

Where concentrated cart traffic occurs due to bunkers, mounds, or trees, the bermudagrass will transition poorly.

Fairway Overseeding: Does It Make Dollars or Sense?

Objectively evaluating the impacts of fairway overseeding will determine if your course is ready to make the necessary sacrifices.

by **BRIAN M. MALOY**

FAIRWAY OVERSEEDING is a practice that has become surrounded in controversy at many golf courses in the southern half of the United States, where bermudagrass is the dominant turfgrass species. The benefits of winter overseeding are of course widely publicized in popular golf magazines where advertisers make every effort to lure golfers to their courses with glossy pictures of emerald green fairways. Unfortunately, the side effects that become evident during the following summer season are rarely, if ever, advertised as they would send golfers running to neighboring courses that do not overseed their fairways.

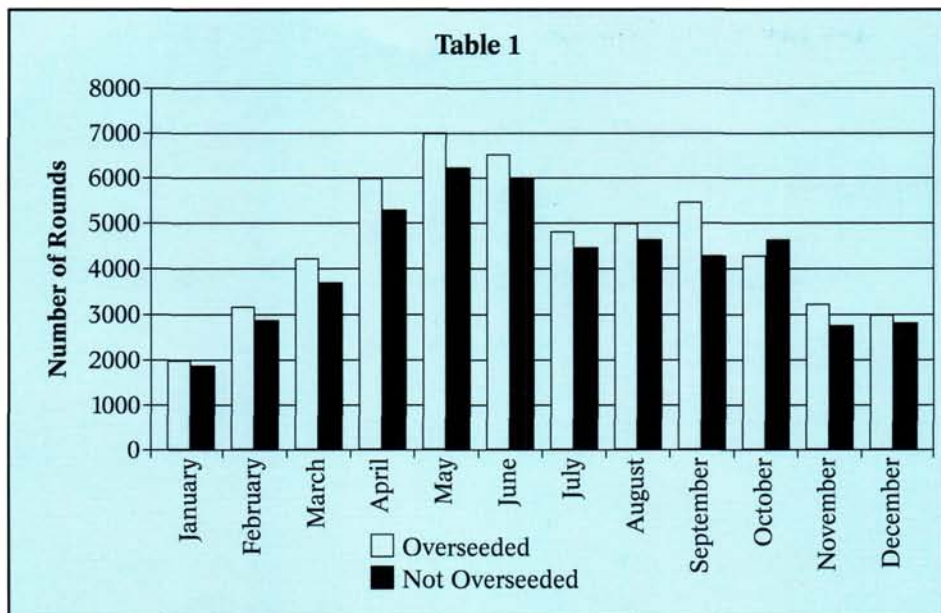
The need to overseed is best determined by whether a course relies on making the bulk of its income during the cooler months of the year or the warmer months of the year. For example, there are many golf courses located in the southern states that typically receive the majority of their annual rounds between November and June by attracting seasonal residents, northern vacationers, and business travelers.

Courses that elect not to overseed their fairways generally are those with a majority of year-round residents who play all season long. Unfortunately, it is at these very courses that problems

develop when a small group of golfers want the fairways to be green in winter and in perfect playing condition during the summer. Analyzing six common arguments used to promote fairway overseeding can reveal serious flaws, which, in turn, may change your mind on this topic.

Flawed Arguments

The first argument is that overseeding will increase the total number of rounds played throughout the year. This statement is rarely valid for crowded courses that generally find it impossible to squeeze another player onto the starter's sheet. A good case in



Indian Creek Golf Course, Dallas, Texas, tested the theory that overseeding will increase the total number of rounds played throughout the year. The overseeding did not create sufficient additional rounds of golf from October through March to warrant its expense. The length of day and climatic conditions had a greater impact on the number of rounds played.

point is Indian Creek Golf Course, which is a 36-hole facility in the Dallas metropolitan area. Given that there are two courses, they decided to test the argument by overseeding the fairways on one and not the other. As Table 1 reveals, there was no significant difference between the total number of rounds played at each of the two courses from October through March. In fact, the greatest difference in the totals was due to inclement weather and shorter days that affected the total number of rounds equally on both courses.

The second argument in favor of fairway overseeding is that it does not really cost as much as some experts say, leading to the conclusion that the practice should not be based on economics. Advocates of overseeding usually try to propose that the cost does not go beyond that of the seed, which ranges from \$350 to \$550 per acre. In reality, however, the total cost is much greater.

