



The Agronomics of Course Preparation for Major Championships

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Clubs that entertain the challenge of major championships enjoy a special competitive relationship. Pride permeates every aspect of a great club's existence. The club, the membership, the golf test, the employees all feel a special kinship.

"Our course is something special and interest shown by our members and guests tells us so. We challenge players of every calibre. We're a championship golf course and when we do have a national tournament, we don't need to make any extraordinary effort to accommodate it, we just put on our Sunday Best' and proceed."

This has been said in many ways by many golf course superintendents-past and present. The great courses are there, the challenge is there, but what makes it a great test is that every challenging feature of the course is brought into play when the major championships are held. The course is usually set up just as the architect designed it-no major changes, normally, just some tightening up here and careful study of every hole to get the most out of every foot of terrain and every hazard.

Joseph C. Dey, Jr., retired Commissioner of the Tournament Players Division of the PGA and former

USGA Executive Director, has said, "There are some solid principles to guide you, whether the championship is the U.S. Open or the Nassau Open, the basic idea is the same-you are going to help determine a champion golfer you are going to prepare a testing ground that will reward skill ."¹

For major championships, representatives of the sponsoring organizations work with club officials far in advance of the scheduled event, sometimes two years in advance. These officials and committees finalize decisions as to how the course should play for that specific championship.

Quite obviously, preparations for the United States Open or PGA Championship are directed towards a more challenging test than one set up for the Junior Amateur. The Open Championship places a premium on accuracy and skill with the use of every club in the bag.

A very important part of that challenge is the turfgrass cover, how the turf plays-things that our best amateur and professional golfers look for—tight, firm fairway lies; firm, fast greens; close-cropped teeing grounds; and above all, a uniformity of condition that inspires confidence in predicting the way the ball will act. Simply stated, conditions must

allow for the possibility of finesse throughout the prime target zone and provide a suitable penalty for all who stray from it. This is the role of agronomic preparation. This is where the golf course superintendent and consulting agronomists put their heads together to prescribe the best route to follow toward that end.

Richard S. Tufts, past President of the USGA, has said, in effect, that things need not be so uniform that the swing be automatic. A golfer must expect variations caused by terrain, by constant use, and the changing conditions of growing things. That's all part of the challenge, "It's the rub of the green aspect that makes golf the challenging and exciting game that it is." As a passing comment, he also said, "Fairways today are as good as some of the greens I used to putt on in my earlier days of golf."

Every golf course superintendent worth his salt is conscious of the responsibility of public image. Major championships receive wide coverage in the news media and television. The superintendent wants his course to show to best advantage to interested spectators from all walks of life, and yet he knows that turfgrass appearance and excellence of playing quality are not always the same. Dr. Fred V. Grau said it best: "Golf is played on turf, not color."

Those involved in course preparation are furnished a copy of the *USGA Golf Championship Manual* for guidance. This manual defines the guidelines and only that. It does not project the "feel" for making the field adjustments necessary for a great test of golf. This is the job of the agronomic team—the turfgrass specialists—who tailor the turf to the terrain, weather and growth conditions. For example, the set of the mower doesn't insure that turf will be cut at that height. When you deal with fractions of an inch, other factors come sharply into focus. The thatch, the condition of the machine, rate of growth, climate, the experience of the man mow-

ing, plant turgidity, and even the time of day all make a difference in efficiency of cut. Adjustments must be made! If there is any question, one great equalizer is frequency of cut. If you step up the mowing schedule during the tournament, it could balance off some of the weaknesses that otherwise would be prominent. The rule of thumb is to step up the mowing process during any championship. The second rule is to mow the turf as close as the grass permits without risking permanent injury.

