



The GCSAA Still Has A Recognition Problem

By Rob Schultz

It must be summer. The mosquitoes and ticks are back, lawns are turning brown and it's impossible to find a golf course superintendent anywhere but on the course or in bed sleeping.

So, as an aid for all those poor superintendents who forgot the last time they had a day off or didn't have dirt under their fingernails, we're going to discuss some issues that they may have overlooked during the past few busy weeks.

1) When is the GCSAA going to realize it continues to have a serious recognition problem?

C'mon guys. You put out a great poster, but that's about it. The average hacker still doesn't know what the GCSAA is. Does it stand for the Great Communist Society of Average Americans or what?

What's worse, some folks who operate golf courses don't know what the GCSAA is. I played golf with the head of an extremely successful course operation who was looking for a new superintendent. Needing advice, he admitted that he started calling some golf pros.

A few minutes later, after I finished choking, I told him about the GCSAA. Instead of talking to some pros, I politely told him to call some local superintendents. A few days later he called to thank me.

The moral of the story is that my golfing buddy shouldn't have had to learn of the GCSAA from some wag playing in a \$2 Nassau.

The GCSAA should spend some money to get the word out. Golf is a booming sport but the GCSAA still acts as if it's the 19th century. Nobody knows more about golf and golf courses than a superintendent. But few know that except for the superintendents. I don't even think the GCSAA knows it.

Here are a couple of suggestions:

- How about starting a "We're the answer men" advertising campaign? Use a takeoff on Chevrolet's successful Mr. Goodwrench campaign. Then, when somebody has a question about a golf course, they'll know who to call.

God forbid that some are still calling sportswriters and golf pros.

- Improve the GCSAA magazine. I can't believe that it's very readable for all the superintendents, let alone anyone else.

Let's brighten it up with some lively features on issues that don't just relate to turfgrass, pesticides and paint for tee blocks. That would make it readable outside the GCSAA industry and, thus, greatly enhance its image.

There's no reason why Golf Course Management (especially with a new name) can't be a force to reckon with like the PGA's or USGA's magazine. If the GCSAA wants to keep Golf Course Management as is, then create a new magazine — publish it three or four times a year — that uses some of the aforementioned suggestions.

2) The UW golf course is beginning to take shape.

There are few pleasures greater than walking a new golf course under construction late in the evening and after the construction crews have left.

Walking the back 9 of the new UW course one evening in early June, I was amazed at how well everything is falling into place there. The fairways and tees are shaped and the irrigation system is being put in.

The UW's back 9 is simply magnificent. I've been critical of the course and I feel much of it is still a mess. But it's hard to find fault with the backside holes. Undulating and with spectacular views of the countryside from certain areas, this land was created to be a golf course.

Cut through thick woods, you get a feeling of extreme solitude out there. I counted no less than 15 different types of birds. A fox ran out in front of me while chasing one of those birds. And throughout my walk I couldn't help feeling that I was being watched. Finally, I found out why. Peering out from some brush was a doe and her fawn.

3) Winter kill kudos.

It has been a brutal spring as superintendents have worked hard to get their courses ready despite bad cases of winter kill.

Cherokee Country Club in Madison was no exception. And to make matters worse, Cherokee hosted the Big Ten Conference Golf Tournament in early May. The timing couldn't have been worse.

Yet, Mike Semler and his crew did a terrific job getting Cherokee ready. The fairways were excellent. The greens couldn't have been better. They even *looked* good. During discussions with many players and coaches, none could find fault with Cherokee's conditioning. In fact, most went out of their way to ask who the superintendent is at Cherokee so they could thank him.

So kudos to Mike Semler and his crew for a job well done.

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(Continued from front page)

While putting green aerification is as popular as ever, spiking putting greens appears to be a lost art since only five of the twenty-five golf courses in this survey employ this procedure. Of these five, three spike every three to four weeks, one spikes once a year in conjunction with overseeding and one spikes along with sand top dressing applications.

Table 1.
Aerification Summary for Putting Greens
in the 1989 Wisconsin Survey.

Machine	Season	Tine Size	
Coremaster 2	Spring 12	1/4"	1
Ryan 17	Fall 14	3/8"	3
Toro 12		1/2"	18
		5/8"	3

Values indicate number of golf courses in each category. Golf courses can be listed more than once in each column.

All five superintendents that spike putting greens use Toro triplex greensmowers equipped with spiking units set at a depth of 1.0". Because this equipment makes the spiking operation efficient and clean, the lack of popularity for spiking putting greens must be due to the absence of beneficial results observed by the majority of superintendents in this survey.

In contrast to spiking, verticutting of putting greens is employed on a regular basis by twenty out of the twenty-five surveyed golf courses. Of the twenty superintendents verticutting, the choice of equipment was an even split between Jacobsen and Toro triplex greensmowers equipped with verticutting units. The average frequency of verticutting was every three weeks from May-September. Light (1/16" to 1/8" penetration) verticutting dominated the survey with several superintendents occasionally using verticutting in conjunction with their top dressing programs.

