's 10th place ranking with 415 golf courses within her borders begs the question, again, "Why have so few donated to the NOER CENTER?" That number — 415 — indicates popularity and prosperity for golf. Are all but the 25 or so who have pledged pikers and parasites, smug and selfish and stingy? Are they ignorant to the value of research, education

and extension? Don't they care? Haven't they heard about the NOER CENTER project? Please help to find the answers to these questions. Time is getting short for our fundraising.

Speaking of new golf courses, news reports have it that Lake Geneva may be the site of a major new golf resort development.

The story is that the Anvan Development Corporation of Lombard, Illinois will build three 18 hole golf courses on 1,500 acres situated on the shores of Lake Como in the town of Geneva.

The prominent names mentioned for design of the courses have been Pete Dye, Tom Fazio and a team of Dick Nugent and Lee Trevino. A development of this magnitude is seldom seen anywhere in the country and obviously would be the biggest thing of its type in Wisconsin.

The Anvan Corporation isn't exactly a stranger in the Lake Geneva area. They own two resorts with golf courses — The Abbey in Fontana and Lake Lawn Lodge near Delavan — and one without a golf course — Interlaken.

Three new golf courses by three well established golf course architects — how exciting!

He did it, just like I knew he would. GRASS ROOTS columnist Rob Schultz, who moonlights as a sports writer for *The Capital Times*, received an award in the Associated Press Sports Editors Contest.

The award recognized Rob's coverage of the meeting between Monona teenager Jamie Hutton, who suffers from leukemia, and pro golfer Greg Norman at the 1988 Heritage Golf Classic.

Schultz, who has been on TCT staff since 1984, reports on golf and on the Green Bay Packers. His golf story for 1988 goes with the same award he won

in 1987 for a story he wrote about the Packers.

Winning awards is great, as long as it doesn't interfere with your column THE SPORTS PAGE, Rob. Congratulations! There will be more for you where these came from.

The subject of writers in the GRASS ROOTS brings up the name of a former author in the WGCSA journal — Mike Nelson.

Mike has done very well for himself since his graduation from the UW-Madison with a degree in meteorology in 1981. He worked at Channel 27 in Madison during high school and college and for 3 years after graduation. In 1984 he moved to KMOV-TV in St. Louis, where he is now the chief meteorologist and appears daily on the 5, 6 and 10 p.m. weather spots. KMOV is a CBS-owned affiliate. During the week of April 10th, Mike moved into the major leagues. He took over the weather on CBS' "THIS MORNING" and appeared with Kathaleen Sullivan and Harry Smith. It's a network show seen by millions of people.

Mike played a lot of golf at Blackhawk Country Club while growing up in Madison. His father is a past president of the club. In addition to writing for the WGCSA, Mike travelled to Dave Murgatroyd's golf course in Wisconsin Rapids in the mid-1980's and was a speaker at one of our monthly meetings.

KUDOS

To **Randy Smith** (and son Brent) for yet another great job on the WGCSA Directory. I'd bet it is the best chapter directory of all those published in the country.

To **Bob Erdahl** for his enormous effort in "The Wisconsin Survey — Putting Green Management". When he said "yes" to my request last winter to update Wayne Otto's article of ten years ago (reprinted in this issue of the

GRASS ROOTS for all of the younger members and new members of the WGCSA), I knew we would all have a lot of information to digest.

One part of his article reflects his training in the Department of Soil Science at the UW-Madison — he prefers to deal with N-P-K levels on an elemental basis. If you are interested in converting your oxide levels (P_2O_5 and K_2O) to Bob's elemental basis, multiply P_2O_5 by 0.44 and K_2O by 0.83.

To **Rod Johnson** for presenting his pregermination experience both at our March WGCSA meeting and in the last issue of the GRASS ROOTS. Both were nice complements to the piece written by Mark Grundman in the GRASS ROOTS a while back. What a spring to have that kind of reference before us. I know that both articles have received some attention from other state chapters.

HOW WOULD YOU ANSWER?

Does grass feel pain when it's cut? There is a group called the Fruitarian Network that is opposed to the mowing of grass. It seems these fruitcakes base their opposition to the cutting of grass on the curious contention that grass has "some sort of consciousness". That is to say our bents and blues and ryes have feelings. So the fruits answer the question with a resounding YES! What next?