GREENS

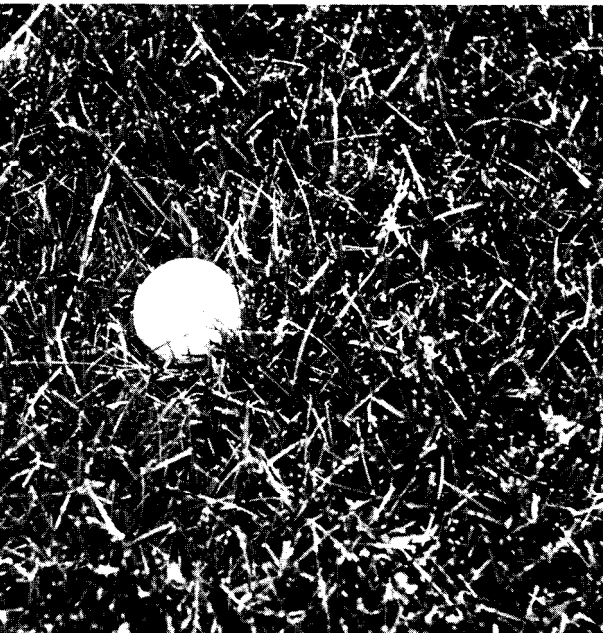
Golfers have said it in many ways: "The difference between the winner and the rest of the field is putting!" From the tee and through the green their abilities are fairly equal, but the one who uses the fewest strokes on the greens usually wins! What makes an exceptional green? It must be firm and fast, the ball must roll true and take the break of the terrain only; it should be influenced by top growth of grass little or not at all. In British terms, the greens must be keen.

Excellent greens require that—

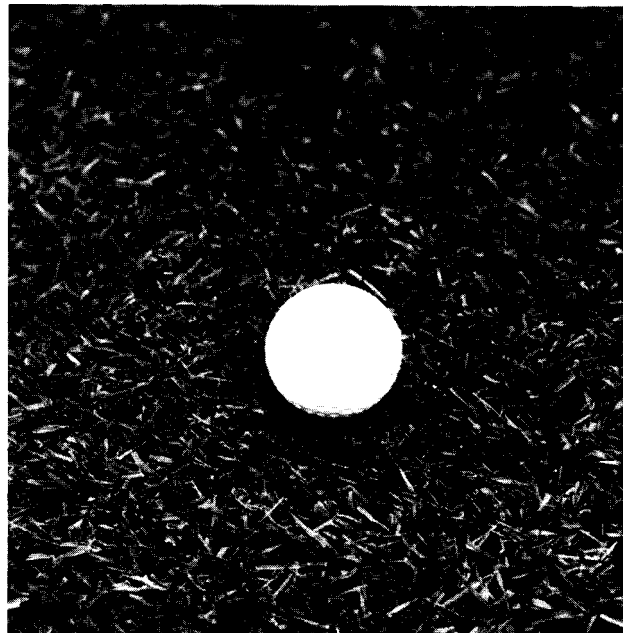
1) The height of cut be $\frac{3}{16}$ -inch or less. To insure this, greens must be cut daily for several weeks prior to the completion of the competition and double-cut every morning of the tournament, including the practice rounds. Every day the greens should be cut in two directions, the second cut at right angle to the first direction of cut. This also refers to the practice green.

2) There should be approximately $\frac{1}{2}$ inch of thatch to allow the ball to take predictable action when properly struck to the green. Thatch control is a continuous process of top-dressing, vertical mowing, thatching, daily mowing, proper nutrition, good watering techniques, etc. Thatch should be brought under control for reasons of general good health the

As late as the 1950s fairways like this were commonplace—mowed at 1 $\frac{1}{2}$ inches.



Fairways mowed as close to $\frac{1}{2}$ inch as possible allow unobstructed contact of club and ball.





Bunkers with lip toward green side prevent putting out of sand.

year-around.

3) Top-dressing material should contain a high percentage of sand of a type that measures between $\frac{1}{4}$ and $\frac{1}{2}$ mm in size: (See Figure 1) No particles should be larger than 1 mm, and only a small percentage below $\frac{1}{4}$ mm. All top-dressing material should permeate the turf and work its way down to the soil line below. This is possible only if light applications are made frequently. For minimal thatch, approximately $\frac{1}{3}$ cubic yard of top-dressing every three weeks is advised while the grass is actively growing. In most cool season grass areas, this means during the spring, fall and early winter; in bermudagrass areas, this means during the spring, fall and summer.

4) Vertical mowing is required weekly when the grass is actively growing. The vertical mower must be set so that the revolving blades just touch the turf surface and remove **decumbent** blades. It should not gouge or scalp the putting surface. As with normal mowing, the direction of cut should change with every cut.

