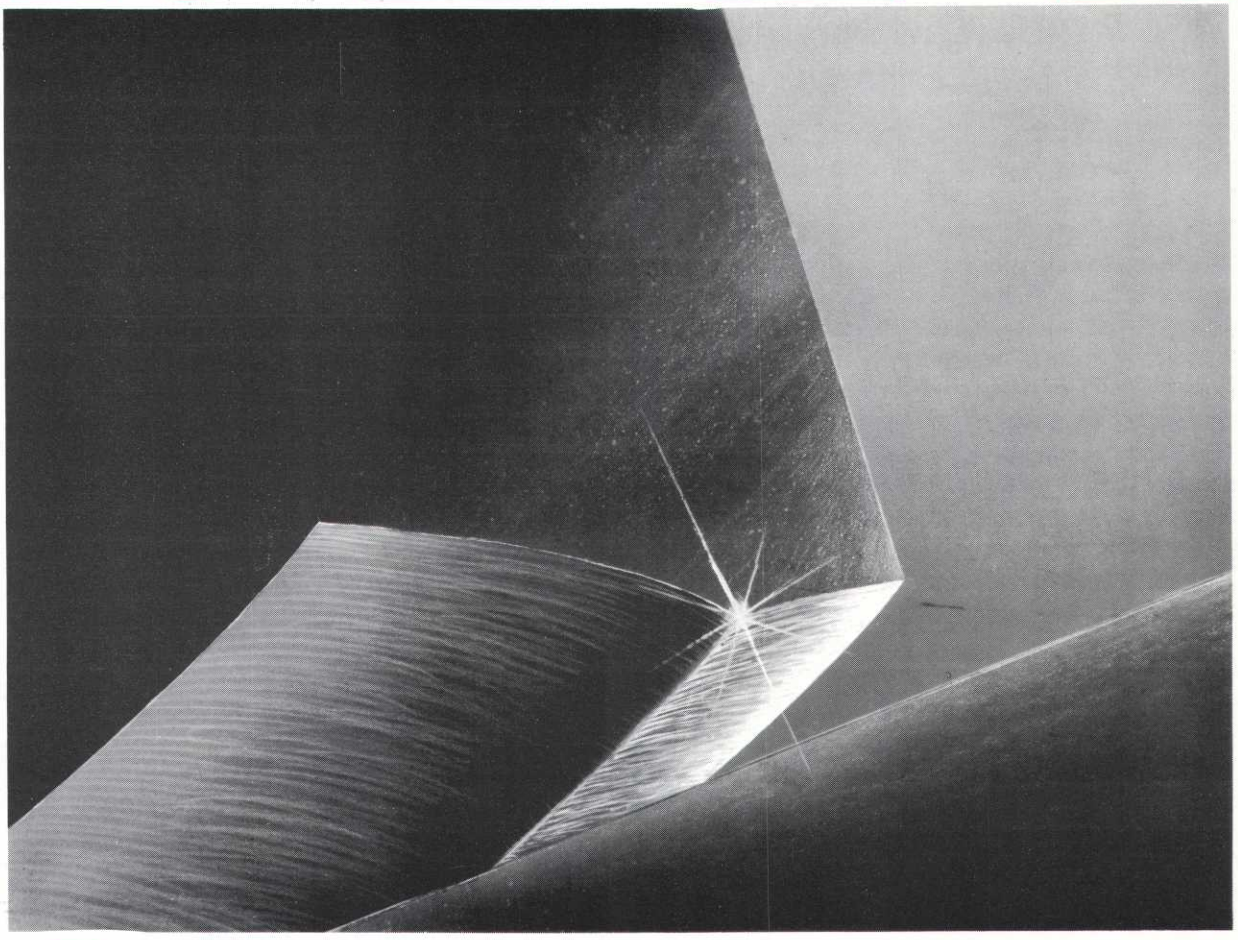
REEL



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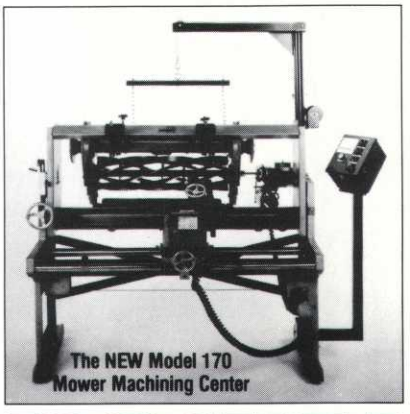

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This Bent's for You?