The Network contends that mowing is cruel to grass. We've all known that there has been a steady upgrading of the civilized status of plants. It was vogue for awhile to "talk" to your plants; some believed they respond to the human voice.

This attempt to start some sort of new mowing debate won't get far, I predict. I cannot believe our society is

ready for an argument over the civil rights of grass. Hopefully we won't have to sneak out onto the golf course and mow it quickly before anyone notices. Or switch our cutting operations to those hours after sundown when the Fruitarians would have a difficult time catching us committing this horrible sin. May it never become a crime — we'll all be behind bars!

If your club or golf course is a USGA member club, you've received your copy of the new "Specifications for a Method of Putting Green Construction". Written by the USGA Green Section Staff, including Jim Latham, this new publication contains some "small, subtle changes and improvements" that have evolved since the first specs were published in 1960. This very well written and attractive book was edited by Bill Bengeyfield.

Several things impressed me. They are tired, as we should be, of the fraudulent claims of "USGA greens". In the introduction, the staff says "If you intend to build USGA Green Section greens, every step in the Specifications MUST be followed exactly as outlined. MAKE AND ACCEPT NO CHANGES." That line has Jim Latham's input, for sure.

One of my former employees shared his experience with a designer who tried (emphasis on "tried") to explain to an owner why the coarse sand layer (he called it the "choker" layer; not once in my over 20 years in this business have I heard that cute word applied to the CS layer) was not needed in a USGA green. The new specifications spell that out clearly on page 9: "the Green Section POSITIVELY RECOMMENDS INCLUDING THE INTERMEDIATE SAND LAYER IN ALL

USGA GREEN SECTION GREENS." Absolutely. Unequivocally. Positively.

Every golf course superintendent needs this book at hand when someone says "you can leave the choker layer out of your new USGA greens."

The authors are just as rigid when it comes to preparing the root zone mix: "IT IS ABSOLUTELY ESSENTIAL TO MIX ALL ROOT ZONE COMPONENTS OFF-SITE. No valid justification can be made for on-site mixing, since a total homogenous mixture is essential to success." Hurrah again!

They've added a section titled "Tips for Success and Opportunities for Error" that's loaded with good practical information.

A great service to golf and to golf courses and to golf course superintendents has been provided by the Green Section with this new publication. Get one for your library.

At least one person is reading the GRASS ROOTS. After the last issue had been on the newsstands for about a week, I received a note from Geoffrey Cornish. He had read "The Spirit Oak" and wanted me to know that John Paul Jones was born in Scotland, not New England. I had his DOB correct, but the John Paul Jones house in Portsmouth, New Hampshire that Cheryl and I have seen was NOT his birthplace. I stand corrected. How nice of Dr. Cornish to write — high compliment, really, coming from a noted golf course architect and one of New England's best historians!

Worry over pear thrip invasion of Wisconsin sugar maples inspired a few lines about this problem that Vermont and some other northeast states have

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suffered in the past couple of years. The insect that caused widespread defoliation of the sugars last year was present in much smaller numbers this year. Researchers are hoping they won't cause as much heavy damage this year. Me, too; Cheryl and I are planning to go out again this fall to see the leaves change colors. It'd be nice to have some leaves!

The average number of thrips per maple bud was only 1.1 in some southern Vermont counties this spring. As a reference, that average number was 8.9 last year.

Here's the fascinating, even fantastic, part of this story. Investigators have discovered a fungus growing that may kill the thrips! Tests are being conducted right now to determine if this fungus (*Verticillium lecanii*) actually did kill some thrips they've found. That would lead to hope that the fungus can be used to control the insect.

The weather in that part of the country this spring allowed buds to open faster than they did last year, giving the insects less time to do damage. Last year the spring weather kept buds on the trees far longer than normal. Sounds like it was the kind of spring we have had this year.

After reading Kevin Dushane's article about putting greens (and asking for permission to reprint it), I called Jerry Kershasky on a Sunday morning to ask about his roller that Kevin referenced in his story. One thing led to another and Jerry told me of their project at Westmoor to lower the pH of their irrigation water. Here in southern Wisconsin we have naturally hard water. Bob Erdahl and I used to use concentrated phosphoric acid to lower pH of

the water used in the spray tank with certain fungicides and insecticides.

But these (and other) methods are pretty boring compared to the plan of a person in the eastern U.S. to raise the pH of acid rain-filled lakes and ponds.