The recent introduction of turf groomers for putting green maintenance has not generated a lot of interest among the surveyed golf courses. Only five superintendents report using turf groomers; two use Jacobsen walking units, two use Jacobsen triplex units and one uses a Toro triplex unit. The average frequency of use was two to three times per week. Of those superintendents who have tried turf groomers but did not purchase a unit, several state that they are impractical at their golf courses because the slightest penetration by the turf groomer kicked up enough soil mix to ruin a mower after just one green. Still other superintendents see no need to change their current management programs. Time will tell whether turf groomers are a fad or a wave of the future that has yet to crest.

Top dressing of putting greens is a cultural practice that all the surveyed superintendents employ on a regularly scheduled basis. Table 2 lists the machines and materials used for top dressing. The choice of top dressing machines is a fairly even match among the four units. It should be noted, however, that the majority of superintendents only indicated the machine they use for light top dressing applications and did not include information on how they fill their aerifier holes.

The choice of top dressing material yields two favorites; 80/20 — sand/peat mixtures and Lakeshore TDS 2150. The 80/20 sand/peat mixture is a generic label given to many different sands and peats that are blended at ap-

proximately an 80/20 ratio. The actual percentages and the quality of the mixture depends on the adherence to USGA guidelines and testing procedures. The quality of the pure sand used for top dressing must also follow USGA guidelines and testing procedures. In this survey, twelve out of sixteen superintendents that top dress with pure sand think that Lakeshore TDS 2150 is the best choice.

The comments I received regarding overseeding of putting greens serve to reinforce my belief that it is usually not a success when attempted in an established green during verticutting, top dressing or aerification. In fact, six superintendents went out of their way to emphasize that it seemed like a complete waste of time and money.

When a putting green has been damaged by disease or winterkill, however, the situation changes. Under these conditions, overseeding at the time of verticutting, top dressing or aerifying yielded positive results for many superintendents.

The overwhelming choice for overseeding was Penn-cross bentgrass. Other bentgrasses, such as Penneagle and Pennlinks, appear to be used on an experimental basis.

Table 2.
Top Dressing Summary for Putting Greens
in the 1989 Wisconsin Survey.

Machine	Material	
Cushman 6	80/20 — Sand/Peat Mix	9
Lely 7	Lakeshore TDS 2150	12
Turfco 5	Portage Silica	1
Vicon 7	Waupaca #4070	3

Values indicate number of golf courses in each category.

The choice of putting green mowers is obviously one of the most important decisions a superintendent has to make. That choice has both subjective and objective components that are based on a superintendent's experience and personal preferences. Table 3 lists the choices made in this survey. The most popular putting green mower is the Toro triplex with eleven bladed reels. In fact, eleven bladed reels were the choice on two-thirds of the mowers, regardless of make and model.

Table 3.
Greensmower Summary
for the 1989 Wisconsin Survey.

Machine	No. of Golf Courses
Jacobsen Triplex 9 Bladed Reels	7
Jacobsen Triplex 11 Bladed Reels	2
Jacobsen Walker 9 Bladed Reels	3
Jacobsen Walker 11 Bladed Reels	3
John Deere Walker 9 Bladed Reels	1
Toro Series 4 Walker	1
Toro Triplex 8 Bladed Reels	3
Toro Triplex 11 Bladed Reels	11

Note: Several golf courses use more than one type of greensmower.

It is most interesting to note the number of golf courses mowing putting greens with walkers; it appears they are making a comeback. In addition, many superintendents who generally mow their putting greens with a triplex mower indicated that they usually mow one or more prob-

lem putting greens with walkers for most of the summer.

When it comes to rollers on the cutting units, three superintendents use solid front rollers while the remainder use grooved front rollers.

Mowing heights on putting greens varies from 0.10" to 0.18" with an average mid-season value of 0.140". This average is up from the 0.125" height of cut that many superintendents were at a few years ago. Perhaps we have turned the corner on the quest for speed and can now concentrate more on maintaining healthier putting greens.

Speaking of speed, let's talk about the stimpmeter. In this survey nineteen out of twenty-five superintendents regularly use a stimpmeter. The range for mid-season readings on these nineteen golf courses was 7'6" to 10'6". The average mid-season reading was 8'10", plenty fast for 99% of Wisconsin golfers.

The recently revived practice of rolling putting greens generated some of the strongest comments from survey respondents. Only two of the twenty-five superintendents have plans to roll their putting greens in 1989. Many of those who have no plans for rolling expressed strong reservations about a maintenance procedure they view as unwise and unwarranted.

When discussing irrigation practices, the most interesting statistic is the comparison of light and frequent irrigation with heavy and infrequent irrigation. In this survey, nineteen superintendents practice light and frequent irrigation and supplement this with syringing and hand watering when necessary. Only six superintendents practice the heavy and infrequent irrigation strategy that used to be the technique of choice. It seems that modern, automatic irrigation systems that can operate on short cycles have changed the way we water not only our putting greens, but our entire golf course as well.