Understanding Bentgrass Performance

By Dr. Frank S. Rossi
Department of Horticulture
University of Wisconsin-Madison

In 1923, United States Department of Agriculture Agristologist Dr. Charles Piper and Agronomist Dr. Russell Oakley wrote *Turf for Golf Courses.* In the chapter, The Important Turf Plants, they wrote: "Unquestionably the finest commercial grass for putting greens in the North is Creeping Bent." Back then, "Creeping Bent" was *Agrostis stolonifera* and the seed came from south Germany (hence the name South German Bent). Several other bentgrasses such as Rhode Island Bent *(Agrostis vulgaris),* Browntop or Velvet Bent *(Agrostis canina)* and Redtop *(Agrostis alba)* were also mentioned as grasses used on golf courses. Interestingly, creeping bentgrass became *Agrostis palustris* in the US and remained *Agrostis stolonifera* in Europe. And it is widely thought now that the Colonial bentgrasses *(Agrostis tenuis)* with small amounts of creeping and velvet.

Until the mid 1950s, bentgrasses were established vegetatively from the C-series with varieties such as Cohansey, Washington, Congressional and the now famous Toronto. Establishment by seed meant you planted either South German or Seaside. Then in 1955, Penncross, a seeded bentgrass (the standard by which all future varieties would be measured) was released by Dr. H. Burton Musser of Penn State University. Penncross is quick to establish and recover from injury due in part to its aggressive nature and extensive lateral growth. Penncross seed is produced from the random crossing of 3 vegetatively propagated strains in the field. The next 20 years would see the release of very few bentgrass cultivars, and not until 1978 did Dr. Joe Duich, also from Penn State, release the first serious competitor in Penneagle. Penneagle is considered less aggressive and more upright then Penncross. As several have written and Dr. Milt Englke said at the last EXPO, many of the management standards and equipment in use today were developed to maintain Penncross.

As part of the 1993 National Turfgrass Evaluation Program (NTEP) we established 28 varieties of bentgrass at the O.J. Noer Facility, twenty-three of which are creeping bentgrass and about 18 that are commercially available. The trials are both at green height, on modified soil (80% sand 20% peat) and native (loamy) soil, and at fairway height. Simply, there has been more activity in the bentgrass development area in the last 7 years then there was in the previous 40 years combined. Primarily this is due to some of the limitations of Penncross, the explosion in golf course construction and renovation that has taken place in the last decade, and the expanded use of bentgrass on tees and fairways.

Domination

As a result of widespread use and domination of Penncross, superintendents have showed reluctance in the use of the new generation of bentgrasses. For many superintendents familiarity with the "Penn" prefix meant they would at least try Penneagle on fairways and then Pennlinks, by 1987, on greens. Additionally, the USGA has been conservative in the recommendations regarding the use of varieties other than Penncross. I can understand this because, as I mentioned earlier, an entire maintenance industry was built to grow Penncross.

If you are renovating greens and have several Penncross (or Penncross/*Poa annua*) surfaces, it will require some alteration of your management program on the newer greens to maintain a certain amount of consistency. Newer varieties, especially Pennlinks, were developed primarily for use on greens and, like annual bluegrass (its major biological competitor), it has an upright growth habit, fine-textured leaves and provides a superior putting surface. Still, the specification of bentgrass varieties for new construction includes vast amounts of Penncross, and it is in this scientist's opinion that this is no longer the best choice—the domination is slowly ending. In my travels across the country, I see more professionals making their way from Penncross through Pennlinks into the newer varieties.