Sit down. You won't believe this. He makes tablets — two feet across and 42 pounds in weight — from limestone! His plan then calls for them to be plopped into lakes where the pH is too low.

His theory — sound enough — is that the limestone will neutralize the acid and bring the water pH up to somewhere near the middle of the scale where it is supposed to be. He agrees his "river Roloids" are only a stopgap measure until the smokestacks are cleaned up.

Does this mean that we should, therefore, be irrigating with vinegar?

I had a chance to talk to the kids attending the 1989 Jacobsen College Student Seminar in late May in Racine. I had only time to stay for a bit before and after my remarks, but would like to have stayed through the next day because the program had two of our former residents (but still WGCSA members) on it. Bill Roberts was flying across the lake to talk to them about the GCSAA. Danny Quast was coming up from his new position as GCS at the famed Medinah C.C. Dan has been a cornerstone to the annual Jacobsen seminar for many years.

I couldn't help but thinking back to the year I attended the Jacobsen Seminar for College Students — 1968. If I'm not mistaken, that was the first year it was held. It was a lot of fun and very instructive, just like it is today.

One thing was different, however. Back in 1968, most of us who had just

graduated carried more than a diploma in our back pocket. We also had a draft notice. My worst fears were realized. How lucky for the class of 1989 that they can look forward to employment and peaceful times.

The past year has seen a couple of veteran golf course superintendents in Wisconsin retire. On June 2, Ted Payne joined that group after 26 years as course superintendent at the Odana Hills Golf Course in Madison. Ted has spent the last 37 years in the City of Madison Parks Department.

A former all-city football player at Madison East, the big guy is a very good golfer. He plans to polish those skills even more now that he will have time to live a "normal" summertime life. Best wishes to a really terrific person.

How generously did you budget for fuel costs for this 1989 golf season? Thanks to that crack, ace navigator Joe Hazelwood and suspected thievery by the big oil companies, gas prices in our town have gone up about 35 cents a gallon since early spring.

A story from *U.S. Oil Week* in mid-May — this is a publication that focuses on issues of interest to service station owners — accuses big oil companies of using the Valdez, Alaska oil spill as an excuse to jack pump prices of gasoline out of sight. The publication gave an example of a refiner increasing his margin from 13 cents a gallon to 34 cents a gallon. Of that 34 cents, 19 cents was pure, unadulterated profit.

Isn't it nice to know that greed is still in the saddle of the land? I'd boycott
(Continued on page 27)

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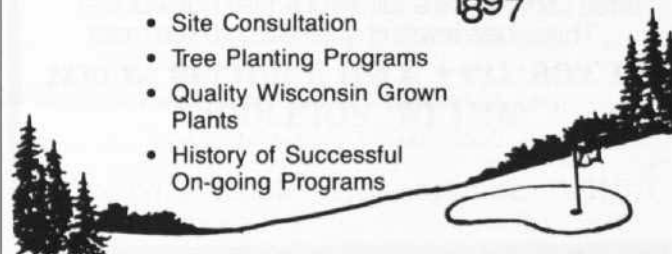