For most courses in the Southwest, the cost of overseeding ranges from \$750 to \$1,500 per acre since the seeding rates used are much higher. Additional costs to consider include the expense of water, fertilizer, equipment maintenance, fuel, and labor for additional mowing. Often overlooked costs are the need to purchase bermudagrass sod for areas that transition poorly the following summer and the

purchase or rental of additional equipment to complete the process of overseeding.

The third argument for fairway overseeding is that the transition back to bermudagrass the following summer need not cause problems, as it can be successful if managed properly. Just ask any Green Section agronomist in a region where overseeding is practiced and he will tell you that the transition from perennial ryegrass to bermudagrass is rarely pretty. Transition problems are as much a part of overseeding as pain is a part of dental work. Further complicating the challenge of a smooth transition are the many new varieties of perennial ryegrass that have become more heat tolerant and, as a result, more persistent during early summer. This persistence increases the competition for space, nutrients, water, and sunlight between perennial ryegrass and bermudagrass, with the latter suffering long-term consequences.

Consider this analogy: Overseeding fairways at a rate of 400 pounds of seed per acre is equivalent to spreading 11 weed seeds per square inch across your home lawn and then expecting the bermudagrass to emerge unscathed the following spring. Now, raise the seeding rate to 1,000 pounds per acre as is done at desert southwest resort courses. Can you really believe that one turf species can be grown on top of another without causing problems?

The fourth argument is that fairway overseeding improves the winter survival of bermudagrass. This is not true, according to Dr. Robert Carrow, Professor of Turfgrass Stress Physiology at the University of Georgia. Bermudagrass under stress from competition has a lower percentage of stored carbohydrates, which in turn increases the percentage of water in the viable tissue. Hence, freezing temperatures below 10°F create ice crystals inside individual cells, causing their outer walls to burst open. In other words, the bermudagrass is more prone to the phenomenon of winterkill.

Dr. Carrow reports that some overseeded courses occasionally fare better when more irrigation is applied on the fairways. This reduces the potential of winter desiccation and/or may provide some insulation during short periods of extreme cold.

The fifth argument should receive little credence without a survey that accurately details the pros and cons of overseeding. Those with an agenda often say, "We've spoken with a majority of the membership and they want the course overseeded this winter." The first question that should come to mind is, "Were the individuals surveyed told that in many cases the true cost of overseeding exceeds \$100,000 and that the condition of the course next summer will more than likely suffer as a result?" Odds are these details were kept secret.

To determine if the membership of The Country Club of North Carolina wanted the course overseeded, a survey was taken in 1989. The results showed that 14% of the members were in favor of overseeding, 54% were against overseeding, and 31% had no opinion. What is interesting is that the members favoring overseeding played just 2,000 rounds per year, whereas those against overseeding played 15,000 rounds per year, and those with no opinion played less than 3,000 rounds per year. As made evident by this survey, a decision to overseed fairways at a particular course may be more of a case of the squeaky wheel getting the grease than the actual desire of a majority of the membership. (Note: The Country Club of North Carolina currently overseeds 18 of 36 holes to satisfy all segments of the membership.)

Lastly, argument six: fairway overseeding will produce more so-called high-quality rounds. Depending on the seasonal use of a golf course, it is actually possible that overseeding can

negatively affect the total number of high-quality rounds played. The result depends on (a) which seasons the majority of rounds are played, (b) the duration of normal bermudagrass dormancy, and (c) the duration and severity of disruption caused by the annual transition from perennial ryegrass to bermudagrass.

To analyze this situation, compare the two following courses with differing annual usage in the Green Section's Southwest Region. The first course is The Southern California Golf Association Members' Club at Rancho California (SCGA) located in Murrieta, California. This course is a daily-fee operation that has a loyal year-round clientele. The peak of the golfing year occurs between April and October (see Table 2) when the extended daylight hours allow SCGA members to enjoy the course. The second course is Sun City Vistoso Golf Club located in Tucson, Arizona. This course is host to a desert resort community where up to 60% of the golfers are temporary residents and the peak of the golfing year occurs between November and May (see Table 3).