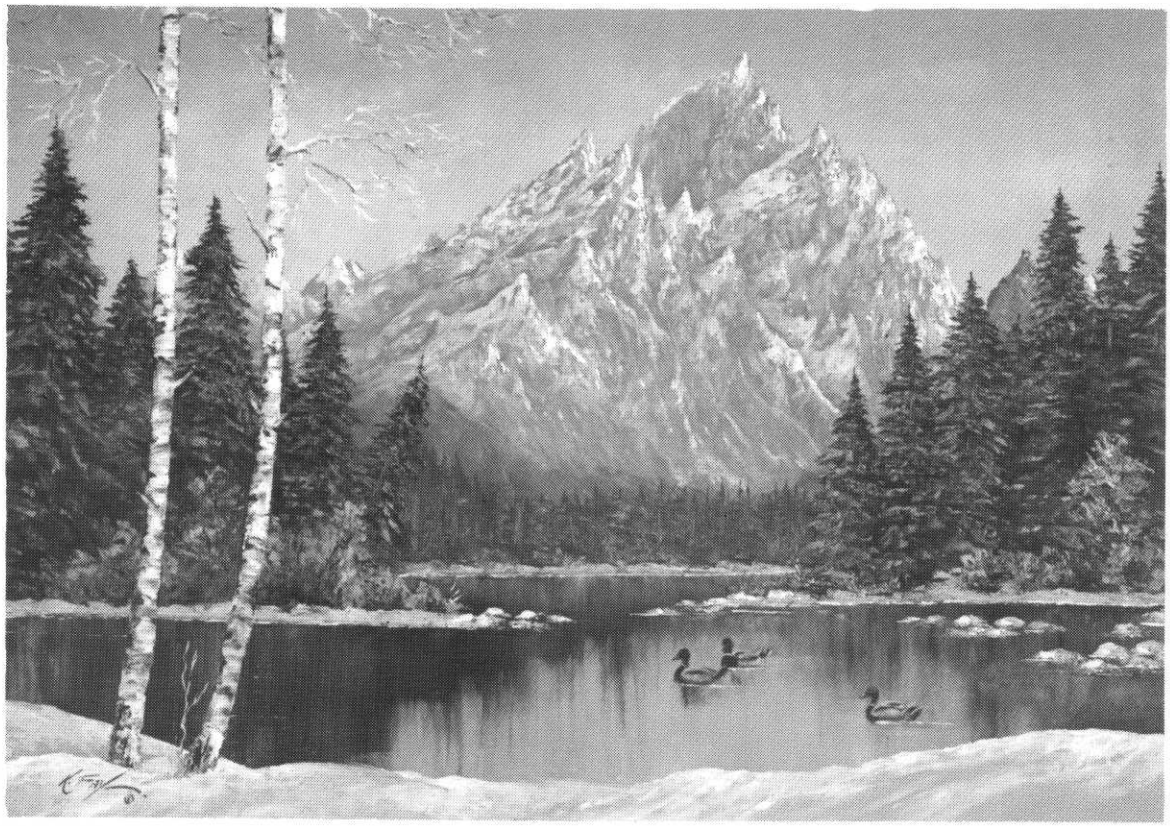
A Closer Look

New varieties are developed to offer different options that include improved heat and wear tolerance, darker green color, finer leaf texture, upright or lateral growth and various levels of disease resistance. Also, several varieties have been released just for use on greens such as Pennlinks and 18th Green developed in Canada.

Here's a quick overview based on published reports and results of the 1990-1993 NTEP Trials.

The best performer in the NTEP Trials (both green and fairway/tee) was Providence. Providence was released from my alma mater, the University of Rhode Island, by Dr. C. R. Skogley (my friend and mentor). For decades Dr. Skogley preserved and cared for the oldest bentgrass plots in the country and always stressed the importance of having a variety that was a consistently high seed producer. Providence is one of the darkest green varieties available, scoring very high in genetic color ratings. Also, it is fine textured and has demonstrated dense, upright growth. It provided excellent quality in all the trials (fairway/tee and native and

(Continued on Page 12)



TAKE TIME TO SEE

It seems so hard to understand
As I look out across the land
That all I view belongs to me
I ought to take more time to see!

The distant hills and mountains high,
The rolling clouds and bright blue sky,
No one can take these views from me
As long as I have eyes to see.

A timid deer with haunting look
Who stands refreshed by yonder brook
Knows not that he belongs to me,
Oh, what a thrilling sight to see!

The song of birds so gay and clear
That fill the morning air with cheer,
And fragrant flowers of every hue,
That stand erect bedecked with dew,
All these and more belong to me,
If I but use my eyes to see.

The Leitner Company wishes you a Merry Christmas and a Happy New Year

WINTER KILL!

* * * *

What Are You Going To Do About It?