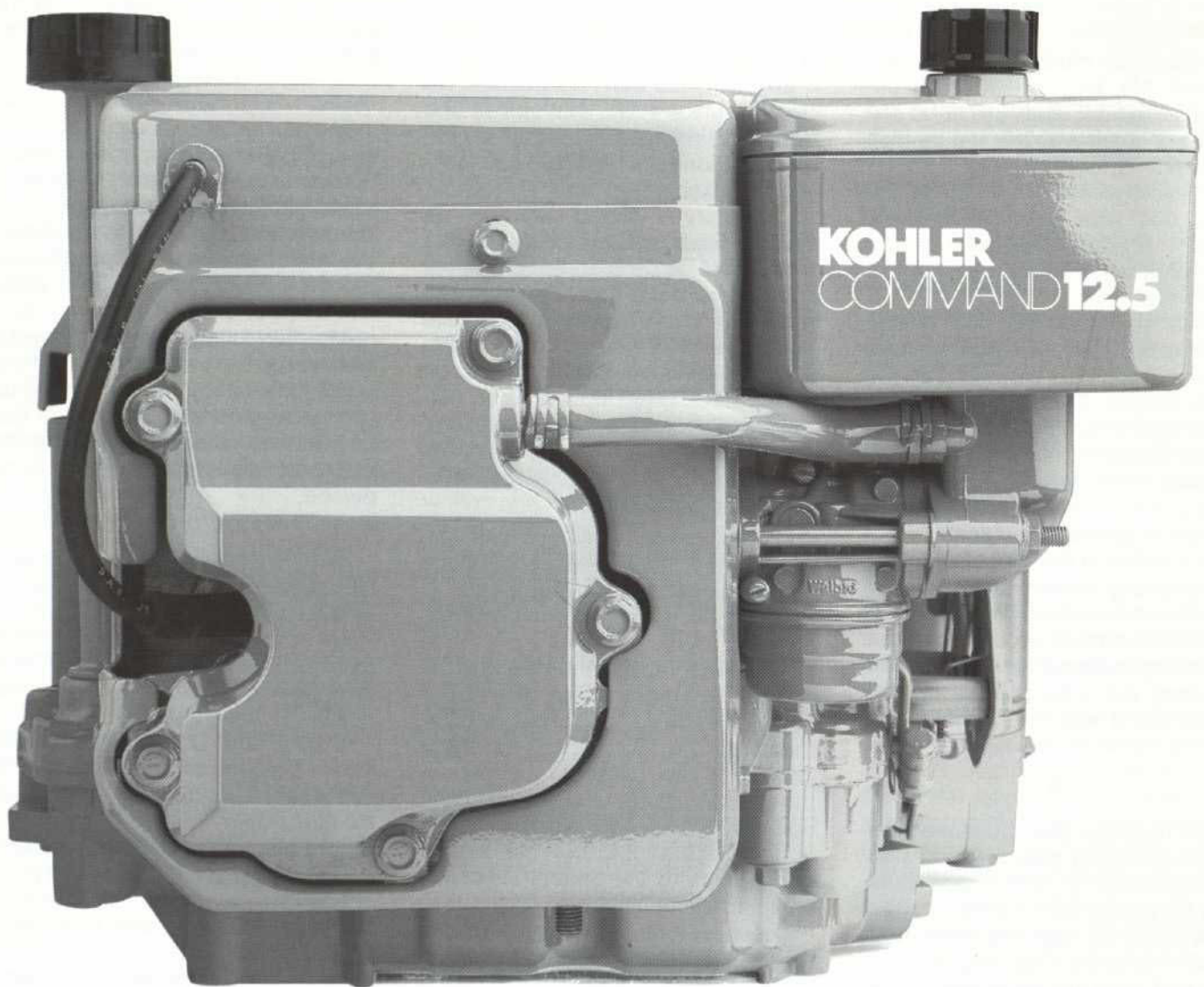
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(Continued from page 25)

Exxon but they moved their retail operations out of Wisconsin some time ago. That left the option of writing Kohl, Kasten and Kastenmeier to encourage maximum prosecution of "good time" Joe and the jerks running that corporation. Of course, "monkey see, monkey do," and other oil companies raise their prices, too.

Rod Johnson clipped an article from the front page of *The Sheboygan Press*, May 1, 1989 edition. The headline read "April driest in many years" and the story reported that 0.72" of rainfall was recorded at the city rain gauge for that month. Rodney said that Pine Hills only received 0.49" of precipitation.

On May 30, I called him to remind him of the *GRASS ROOTS* deadline and he was complaining about all the rain — 1.25" the week before and 5.0" that day (May 30).

That's been the story of this spring in Wisconsin. Cold and dry for the longest time, and hot and humid and

(thankfully) getting stormy as we move into summer. The storms are what we we didn't see in 1988.

As late as May 24th, State Climatologist Douglas Clark was worried we were headed for the all-time driest combined April and May. To that date the average was 2.6" and the all-time dry record is 3.0" for the two months combined.

Much of the rain missed southern parts of Wisconsin. At our golf course the May 25th storm left 0.33 inches. We received 0.15" on Memorial Day morning and 0.45" on May 30. No complaints, though. Colleagues up north were talking about "too much too fast". That's true, but even "too fast" fills ponds, lakes and reservoirs back up.