The subject of pesticide applications on putting greens to control disease, insects and weeds is basically a hohum discussion because all of the surveyed golf courses are on a regularly scheduled, preventative program that limits the chances for the occurrence of problems. The average disease control program is based on the rotation of the three basic fungicide types; sterol inhibitors, systemics and contacts. Only pythium and yellow tuft were singled out as problems that might take an extra application. Insect control also seems to be quite successful using the available insecticides with only cutworms giving any real cause for concern. And when it comes to weed control, most superintendents answered with one word — none.

Table 4.
Fungicides Used for Snow Mold Control
in the 1989 Wisconsin Survey.

Fungicide	No. of Golf Courses
CaloClor, CaloGran or PMAS	23
Chloroneb	14
Thiram	13
PCNB	7
Benomyl	2
Dyrene	1
Iprodione	1

A look at the snowmold control programs on the twenty-five surveyed golf courses points out how heavily we rely on the mercury compounds to control this winter neme-

sis. It turns out that twenty-three out of twenty-five superintendents base their snowmold control strategy around mercury compounds. Table 4 lists the fungicides and the number of golf courses that use them for snowmold control.

Split applications for snow mold control fungicides were employed by eighteen of the twenty-five superintendents while ten superintendents take the advice of Dr. Worf at the University of Wisconsin and apply their snowmold control treatments three to four weeks earlier than is traditional.

The use of covers for winter protection of putting greens is starting to catch on in Wisconsin. Nine superintendents report good results in covering from just one or two problem greens to all eighteen greens on their respective golf courses.

An even dozen superintendents end the year with a heavy application of top dressing in late November. They like the extra protection it affords the crowns of plants and report earlier recovery in the spring.

A discussion of attempts to chemically control *Poa annua* could fill an entire issue of *THE GRASS ROOTS* and still only scratch the surface. In this survey, the results show that eight superintendents are attempting to control *Poa annua* on their putting greens with chemicals. The chemicals and number of superintendents using them are as follows: Betesan — one, Cutless — one, Prograss — one, Rubigan — five. Of these four chemicals, only Rubigan has been used regularly for more than one year. None of the eight superintendents gave any indication as to the success of their chemical applications in decreasing the amount of *Poa annua* in their putting greens.

The remaining seventeen superintendents are employing fertilization, irrigation and other cultural practices to encourage bentgrass over *Poa annua*. Eight of these seventeen took the time to detail their various attempts over the years to chemically control the growth of *Poa annua*. They reached the conclusion that in the long run *Poa annua* always persists despite attempts to chemically control its growth.

Table 5.
Wetting Agents Used on Putting Greens
in the 1989 Wisconsin Survey.

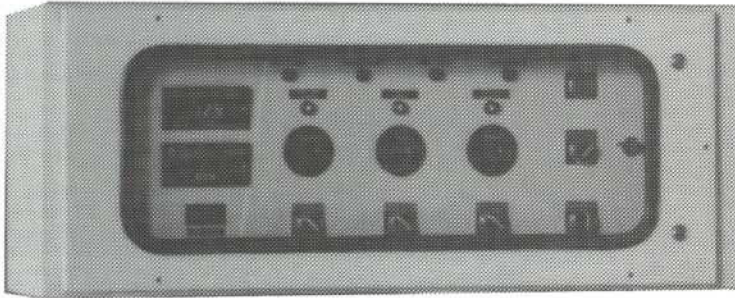
Wetting Agent	No. of Golf Courses	
	Under 20 oz./M/season	Over 20 oz./M/season
Aqua Gro	8	5
Clearys Super Wet		1
Hydro Wet	3	5

Wetting agent use on putting greens is quite popular with only three out of the twenty-five surveyed superintendents not using these treatments. For discussion purposes, it is convenient to divide wetting agent use into two categories: less than twenty ounces/M/season and more than twenty ounces/M/season. Table 5 lists the wetting agents and number of golf courses using them.

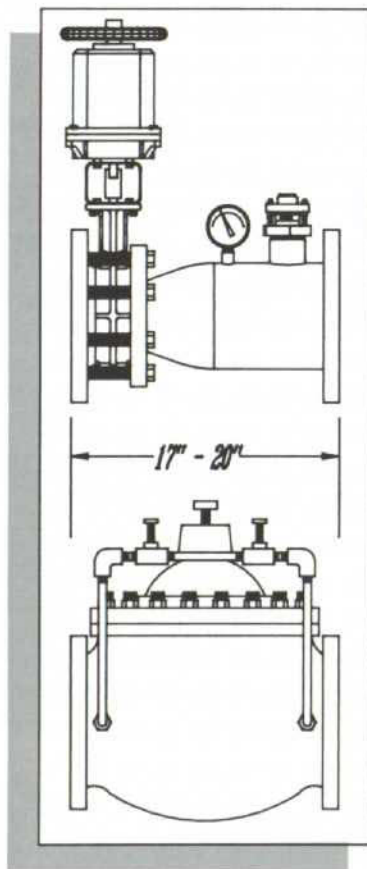
Those superintendents using less than twenty ounces/M/season generally apply small amounts (1.0-2.0 ounces/M/treatment) of wetting agent with several of their regularly scheduled pesticide applications.