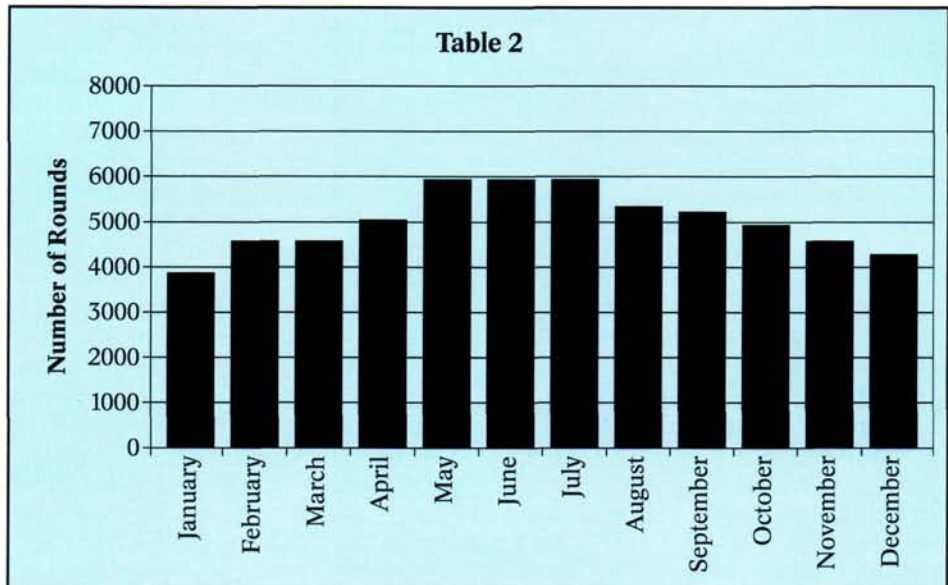
Based on the following scenarios, winter overseeding affects each course quite differently:

Scenario 1: Assumes overseeding is not practiced and that poor playing conditions are defined as dormant fairways from December through March.

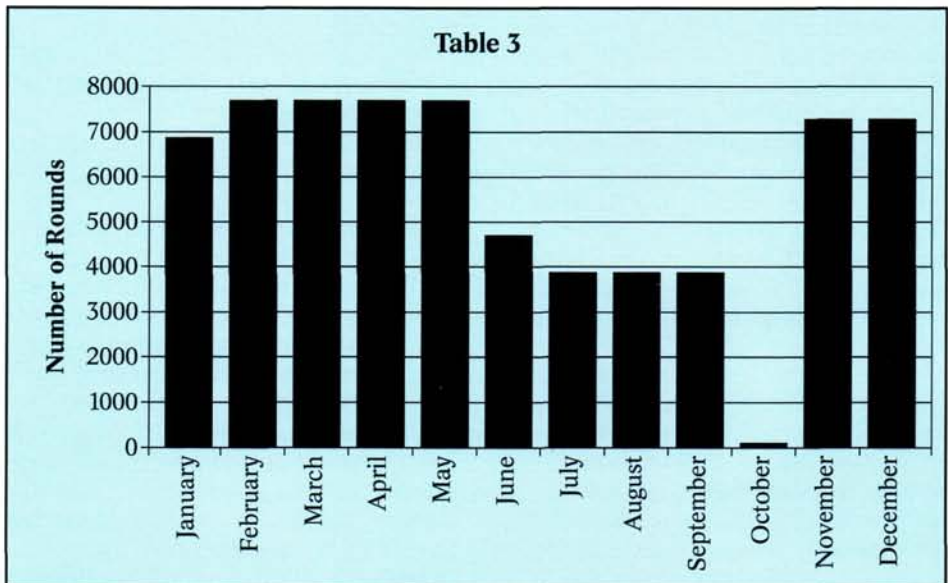
Scenario 2: Assumes the course is closed during October to complete overseeding and that poor playing conditions are defined as immature, thin turf during November and December and July 15th through September, when the effects of transition occur.

To see how overseeding would serve the two courses differently, please note Table 4.

The quality and playability of the perennial ryegrass during the winter and the degree of disruption caused by the transition back to bermudagrass the following summer are the criteria used to judge the success of fairway overseeding. The whole process can best be described as a balancing act between the maintenance practices required for each of two turfgrass species. If overseeding is a sound decision for your course, you must have realistic expectations and understand that with the good comes some bad. Also, you must be aware that certain sacrifices will be required that ultimately interrupt course usage, increase operating



The SCGA Members Club in California is an example of a facility that receives balanced year-round play. Spring, summer, and fall play is slightly higher than the winter months, with a total of 61,600 rounds for the year.