By Darin W. Lickfeldt
Department of Horticulture
University of Wisconsin-Madison

Fall has passed and winter is upon us, but have you prepared your grasses for winter? Now that the stress of the season is past, let me remind you of what may come—winter injury.

There are several forms of winter injury that can occur to cool-season turfgrasses and these include ice encasement, traffic damage, low temperature diseases and freezing injury. Is there anything you can do to prevent or at least lessen the severity of winter injury?

Many of you have heard the term "crown hydration," which is associated with the idea that grass plants hydrate in response to warm temperatures in the spring and then are irreversibly injured by low temperatures. Unfortunately, this phenomenon has received only limited attention of researchers to pinpoint the mechanisms of dehardening and what conditions are necessary for it to occur. In one study, researchers found it takes only 4 days of 40° F for perennial ryegrass to deharden, indicating how easily this process occurs.

Another theory is "crown dehydration." This involves grass plants losing so much water that they are severely injured and cannot commence normal metabolic processes in the spring. Scientists have determined that the formation of ice crystals between cells actually draws water out of cells causing dehydration, but how lethal such processes are to turfgrasses has not been determined. We can have ice form between cells and the plants will remain alive in many instances, and fortunately ice almost never forms inside of cells which are full of carbohydrates.

Both of these theories are being evaluated at the University of Wisconsin-Madison with the intent of determining what spring conditions are necessary to cause dehardening in annual bluegrass, creeping bentgrass and perennial ryegrass. Also, when and how do our turfgrasses decide it is spring? Are there specific mechanisms within the plant we can control? The next step will be convincing the turf not to induce such mechanisms in the early spring since there are still very cold days to endure.

The Science

In order to prevent intercellular ice formation, the plants will concentrate sugars in their cells. This lowers the temperature at which the water in the cells will freeze because whenever we dissolve a solute in water we lower the freezing temperature of the solution. This seems relatively simple: let's just build up the concentrations of sugars and the cells will not freeze, right? Let's examine how this might be accomplished.

Many of us will put on a few pounds in the fall and our friends will jokingly say we are fattening up for the winter. We fatten up by eating excessive quantities of food which are converted into body fat. Well, the fat is a food reserve which may allow us to survive long periods without food. When needed, we can use up these food reserves. Believe it or not, plants behave similarly.

Recall how plants produce their own food. The soil is important for providing nutrients, but all plants actually produce food from photosynthesis. Remember, sunlight, water and carbon dioxide convert to oxygen and sugars. When plants are growing these sugars are quickly utilized for making more plant tissue. When growth slows appreciatively in the fall at cooler temperatures, where do all of the sugars go? To storage reserves? No, plants do not get fat, but the sugars are stored in the roots and crown where they later can be used by the plant to get energy. Rather than fat, plants store potential energy in the form of fructans. Did the sugars build up to lesson ice formation, or was this purely in response to decreased growth rates while photosynthesis was still continuing? This is another question that is being addressed at UW-Madison.

What Can We Do?

Regardless of why plants build up sugars, we do know that we need to have sugar reserves to improve winter survival. To get more sugars we need more photosynthesis and less growth. Less growth is occurring because we are not fertilizing with water soluble fertilizers in September and October, right? More photosynthesis can only come from increasing leaf surface area (raising mowing heights) and decreasing shading. Plants actually continue photosynthesis throughout the winter, and there is not a lot we can do to increase photosynthetic rates. Therefore, we need to concentate our efforts in reducing growth rates in the late fall and early spring.

The late fall, dormant N fertilization that has become so popular is probably not detrimental to winter survival because the plants have stopped growing appreciatively. If

(Continued on Page 23)

The year end brings no greater pleasure than the opportunity to express to you Season's Greetings and Good Wishes.

May your holidays and New Year be filled with happiness.