(Continued on page 19)

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Putting Green Speed

By Kevin Dushane
Bloomfield Hills Country Club
Bloomfield Hills, Michigan

Welcome to a new feature in *THE GRASS ROOTS* — FROM ACROSS THE COUNTRY.

In my time as editor I've avoided the temptation to reprint articles in our Wisconsin journal for golf course superintendents. One reason was because there is so much going on in the world of Wisconsin golf courses that we didn't need material from out-of-state. Another reason was our access to so many quality writers willing to share their skills with us. Finally, I wanted to avoid what I consider a major shortcoming of some of the state chapter newsletters and magazines — some are nothing but reprints. In the course of a month or two, I would see the same story three or four times!

There are advantages to such a philosophy that are obvious and apparent. But there is a downside to such a strict attitude. That disadvantage is that readers of *THE GRASS ROOTS* miss out on some valuable material printed in publications from across the country.

From my collection of chapter newsletters saved over the past couple of years and from those few I currently receive on a monthly, bimonthly or quarterly basis, I'll choose one article to reprint in each issue of *THE GRASS ROOTS*. Each article will be presented only after permission from the editor and/or author.

The first article in this new feature was written by Kevin Dushane. Kevin, who is a golf course superintendent at the Bloomfield Hills Country Club in suburban Detroit, was a speaker on the program of the Wisconsin Golf Turf Symposium five years ago. His thoughtful piece on putting green speed appeared in the January/February issue of *A Patch of Green*, the official publication of the Michigan and Border Cities Golf Course Superintendents Association. Ted Woehrle, editor of *A Patch of Green*, gave permission to include it in *THE GRASS ROOTS*. Kevin's article is complementary to the Wayne Otto article in this issue, to Bob Erdahl's *Wisconsin Survey* article and to Dr. David Cookson's "Reflections".

— MSM

Putting green speed can be seen through two sets of eyes, one being the golfer and the other set, the golf course superintendent. As superintendents we are asked to provide the golfers, to the best of our agronomic abilities and budget limitations, the range of green speed they prefer, and still maintain a quality putting surface. Since putting is a major factor in a golfer's score, the quality and speed of the greens becomes a big concern to the game. And I would like to point out that quality of putting greens is not measured by speed alone. In my view consistency from green to green is as important, if not more, than speed. I think there are many superintendents and golfers alike who agree with me on this point.

Many times, the demands put upon the superintendent to provide ultra fast greens (above 9.5 on the stimp meter) can be detrimental to the turfgrass and the superintendent's employment. As you can probably tell by now I am not a proponent of ultra fast greens and I would like to tell you why.

The golf course can have beautiful natural scenery and breathtaking vistas. The tees can be perfectly level. The fairways can be wide and inviting, the ball sitting up begging to be hit onto the green. And the most important playing area on the course, the putting surface, can be lush and green. But as the ball is putted towards the hole and rolls up just short of falling in for par you may hear from that golfer after his round is over asking if the greens were mowed today or remark the greens are a little slow today. To these comments I might explain that it rained over an inch last night or they slow down a little right after a light topdressing. But I would like to respond in this manner, "Try stroking the ball a little firmer." As long as all the greens, including the practice green, are consistent with

a good pace then the golfer must adjust to the green conditions of that particular day. It is not possible to have the same green speed everyday throughout the golfing season. There are too many variables to contend with.

Why do most golfers prefer fast paced greens? Because they generally roll smoother and putt truer. I couldn't agree more because I enjoy putting on fast greens. But there are fast greens and then there are ultra fast greens. The ultra fast greens are what I oppose, both as a golfer and a superintendent. As a golfer, when greens become too fast it takes the skill out of the game. These ultra fast greens will contribute to slow play. A golfer may be attempting his third putt farther from the hole than his first putt, especially higher handicapped golfers. And looking at it from a superintendent's view extra fast greens put tremendous stress on the turf.

Television played a major role in the birth of ultra fast greens. In the mid to late 70's many golfers viewed the Masters and the U.S. Open not knowing anything about the stimp meter. What they knew about green speed is what they learned on television. Speeds at these tournaments were extra fast. What they didn't mention on TV was these golf courses were peaking the greens at these fast speeds for a one week period. Many golf courses began to pressure the superintendent into producing ultra fast greens. Comparisons were being made with neighboring courses. You may have had one of your members ask, "Why can't our greens be as fast as XYZ Country Club? This would be like comparing apples to oranges. The variables that exist from golf course to golf course are many. Soil conditions, grass varieties, undulations, amount of play, cultural practices such as topdressing and aerification, mowing frequency and budgets are just a few of the conditions that

can alter green speed from course to course. Soil moisture, percentage of shade and wind exposure can create speed differences on the same golf course. Golfers cannot expect greens from one course to the next to be the same speed. Our main goal is to provide 18 consistent, quality greens with a good pace.