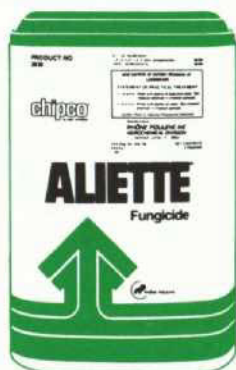
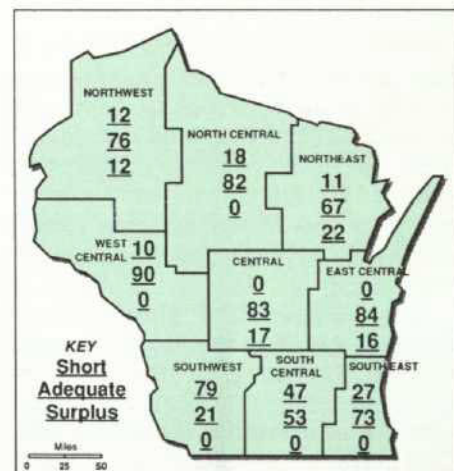
The killer came in mid-May where a phone person from LESCO called about the date the truck was stopping. She was depressed over 16 straight days of rain in Ohio and glad for three days with some sun. Feast or famine.

Through mid-June, we'd received inches of rain at our golf course. Although that isn't much, every drop fell

gently and went into the soil. We are still between 5" and 6" below normal in rainfall for 1989. Couple that with the 1988 shortfall and it is easy to see we have a long way to go to get moisture levels back to where they belong.

Accompanying is a graphic that shows soil moisture conditions in Wisconsin through June 9, 1989.

Soil moisture conditions
June 9, 1989



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“REFLECTIONS...”

By Dr. David U. Cookson

Once a year I try to think of a subject for this column that might be interesting, or provocative, or both; and sometimes (but not always) I succeed. This time I shall explore certain misconceptions and complaints I hear relating to one of the subjects I most closely relate to — golf course maintenance.

Green speed and green surface firmness are always subjects for discussion. It is obvious to me that in any group of golfers, no consensus will ever be attained on these subjects. One player's ideal green speed is certainly too fast or too slow for a large number of other golfers who feel entirely differently. In general, low handicappers prefer faster greens, since a well struck ball will roll precisely and good touch will be well rewarded. Contrariwise, either the unfortunate golfer afflicted with the yips, or often the higher handicap player who plays less often, sees fast greens as unfair, since he or she cannot ever get tuned to the delicate touch these surfaces require. I deal with these points of view all year, and conclude they cannot be reconciled. I submit then that the playing surfaces of any game are best prepared so that the most skill is generally rewarded, which means fast, true

greens. Golf is a game on continually trying to achieve perfection, and that means learning to putt greens the way they are prepared for championship play. On the other hand, greens too fast, or more commonly, placing holes on slopes where roll is excessive, takes the skill out of the game for all players, and this type of zeal to achieve top green speed or difficulty in competitions is to be deplored. I feel ideal green speed is 10 feet to 10½ feet on the stimpmeter, unless the greens slope excessively, when 9 feet to 9½ feet is more reasonable. These are the general speeds in the USGA competitions I attend each summer, and are well accepted by the contestants. I have observed this ideal cannot be obtained when there is too much water on the greens, either from heavy rains,

“Moreover, I submit that most shots that do not hold on a green are poorly hit balls. . .”

too much irrigation, or high humidity; and those golfers who complain of slow greens during these kinds of situations should recognize that weather circumstances may not allow the necessary ideal speed to be attained on a specific day.

A corollary to the green speed controversy is green surface firmness. Most golfers I listen to feel that greens are too hard most of the time. I think this is because we are used to the years of overwatering of greens in Wisconsin (thankfully now being corrected at most clubs) where each shot to a green nearly plugged in its own mark, and of course stopped relatively quickly. Keeping greens this wet all the time is counterproductive; green compaction is exaggerated, the turf is more prone to disease and is weakened, and green speed suffers. Moreover, I submit that most shots that do not hold on a green are poorly hit balls, usually of two piece construction and surlyn cover, that just cannot “sit down” as well as a balata covered ball will. We older players grew up with balata balls that stopped much more quickly, and now when most balls are surlyn, and consequently do not stop as promptly, we blame the green surface itself for a condition that has much more to do with the nature of the ball. This is of course aggravated if greens are small, as they are at many of our older Wisconsin courses. Still, a good player who hits the ball more precisely, can stop a ball of either type on a firm surface (I don't mean hard and baked — nobody wants that). Again, no green