5) The nutrition program, lime and fertilizer, should be one of moderation for months prior to the competition. Hungry greens cause fewer problems, and they also make for truer, faster greens. Applications of fertilizer to putting surfaces should not exceed $\frac{1}{4}$ pound nitrogen per 1,000 square feet at any time during the current year of a scheduled major championship. It is far better to apply four applications at $\frac{1}{4}$ pound of nitrogen over an extended period than higher rates of nitrogen less frequently. Ground limestone also must be applied in moderation otherwise a layer detrimental to water movement will form over the soil line. Remember that color could be improved by using light applications of iron

sulfate in place of more nitrogen.

6) Greens rarely should be aerated within six months of a major tournament because of the possibility of "pimpling" of the putting surfaces. By "pimpling" we mean stronger grass growth occurs over aeration holes and therefore a "roller coaster" effect results. Only the most troublesome greens might require aeration within six months of a tournament, but only if there is fear that some turf loss would occur if not aerated.

7) The watering of greens is a precise operation and it differs with every course. The rule of thumb is that greens should be firm. This means that they should be watered moderately and carefully so that uniform amounts are applied in order that every portion of the putting surface will provide uniform ball reaction. The least amount of water that you can apply and yet keep greens alive is the recommended program for greens during championships.

8) Standard preventive disease and insect control programs should be followed at all times on greens, not only for major championships. If extraordinary problems arise, they should be brought to the immediate attention of all involved in the turfgrass phase of course preparation.

9) The collar around greens generally measures approximately 36 inches and should be mowed between $\frac{1}{2}$ and $\frac{5}{8}$ inch. The collar can be aerated at any time up to six weeks before a championship if the turf is in need of strengthening. Collars should be managed as greens, except that they may require slightly more hand watering to keep them from drawing water from the edge of the putting surface. If collars are watered efficiently, greens tend to dry-out less at their perimeters.

TEES

The teeing area should be mowed at 1/2 inch or less for the tournament. Tees should be kept on the dry side, they should be watered sparingly, if at all during the competition. Clippings should be removed with each mowing. Tees otherwise should be managed on the same program as greens, except they may require slightly more fertilizer. However, they should never be overstimulated to the point where they become soft and more prone to injury.

Tees may be aerated at any convenient time.

Top-dressing is important to smooth and level tees. Top-dressing can be applied lightly and frequently, similar to the program followed on greens.

Since tees on par-3 holes will take abnormal divot abuse during most of the year, it is very impor-

tant to keep play away from the area to be used during the championship for at least one month prior to the competition.

FAIRWAYS AND ROUGHS

Undoubtedly, the outline of fairways will be altered to place a premium on accuracy for most major championships. Where fairways are narrowed, grasses will produce a very thick stand when allowed to grow to rough height. One compensating factor, however, is that there will usually be a swatch of intermediate rough at approximately 2 inches immediately adjacent to fairways, the remainder will be 4 inches or higher, depending upon committee decision. In order to assure rough growth to designated height, it is important to aerate, lime if

Figure 1
Sand Particle Size Classification Table

	Tyler Scale (ASTM)* (Mesh)	U.S. (Sieve) No. (NBS)**	Sieve Opening mm.	Textural Name	
	4	4	4.76		
	5	5	4.00		
	6	6	3.36	Gravel	
	7	7	2.83		
	8	8	2.38		
	9	10	2.00		
	10	12	1.68		
	12	14	1.41	Very Coarse Sand	
	14	16	1.19		
	16	18	1.00		
Range	20	20	.84	Coarse Sand	Range For Soil Mixes And Top- Dressing
For	24	25	.71		
Bunker Use	28	30	.59		
	32	35	.50		
	35	40	.42	Medium Sand	
	42	45	.35		
	48	50	.30		
	60	60	.25		
	65	70	.21		
	80	80	.18		
	100	100	.15	Fine Sand	
	115	120	.13		
	150	140	.11		
	170	170	.09		
	200	200	.07	Very Fine Sand	
	250	230	.06		
	270	270	.05		
	325	325	.04		

* American Standard Testing Materials

** National Bureau of Standards

Ideally, a minimum of 75% medium sand should make up the sand for soil mixes and for bunker use. The bunker sand particles should be sharp, angular, while the sand for soil mixes preferably should be round, if obtainable.

soil tests indicate the need, and to fertilize the roughs adequately for each of the two years prior to the tournament. The swath designated to be mowed at 2 inches could be fertilized only when applications are made to fairways. It is also important to prepare for the primary rough cut by halting mowing operations six weeks in advance of the tournament week. Much depends on the rainfall pattern unless roughs are normally irrigated. It is better to stop mowing roughs early, rather than too late, because the rough may be cut at a specified height prior to the tournament if growth becomes too great.