This is where the stimpmeter can be a valuable management tool for the superintendent. Used properly the stimpmeter can provide accurate readings of individual greens and this information can be used to keep the greens consistent. For those of you not familiar with this tool, the stimpmeter is an aluminum bar 36" long with a v-shaped groove extending along its entire length. It doesn't cut grass or prevent disease but over the past 11 years it has raised quite a controversy. Invented by Edward Stimpson in the 1930's and refined by the USGA Green Section the stimpmeter's main purpose is to give the superintendent a tool to control speed and to measure ball roll consistency in putting greens on the course. I polled many superintendents on whether or not they used it and why. For those who do use it most of them responded as I did, "for obtaining consistent greens". Many of them also added, in sort of a contemptible way, they make sure no members see them use it. I have read many articles concerning the stimpmeter and it is apparent many superintendents do not particularly like it although it does serve a useful purpose. The demand for ultra fast greens in the early 80's and the resulting stress it caused to greens and superintendents may have developed this negative attitude towards the stimpmeter. Putting aside all resentment I feel the stimpmeter, coupled with sound agronomic practices, can be helpful in the management of high quality greens. Some superintendents even post the daily green speeds to inform golfers of the conditions for that day. I now see the trend for ultra fast greens falling off, and not too soon, in my opinion. The stimpmeter has taken some of the blame for creating the trend and maybe unjustly so.

"Television played a major role in the birth of ultra fast greens."

There are many ways the golf course superintendent can control and influence putting green speed. Routine cultural practices like topdressing, verticutting and aerification not only can improve green speed but will also improve turf quality. Sand topdressing has been practiced in our region for many years. By applying a light layer of USGA specified sand every 2-4 weeks greens will putt smoother, truer and faster. The pitfalls of sand topdressing are you must apply the sand religiously every 2-4 weeks during the growing season to avoid layering, the sand is abrasive and wears out reels and bedknives faster and greens can tend to dry faster than soil base greens. Topdressing with a soil mix can be effective also but many times it is difficult to find the same mix from year to year. Verticutting lightly on a regular basis will control grain. Aerification will improve the root system and contribute to the overall health of the turf so that other intense management practices can be used. The most significant methods the superintendent can alter green speed are through fertilization, height of cut and mowing frequency.

There is no doubt that when fertilizer rates decrease, particularly nitrogen, putting speed increases, and vice

versa. When many superintendents were caught up in the green speed contest nitrogen rates were as low as 1#N/1000 sq. ft. per year with cutting heights below an eighth of an inch. Many felt this was the only way to obtain the ultra fast speed. It was just a matter of a few years when many golf courses experienced problems with their greens. Thinning turf, algae, moss, weed encroachment and disease (most notably Summer Patch) were symptoms for greens with low fertility and extra low height of cut. From what I see many superintendents are now moderating their fertilization programs by applying more nitrogen and potash on annual basis but applying it in light rates. I, for one, have increased my nitrogen annually and I am seeing healthier turf. From my view, gone are the days of low, low fertility rates and low heights of cut. Many superintendents lost their jobs living on the edge of disastrous turf loss when it should not have been necessary just to please a small portion of the golfers. Many turfgrass agronomists are now recommending rates of 1/2# of N/1000 per growing month on cool season grasses. But they also recommend spoon feeding the fertilizer in rates at a 1/4#/1000 or less for a single application. Higher applications cause the turf to become coarse which is difficult to fine down during that growing season. Some superintendents apply a weekly rate of N at 1/10# per 1000 sq. ft., especially during hot weather to avoid fast, lush growth while still satisfying the turf's need for food. The only way to apply this low amount of fertilizer with any uniformity is by using a soluble fertilizer. Fertilizer rates will vary from course to course depending on such factors as soil conditions, turfgrass species, size of greens, irrigation, precipitation and amount of play. While not over fertilizing I like to provide the greens with good color and adequate growth for rejuvenation and health while maintaining good green speed.

I'm not going to tell anyone how high or low to cut their greens, or how often. Every superintendent should know what factors determine green speed at their course and work within those parameters to produce quality putting surfaces. But everyone must know that bentgrass or *Poa annua* can be cut just so short and live to tell about it. Grinding bedknives paperthin, adding weight to mowers, using wiehle rollers and other techniques to cut turf so low the word green only relates to an area and not the color of the grass. While low height of cut plays a major role in green speed it also puts the turf under extreme stress, especially in hot weather, many times to the point of turf loss.

A reduced root system can be expected under low heights of cut. In the past I have heard superintendents comment that you don't putt on roots. But without an adequate root system you have a great potential for turf loss. The grass blades are more susceptible to disease and insect attacks. The shorter root systems require more water and syringing during the hot periods may be required to prevent turf loss from wilt. Aerification during stress conditions may be necessary to keep the turf healthy. There are aerifying units available on the market today that can provide the opening of the turf with small diameter holes which will aid in water penetration and root growth and not significantly disturb the putting surface.