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Black Layer of Putting Greens

By Dr. J. Vargas
Michigan State University

Of all golf course putting green conditions to be investigated during the past ten years, none has generated more interest or concern for curative measures than the "black layer". Dr. Joe Vargas at Michigan State University is an authority in this area and his research results and conclusions are worthy of note. Consider the following points:

- We need to know more about the practice of sand topdressing of golf greens. Light, frequent applications should not result in the creation of a perched water table or localized dry spots that may require use of wetting agents or nematode problems.
- Natural soil supports good populations of a wide variety of organisms; often sands do not. Sand cultures allow weak pathogens to become stronger. These have been observed, particularly on Toronto creeping bentgrass. A bacterial wilt has been found to plug conductive tissue under some conditions.
- Sands may become nutrient deficient—especially for phosphorus. Calcarious sands may require use of sulfur to acidify for improved nutrient availability.
- The black layer is associated with use of sulfur, particularly dry forms. Sulfates in water wash down into the sand. The black layer has nothing to do with either soil or sand as it may occur in either substrate. It has to do with the presence of sulfur under anaerobic conditions as the root zone becomes water saturated.
- Algae use a by-product of sulfur to stimulate their development. Control of algae is helped in getting rid of sulfur.
- Sulfur becomes an oxygen sink. That is oxygen is tied up in the oxidation of sulfur. Where there is limited oxygen, anaerobic conditions develop. This condition is enhanced by excessive irrigation, heavy rains, traffic that compacts the soil and the presence of sulfur. One inch of rain can take all the oxygen out for a 24-hour period. Sulfur may come from supplemental application, acid rain, irrigation water and overuse of sulfur-coated urea.
- What management practices can help prevent the black layer:
  - aerification;
  - light irrigation;
  - use of nitrate fertilizer—¼ to ⅓ of a pound of nitrogen per 1,000 square feet per application because of high salt index;
  - avoid applications of sulfur.

—Lawn Institute Harvests Editor, Eliot C. Roberts

GCSAA Names Partner For Its Annual Banquet and Show

The Golf Course Superintendents Association of America (GCSAA) has reached an agreement with Jacobsen, E-Z-Go and Textron Financial Corporation, all divisions of Textron, to a multi-year, exclusive sponsorship of the association's annual banquet and show.

The agreement marks the type of partnership established as one of the central goals in GCSAA's strategic plan for future development in member support.

GCSAA President Joseph G. Baidy, CGCS, said: "We are delighted to have the Textron group of companies as a partner in presenting this very special member event. It should be a wonderful end to a remarkable week."

Harold Pinto, vice president of sales and marketing for Jacobsen, said: "We at Jacobsen, E-Z-Go and Textron Financial Corporation are excited about this opportunity, and we're eager to offer GCSAA members a first-class event."

IN SEARCH OF

Are you currently looking at alternative medical insurance carriers or, like myself, suddenly finding yourself paying your own premiums due to club policy?

We are not alone in meeting this challenge. Many people in our industry are facing this real problem now.

I am in search of people interested in forming a co-op health insurance group. By combining like job backgrounds with a large number of participants, we will be able to offer a reasonably affordable health insurance program as compared to an individual plan. More details of the plan will be available soon.

Interested people should contact the President of the MGCSA, Kevin Clunis at 612/439-7760 or fax at 612/439-3531.

MEMBERSHIP REPORT

NEW MEMBERS—NOVEMBER 12, 1994		Class
Joseph Anderla	Anoka-Hennepin Tech. College	C
3393 Northdale Blvd., N.W. Apt. 120, Coon Rapids, MN 55449	W: 612/427-1880	
David Lundeen	Anoka-Hennepin Tech. College	C
2728 State Ave., Anoka, MN 55303	W: 612/427-1880	
John Malloy	Bearpath Golf & C.C.	A
17600 Pioneer Trail, Eden Prairie, MN 55347	W: 612/975-0541	
Eric Peters	Anoka-Hennepin Tech. College	C
820 W. Main St. #112, Anoka, MN 55303	W: 612/427-1880	
Jeff Vinkemeter	Anoka-Hennepin Tech. College	C
206 E. Raven, Belle Plaine, MN 56011	H: 612/873-6196	

NEW MEMBERS – DECEMBER 7, 1994		
Christopher Corrigan	River Falls GC	C
Daniel Evans	Oak Ridge GC	BII
Pete Felland	Hudson CC	C
John Hamblet	Lakeview GC	D
Allan Hollingsworth	Pine Meadows at Brainerd	A
Loren Kacon	Edge of the Wilderness GC	A
Andrew Larsen	Interlachen CC	C
Tom Marron	Somerset CC	C
Joel Metz	Inverwood GC	C
Charles Padula	Anoka Hennepin Tech	C
Steve Pickle	Ostlund Chemical / UHS	C
Christopher Smith	Anoka Hennepin Tech	C
Cris Risberg	Anoka Hennepin Tech	C
Forrest Tibbetts	Anoka Hennepin Tech	C
Bruce Zweber	Heritage Links GC	E