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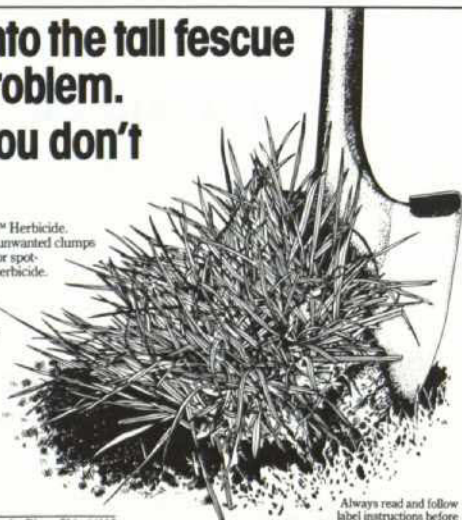
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will easily accept a ball hit with a strong following wind, and particularly if the greens are small they will not hold as well as the hard covered ball. Finally, in Wisconsin, on older courses with small native soil greens with a large amount of clay in the subsoil, it is more difficult to stop a ball. These circumstances require a commitment to a good sand top dressing program carried out for a number of years, (it has done wonders at my course), and at such clubs concerned players should think about returning to use of the balata covered ball. Excessive watering of these greens to make them soft, will only aggravate the problems of increased compaction, a self-defeating process which already occurs far too often. Lastly, the problem of the ball rolling over the green is compounded by the recent trend to keep rough up to the collars of greens, markedly increasing the difficulty of the hole. In this situation, perhaps the green committee could consider modifying the difficulty that this situation presents.

The other golf course maintenance practice I hear about all the time is bunker sand — either too soft or too hard. I play at two Wisconsin courses, one

where the sand is generally too soft, and the other where it is generally been too hard (although it is being changed), and it is obvious to me that golfers get used to playing out of one kind of sand and object strenuously if they come across different bunker conditions elsewhere. This circumstance is compounded by the fact that bunker play demands more skill than ordinary shots from off a green, and if a player mishits it, he will blame the bunker sand before he blames himself. Generally the sand available to us in Wisconsin is decent sand, but I think it gets too hard in large part because of frequent green watering, which every day tends to compact the adjacent bunker sand if, as usual, the water system catches the bunkers as well as the greens. The solution here is obvious, either water less, or earlier so that there is more time for the sand to dry out before play begins, or make bunker maintenance more of a priority than some Green Superintendents have made it. Some courses have tried to solve this problem by pouring in more new sand, which then at first causes plugged lies and difficult conditions until this sand too compacts. Often the apparent pres-

ence of too much sand is due to raking practices which try to make bunker faces look more orderly, putting very loose sand under the lip, leading to the worst bunker condition, the plugged lie under the lip. I support the point of view that ideally bunker sand will never be so loose that the ball can bury completely below the surface. I think this can be accomplished by paying more attention to bunker maintenance and particularly how the bunker plays, rather than how beautiful it might appear on a colored photograph. Still, in the end, the player himself should learn how to play out of both loose and compacted sand, since the ideal situation is both unlikely to be consistently attained at your own club, and because uniformity of bunker sands comparing one course with another will never happen.

Editor's Note: This article by Dr. Cookson, focused entirely on golf course management philosophies, appeared in the Volume 12, Number 1 edition of the "Wisconsin Amateur Golfer's Newsletter." It is printed here with the kind permission of WSGA Executive Director Gene Haas.

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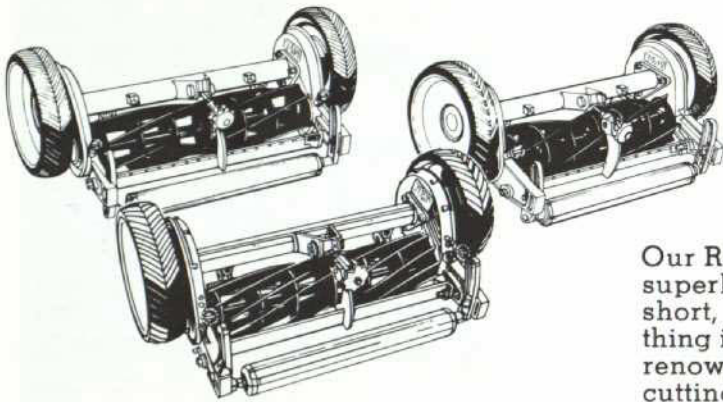


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