To point out the difference in height of cut I would like to present this example. If you are presently cutting greens just under 7/64" (.105) and raise the height to 1/8" (.125) you are in effect increasing the leaf surface of the turf by 20%, quite a significant amount at that low height. By go-

ing up an additional 1/64" a 40% increase can be realized. There are other methods to achieve the putting green speed you desire without cutting the turf to the crowns. This past season I raised our height of cut by 20% and the greens were healthier than in past years even through the drought of early summer and the hot, humid conditions of mid-summer. By increasing the intensity of my cultural practices I sacrificed very little speed for regular play and was able to increase the speed for special events and tournaments just by double cutting for a few days before and during the events.

What type of mower will provide the necessary putting surface your golfing membership requires, walking units or the tri-plex riding mowers? I feel if you are looking for the normally paced speed in greens the riding units will provide the quality of cut desired. But if it's the extra fast greens you require the feeling among superintendents is that the walking mowers will cut tighter than the riding units. The rigid cutting head of the walker versus the floating units of the rider is what may make the difference. One factor you may want to consider in choosing what mower to use are labor costs, which will be greater with walkers. Soil compaction and turf wear, especially the outer perimeters can be potential problems of riding units. These are but a few of the factors to be considered. Talk with superintendents who use the riders or the walkers. They may be able to provide the answers you are looking for.

“Thinning turf, algae, moss, weed encroachment and disease (most notably Summer Patch) were symptoms for greens with low fertility and extra low height of cut.”

No matter what type of mower you are using the need for a properly maintained greensmower cannot be overstated when trying to produce quality putting surfaces. Mowers that have dull blades and are only occasionally checked for reel to bedknife adjustment will not produce a cut needed to provide a fine putting surface, especially at the lower heights of cut. Rollers should be checked for looseness and bearing wear as they have a direct effect on the height of cut. Reels will need to be backlapped regularly or sharpened with a spin grinder, especially if you are topdressing on a regular basis. Bedknives may need to be changed two or three times during the season, depending on the frequency of mowing and topdressing. When cutting greens a mower must have precise adjustments and be in good running order to obtain the optimum use of these expensive machines. They can only cut as good as they are maintained. If not maintained properly the purpose of the unit is defeated.

Grooming greens will aid the superintendent in achieving fine putting surfaces, and there are a number of accessories available for the greens mower which can help prevent or reduce the build up of thatch and grain. Attachments such as the turf groomer, a recent development in vertical cutting units, are placed directly in front of the reels. These units work exactly like the separate vertical mower units that have been available for many years. One must beware not to use these vertical units on a day to day basis, especially during stress periods as turf thinning may result. Wiehle rollers have been on the market for a

number of years. Used in place of a standard solid or swedged roller, the wiehle will provide extra weight and the ability to cut into grain and thatch. Again, when the turf is under stress you may want to avoid using them as they can cause thinning of turf, especially when cutting the perimeter around the green. Brushes and combs are other attachments used to fluff up the turf just prior to cutting.

Daily weather conditions have a degree of influence on putting green speed and sometimes we have little control over green speed when nature is involved. As day length and temperatures change throughout the year variations in the rate of turf growth occur. During the early Spring and late Fall turf growth has slowed due to cool, frosty mornings and green speed increases. Also, the grass requires little water during these periods which makes the putting surface firm and smooth. There are many hot, sunny days when the putting surface will dry out during the day and green speed increases. During periods of wet, humid conditions a consistent green speed can be difficult to maintain on a daily basis. I have experienced a drop of 2 feet on the stimpmeter after a heavy rain from the night before. In the hot summer months when the turf is growing and the humidity is high it is not as easy to obtain fast speeds without putting the grass under stress. You may want to consider raising the height of cut slightly, cut back on grooming and fertilizing and apply water with discretion. Putting speed may be temporarily compromised but if the green is pushed to the limit during periods of stress the loss of turf may be hard to explain.

Depending upon soil conditions, irrigation can play a significant part in green speed. Many of the newer courses have sand based greens and excellent drainage which allows the superintendent a little room for over application. Most older courses have greens with heavier soils and inadequate subsurface drainage and these types of greens must be handled with care when irrigating to avoid over-watering. While less irrigation will increase green speed the use of too little water can cause localized dry spots and greens too hard to hold a shot into the green. On the other end of the spectrum too much water will slow greens down while promoting disease and compaction problems.

As I mentioned before, I am not here to judge the methods or practices of any individual. But I still feel that common sense must prevail when attempting to provide conditions that could be detrimental to healthy turf. There are many ways to provide good putting surfaces without sacrificing turf and that is why I marvel at many of my peers who are so innovative and resourceful.