RECLASSIFICATIONS—NOVEMBER 12, 1994		
Shane Andrews	Wilbur-Ellis	A to F
Joseph Buege	Pebble Creek C.C.	D to BII
George Jennrich	Centerbrook G.C.	F to A

RECLASSIFICATION – DECEMBER 7, 1994		
Tom Balko	Redwood Falls GC	B to A

NOTE: Addresses and Phones for December were unavailable at press time.

Dick Grundstrom, Membership Chairman

BURKE BEELER OF THE USGA receives a $10,000 check from MGCSA president Kevin Clunis. The money will be used in a health hazard study conducted by the USGA.

MGCSA PRESIDENT KEVIN CLUNIS gives Jim Latham a $2,000 check for the USGA Environmental Research Fund.

For Heaven's Sake, Get Some Insurance!

By David A. Oatis
Director, Northeast Region, USGA Green Section

Have you ever noticed how common insurance is? Everywhere you look you see one form of insurance or another. In most states, liability insurance is required before we can even license our automobiles. We have disability insurance and health insurance and life insurance. We have homeowner's and renter's insurance. Doctors, lawyers and many others buy malpractice insurance. Baseball pitchers may insure their arms, and professional golfers may have special policies for their golf clubs. The point is, most of us have insurance in one form or another because it helps us sleep at night and because it makes good sense.

With insurance so prevalent in our lives, I am constantly astounded that more golf courses don't have insurance policies against the loss of putting green turf. Putting green turf can be lost in the blink of an eye and totally without warning. We can lose it to disease, vandalism, sabotage and even honest mistakes. The winter storms that bring snow and ice can cause damage, but turf can die just as quickly during hot, humid weather. We can lose putting green turf because of an oil spill or an irrigation system failure, and we can lose it from carelessness. Contaminated or improperly formulated fertilizers and pesticides can destroy perfectly healthy putting green turf in an instant. Considering the number of different ways we can lose putting green turf and considering its relative importance to the game of golf, one would think that every golf course would have insurance policies specifically for their greens. Sadly, many courses do not.

Now, before you start scrambling to call your insurance agent, talk to your golf course superintendent. He or she is responsible for this policy, and it simply amounts to having a good quality putting green nursery. "We already have one!" you say, but do you really? Read through the next few questions and then ask yourself again if you really have a putting green nursery.

- *Do the turf and soil in the nursery match the turf and soil in the existing greens?* If they don't, plugged or sodded portions will stand out like a sore thumb and may not perform well because of soil layering problems.
- *Is the turf nursery being maintained at the same cutting height as the other greens on the golf course?* If the nursery is cut 1/32" higher, it may take quite a while for it to adjust to a lower height.
- *Are the topdressing, fertilization, aerification and pesticide programs similar?* If they are not, it may take even longer for the turf to ajdust when it is used.
- *Is the nursery treated just as the other greens are,* or is it in an out-of-the-way location and forgotten more often than not?
- *Is it usable at a moment's notice,* or is it puffy, thatchy, comprised of a different turf, or mowed too high?

If you have a good nursery, you will find a hundred uses for it. Nurseries can be used to test mowers and new products, and they provide a great training ground for new personnel. They can be used to patch damaged areas or to expand shrunken greens. They are really helpful when disaster strikes. If you don't have a good nursery, *probably there will come a day when you wish you did!*

The message is, *Don't get caught with your pants down!* Have as large a putting green nursery as possible. It should be *at least as large as the largest green* on the course and preferably double that size. The soil and grass types should match the existing greens. If several different types of greens exist (different grasses, soils, etc.), you may need more than one nursery. Nurseries can be built inexpensively by using a few inches of the existing topdressing material and a mixture of shredded aerification plugs and various cultivars from seed.