Fairways should be mowed every day during the competition. The height of cut should be as close to 1/2 inch as the terrain and grass type permits. Fairways should be cross-cut several times during the six-month period prior to the championship date. At minimum, four cross-cuts are advised as follows: one right to left, the next left to right, a third diagonally left to right, and a fourth diagonally right to left. The object is to leave no long grass in swales or depressions within the fairway area.

If fairways need strengthening in some places, they should be renovated and/or overseeded the year prior to the competition. Such areas could be slopes and/or mounds that tend to weaken, both ends of the fairway where tractor turning bruises the turf, makes wheel marks, etc. One remedy for the latter ailment is to use smaller and lighter machines to mow each end of fairways; a second remedy is to alter the turning area with each mowing so that the larger units are not always turning in the same place.

If any area requires sod within two weeks of the competition, the sod should be cut in an 18-inch swath at a depth of 2 to 3 inches so that it will prove stable underfoot. The sod also should be laid so that the seams lie in the direction of the green. Seams should be top-dressed with soil to smooth them to the point where a ball will not nestle in a rut below the turf level. If a month's time or more is available, routine sod work could be performed, and with special care the sod should knit well in that time.

The fairway turf should be weed-free, free of clover and broadleaf weeds especially. Herbicides such as MCPP, 2,4-D and Dicamba assure good weed control when properly used. These herbicides should be applied far enough in advance so that voids left by dying weeds will fill-in with turf from surrounding areas or through renovation.

Fairways should be fertilized to conform with the best practices for the region involved. Since the time of year the championship is held will have a strong bearing on turf performance, the program should be adjusted to have the turfgrasses peak during the week of the competition. This sort of control can best be kept if grasses are fertilized lightly but more frequently. For example, if your goal is 88 pounds of nitrogen per acre prior to the tournament date, the 88 pounds could be divided into four treatments of 22 pounds per application. This way, you always have the option to add a little more or reduce the

final application if observation and performance so dictates.

A preventive disease control program should be followed on fairways to insure healthful turfgrass cover and density.

BUNKERS

Sand for bunkers should be washed sand, free of clay or silt, and should preferably conform to the specifications defined in Figure 1. Sharp (angular) sand is best because it is more stable. Round sand is "shifty" underfoot.

Sand should measure 4 to 6 inches in depth, except on facings where it should be less to prevent balls from becoming lost. If fresh sand is added to bunkers, it should be done at least a month before the competition. If the full 4 to 6 inches is brought into place at one time, it should be done 4 to 6 months in advance of the tournament. The new sand should be watered, if there's no rainfall, for proper settling.

Players should not be able to putt out of bunkers. To prevent this, a "lip" measuring 3 inches or more should be created facing the putting surface. Bunkers are usually edged in order to sharply define the hazard, and the sand at the back of most bunkers should be raked to meet the level of grass and terrain.

POST TOURNAMENT CONDITIONS

After the competition is over, we recommend that the fairway lines be kept intact until the end of the season when it is safe to make cutting adjustments. If cut down and realigned to the original width and contour immediately after the tournament, chances are the grass will turn brown and die. It will look unsightly, and those who are not informed will believe the course has fallen apart after the tournament. In many instances, the membership prefers to keep the tournament course intact, except for the prime rough, for a few months, to compare their efforts against the tournament player's score. The prime rough could safely be reduced an inch per cutting until it reaches a height of 3 inches, where it should be kept until favorable weather conditions permit mowing roughs closer, if desired.

These are the major points of agronomic concern in any major tournament. In addition to the foregoing, there are a number of other details that must be attended to, with committees and officials. Don't cut yourself off from one of the most rewarding times a professional turf man can experience. Seek out and work with the key tournament people. Enjoy the event and the contribution you are making to it. It should be one of the most memorable times in your professional career.

¹ Preparing Your Course For Tournament Play, March, 1973 Green Section Record.