In the 1987 June/July issue of the USGA Green Section Record an article can be found concerning a superintendent's methods for achieving fast greens. Michael Zedreck, Superintendent at Butler Country Club in Butler, Pennsylvania is the author. Mike was able to achieve fast greens by altering his agronomic and mowing practices. He applies 5-10# of N/1000 sq. ft. annually while cutting the greens 7 days a week; six of those days they are double cut. His height of cut is below 1/8" and his daily green speeds are fast. On tournament days he triple or quadruple cuts. What I have mentioned are just sketchy details of his total procedure but it is obvious his approach to attaining fast greens is different.

Jerry Kershsky, superintendent at Westmoor C.C. in Wisconsin
(Continued on page 19)

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(Continued from page 17)

consin was maintaining good paced greens (9.5 stimp-meter) for regular play while mowing greens at 1/8". When preparing for an event or tournament and he wanted to quicken the pace he would roll them 2-3 days before and during the event using a set of triplex rollers he copied from an old set of cast iron rollers. He used plastic water pipe sections filled with concrete and tennis balls to get the desired weight he wanted. Total time to roll all of the greens with one set of rollers was 2½ hours. The results were immediate as he gained an additional 10" on the stimp-meter. Because he has been sand topdressing for 16 years he did not have a compaction problem. Under conditions of heavy rains, high dew points or stress he would not roll the greens to prevent damage to the turf. His rolling program was done on an as needed basis and he was able to achieve faster greens when needed without lowering the height of cut or cutting back on fertilization.

Rolling greens, providing the greens are constructed with the proper soil mix, is an alternative to be considered rather than obtaining ultra fast greens through low fertility and close mowing. Most modern putting greens are constructed with a sand root zone that meet USGA Green Section guidelines. These type of greens are not prone to compaction therefore rolling could be beneficial in obtaining faster green speeds. Many courses that do not have high sand content greens but have been sand topdressing for a number of years could roll greens and not be concerned with compaction. I will try rolling next year on a limited basis to see if I can maintain fast greens while managing the turf under less extreme agronomic practices.

Putting green speed was a controversial topic 10 years ago, it still is today and it will be 20 years from now. From my viewpoint I see the trend for moderately fast greens continuing but avoiding the ultra fast greens that were commonplace just a few years ago. We, as superintendents, cannot get caught in the same situation and try to compete against one another for the fastest greens. Technology in the future may allow us to achieve faster putting surfaces without sacrificing the turf. Let's wait for that day to arrive.

Putting Green Management

(Continued from page 13)

Superintendents who apply more than 20 ounces/M/season usually make one or two heavy applications (6.0-8.0 ounces/M/treatment) in the Spring, Summer and Fall. In addition, they sometimes add small amounts (1.0-2.0 ounces/M/treatment) to their regularly scheduled pesticide applications.

Altering the pH of putting green soil mixes is only being attempted by three superintendents in this survey. Two are attempting to lower their pH with elemental sulfur and one is using lime to raise the pH. The remaining twenty-two superintendents are content to manage pH values that range from 6.2 to 7.6.

Special topics included in this survey were questions about problems with algae, black layer and C-15 bacterial wilt. Only the C-15 bacterial wilt has proven to be a serious problem with six superintendents indicating damage that ranged from general thinning of turf to the complete loss of three putting greens.

In wrapping up this two-part article, I would like to express my appreciation to those superintendents who took the time to fill out the survey and provide me with the raw material for this article. Being able to evaluate twenty-five different putting green management programs has given me new insight and even greater respect for those select few who claim the title of golf course superintendent.

In writing this article, my goal has been to define the state of putting green management in Wisconsin for 1989. It is my hope that this article will serve as a benchmark against which past and future putting green management techniques can be compared.

ECKHOFF AWARD

For Excellence In Golf Journalism



MEMO TO: GRASS ROOTS file
FROM: Editor
RE: Distinguished Service Award

Do not forget to collect your thoughts and emotions from receiving the WGCSA Distinguished Service Award and share them with your friends in the WGCSA.

Tell them how many times you have tried to put on paper the high honor you feel and how grateful you are. As you have said a hundred times, you are not really a success in your chosen field if you do not have the respect of your colleagues. It doesn't matter how great your golf course is, how well you manage it or how much your golf players like you if you don't have that peer respect. There's just no fooling those guys.

Money doesn't substitute. New shops and irrigation systems and new features don't matter much if the people you call "colleagues" don't extend their respect. That is why the DSA means so much.

Mention how glad you are to be a golf course superintendent in Wisconsin — a great career choice in a great state. Tell how you feel your essential worth is tallied in a sort of "spiritual" return you received from this commendation of your fellow golf course managers. No form of compensation comes close to the esteem of the Distinguished Service Award.

And be sure to say how you think about it nearly every day while working on the golf course. Then there's the great company you probably don't deserve — Belfield, Worf, Love, Welch, Sell and Verhaalen. What a great group to be a part of.

Try to keep it short, yet include the enormous pride you feel. Write a line or two about your heightened devotion and dedication to this profession and the people in it. It is, after all, a labor of love.