Yes, there is some cost involved, but the advantages of having a good quality putting green nursery make the cost insignificant. This is an insurance policy you cannot afford to be without, so *for heaven's sake, get some insurance!*

Yes, There Actually Were Green Speed Discussions B.S. (Before Stimpmeters)

* * * *

And Remember, the Normal Height of Cut Was About ¼ Inch, Sometimes Raised During Hot Weather

(Ed. Note: Following is a copy of an article entitled "As We Find Them" from the USGA Green Section Bulletin, Vol. 8, No. 2, February, 1928. It was thoughtfully sent to our Hole Notes office by Jim Latham, Director of the Great Lakes Section of the USGA.)

* * * *

Stepping from the 18th green with the Green Committee Chairman and the Greenkeeper, it was suggested that we "stick around and hear the angels sing. You will hear their daily chant to the Green Committee and Greenkeeper." So there we waited and watched.

One Mr. Average Golfer soon waddled up to attempt what looked like a "dead sure one." In that terrifying silence, which precedes great storms, he went through all the most approved and prolonged preliminaries of sighting and preparing for that momentous tap. Horror of horrors, he missed! We guessed it; the green was to blame. The storm broke!

"Bill, why in the name of galloping golf balls can't we have some greens on this course? These things would be a disgrace to any cow pasture. There isn't a golfer in the world who could putt on them." Ad Infinitum.

All this in spite of the fact that the other members of his foursome sank good, long shots and were last seen headed for the locker room with beaming faces not ordinarily associated with "rotten" greens and high scores.

The next group furnished this helpful suggestion: "If you fellows are interested in improving greens, why don't you first find out what the players want? After all, greens are for the golfers and everything should be done to give them exactly what they want."

We beat him to that idea by many years. We had long ago been told "when baby cries, give him what he wants." But we had also learned that to obtain results it makes some difference whether baby is "crying for something" or "just crying."

The greenkeeper suggested that we question a few of the club's best players as to how fast they preferred to have greens. "One of my men is ill and that has interrupted our schedule. Number 16 has not been cut and is very slow today, but this eighteenth is the real 'lightning type.' " The first reply was:

"This green is perfect! Anyone can putt on it. If you could only get all our greens as fast as this one, every player in the city would be clamoring to join this club. Number 16? Is that supposed to be a green? We thought you were planning to let that grow up for hay."

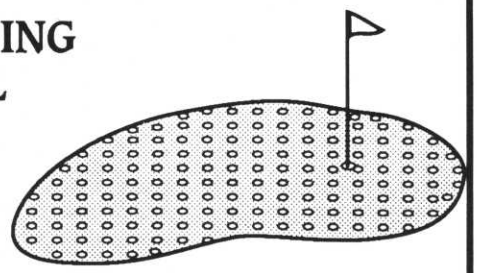
"Fore!" The next foursome is having a terrible time rolling them back and forth across the green. "Bill, what on earth is the matter with this green? If you simply touch the ball, it goes clear across. No use trying to putt on it. Why don't we have all the greens like 'sixteen' is today? You can really hit a ball on that one without making it roll a mile."

Now that's settled! All that the green committees, greenkeepers and "those scientific guys" have to do to give the players just what they want (in speed of greens, at least) is to develop some kind of gear-shift. Then if a player "likes 'em fast" he can shift into high, and if he "likes 'em slow" he can shift to low. Bet some of them will want it fixed so they can shift after the ball is struck. Then they'll want a "reverse" so that the one which is "too strong" will roll back at just the right speed—all counting a single stroke.

A (W)HOLE IN ONE

One-stop shopping for golf course materials

TOPDRESSING MATERIAL



- 80/20, 70/30, or mix to order
- Sand screened with 1mm screen (USGA spec)
- Product blended then rescreened through 3mm screen to assure clean mix

All specs available upon request

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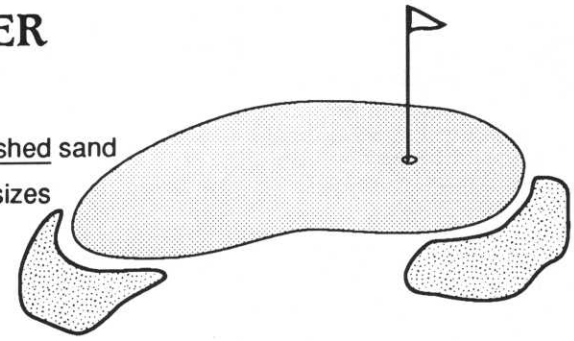
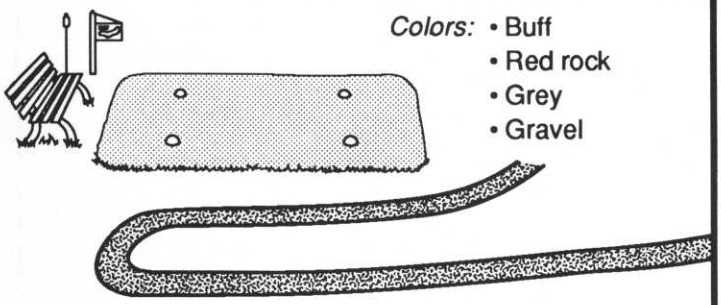


- Clean, washed sand
- 2 particle sizes to choose from

CARTPATH AGGREGATE

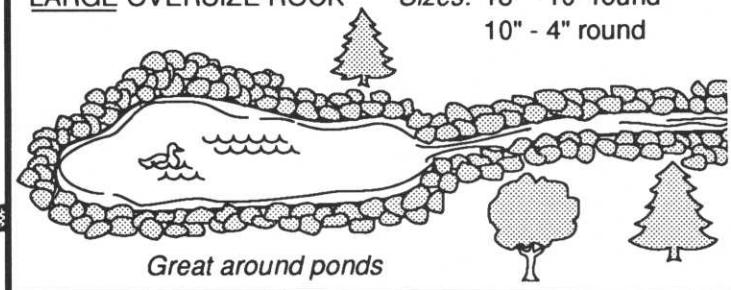


Colors:
- Buff
- Red rock
- Grey
- Gravel

RIP RAP

LARGE OVERSIZE ROCK

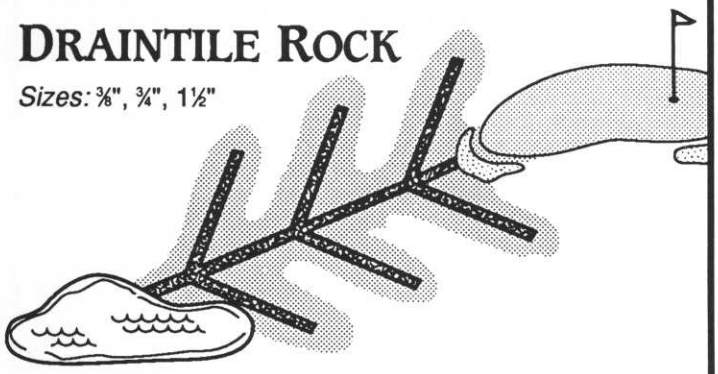
Sizes: 18" - 10" round
10" - 4" round



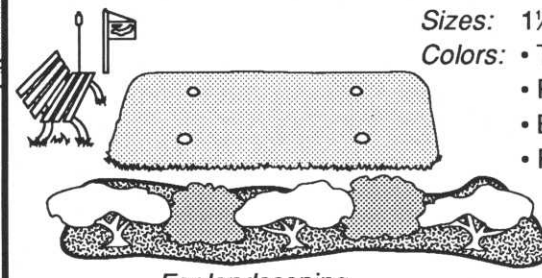
Great around ponds

DRAINTILE ROCK

Sizes: ⅜", ¾", 1½"



DECORATIVE ROCK



Sizes: 1½" or ¾"

Colors:
- Trap rock
- Red rock
- Buff limestone
- River rock
- Granite
- Salt & pepper

For landscaping

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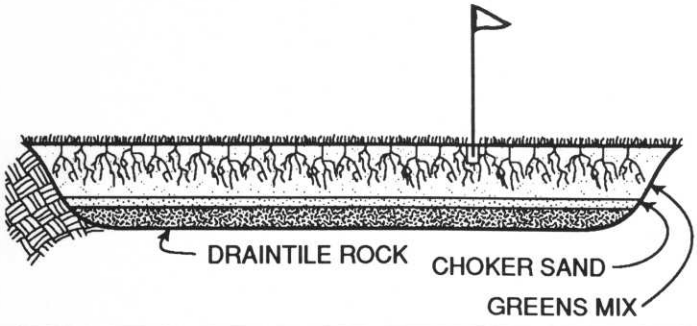

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