You might even admit you know full well who wrote the flattering story in the last GRASS ROOTS, the one you refused to proofread. I love that kid, Mike Lee.

Then thank everybody again.



Nitrogen Influences on Bentgrass Root Growth

By Michael Lyons

Research has shown that when mean daily air temperatures decline to 50°F or less in the fall of the year, bentgrass shoot growth virtually ceases even when supplied with additional nitrogen. This observation is the basis for the idea that when N is applied under these conditions, turfgrass color is improved, photosynthesis increases and the additional carbohydrate produced is available for stolon and root growth. This nitrogen-induced stimulation of late season root growth may be an important cultural practice, especially after high heat stress seasons such as 1988.

The purpose of this special project was to quantify creeping bentgrass root responses to different annual N rates, application schedules and the timing of fall N application.

The site from which the root samples were removed is a field experiment being conducted at the Cherokee Country Club. Treatments sampled include those where 2.3, 3.4 and 4.6 lb. N/M/season were applied according to these different schedules. They are:

Schedule	Percent annual N applied on:						
	5/15	6/15	7/15	8/15	9/15	10/15	11/15
Normal	40	—	20	—	40	—	—
Late fall	—	40	—	20	—	40	—
Dormant	—	40	—	20	—	—	40

The fertilizer used varied with time of season. Greens grade SCU was used May through September, Urea was applied in late fall and Milorganite served as the dormant fertilizer.

The root samples were collected on October 31 and again on November 29 by removing 1.4 inch diameter soil cores to a depth of six inches. Roots in the cores were washed free of soil, dried at 110°C and then ashed at 600°C. Weight loss upon ignition is what is being reported here as root dry weight. The November 29 soil cores were cut into 1.5 inch segments before root removal. This was done so that N treatment effects on root distribution in soil could be examined.

OBSERVATIONS

The root weights were examined from three perspectives:

1. The general effects of N rates and schedules on total root weights observed on November 29;
2. The percentages of roots found at the various soil depths on November 29; and
3. Fall N influences on root growth that occurred between October 31 and November 29.

Averaging the November 29 root weights for the three N schedules revealed the general influences of annual N rate on bentgrass root development. As shown in Figure

1, root weights were considerably greater when 3.4 or 4.6 lb. N/M rather than 2.3 lb. N were applied annually. Thus, the common assumption that turfgrass root weights progressively decline as N rates are increased was not borne out by this study. This observation has been reported by other researchers and seems to be most noticeable during the first year or two after turf establishment. The obvious implication is that from a root growth perspective, higher N rates are warranted the first year or so after bentgrass establishment.

Root weights averaged over the three N rates revealed a substantial influence of N scheduling on bentgrass root growth (Fig. 1). Delaying fall N application from mid-September to October (when topgrowth ceases) clearly enhanced root growth. Further delaying of the fall N application until November was detrimental to root development.

The N treatments had no consistent influence on root distributions within the six-inch sampling depth. There was, however, a general tendency for the percentage of roots in the 0 to 1.5 inch soil depth to increase as total root weight increased. This is illustrated in Figure 2. It needs to be emphasized, however, that root weight per se did

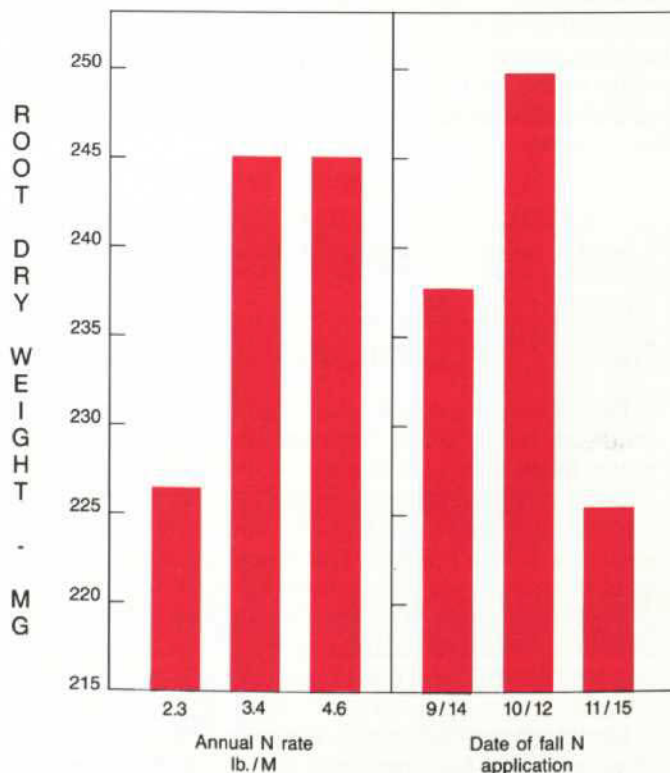


Figure 1. Average influences of annual N rate and date of Fall N application on bentgrass root weights on November 29, 1988.