The majority of the 70,000 annual rounds at Sun City Vistoso Golf Club in Arizona take place from November through May. During the shorter days of winter, two shotgun starts per day are required, five days per week.

Table 4				
Example:	California		Arizona	
Overseeding Scenario	#1	#2	#1	#2
Rounds Played — Good Conditions	46,150	38,000	48,800	52,500
Rounds Played — Poor Conditions	15,450	18,600	26,200	17,500
Rounds Lost Annually	0	5,000	0	5,000

When analyzed quantitatively, the number of rounds played under good conditions justifies overseeding the Arizona course, but not the California course.

costs, and disrupt summer playing conditions.

Proper Timing — Setting overseeding dates based upon the last scheduled tournament of the season can be a formula for failure. Research indicates that the optimum time to establish seed is when soil temperatures are between 72°F and 78°F at a four-inch depth. This equates to air temperatures of between 60°F and 70°F at night and 80°F and 90°F during the day. Overseeding too early increases the potential of seedling diseases and bermudagrass competition, while overseeding too late increases the number of weeks required to produce complete coverage due to slowed growth from cooler temperatures.

Monitoring soil temperatures to determine the optimum planting date is far superior to blindly selecting a calendar date. Since this method is not entirely practical, selecting a calendar date based upon historical soil temperatures is the most common course of action.

Proper Seedbed Preparation — One of the greatest causes of a poor winter overseeding is improper seedbed preparation. Reducing the density of the bermudagrass canopy through moderate vertical mowing is important to allow good seed-to-soil contact. Vertical mowing is disruptive to play, but essential for success!

As the growth of bermudagrass slows in early fall, it begins storing carbohydrates that help it tolerate low temperatures and provide a source of energy to fuel spring green-up. If vertical mowing is done while daytime temperatures are above 85°F, the still actively growing bermudagrass will

expend stored carbohydrates to immediately repair and recover from the damage. With this in mind, severe vertical mowing should be avoided during overseeding preparation because it will reduce bermudagrass hardness in the spring, therefore producing a poor transition. (If excess thatch needs to be removed via aerification to make seed-to-soil contact, it should be scheduled at least 30 days prior to overseeding, while the bermudagrass is actively growing, to avoid spotty or blotchy results from seed germinating in open holes.)

Unrestricted Watering — After seeding, irrigation should be applied three to seven times per day for seven to ten days to facilitate germination. Here again, the practice of overseeding unavoidably disrupts playing conditions in the fall. Late evening watering must be avoided, since seedlings that remain wet all night often develop disease problems.

Irrigation System — All other factors being equal, the quality of overseeding depends largely on adequate quantities of uniformly distributed water applied frequently throughout the day. For a successful winter overseeding, it is imperative to have a state-of-the-art irrigation system capable of being programmed for repetitive watering cycles. Replacing a poor irrigation system to support the practice of overseeding usually costs in the neighborhood of \$1,300,000.

Closing the Course — To produce optimum playing conditions from December through June, courses in the Desert Southwest typically will be closed for the month of October. This is essential because of the disruption

caused by vertical mowing, seeding, and, most of all, frequent watering.

Traffic Control — The additional moisture needed for seed germination causes large wet areas that, when combined with cart traffic, cause significant soil compaction and physical seedling damage. For these reasons courses that close for less than 30 days should have continuous paths, enabling them to restrict cart traffic until the seedlings mature. If the course is not closed and traffic cannot be restricted, the quality of the overseeding will be greatly diminished.

Chemical Budget — Various herbicides and plant growth regulators, such as diquat, mefluidide, and maleic hydrazide, have been used with mixed results to reduce bermudagrass growth or desiccate its foliage to reduce vertical mowing requirements. Most recently, trinexapac-ethyl has been shown to effectively reduce bermudagrass growth with less severe side effects. Although the purpose of the trinexapac-ethyl application is to reduce bermudagrass growth during seed germination, it can also increase density. Therefore, vertical mowing is essential to encourage seed penetration into the canopy.

Seed Budget — Fungicide-treated seed is inexpensive, and it is the best insurance against seedling diseases. This is particularly important for courses that are located in areas with high humidity and precipitation. Having the seed treated will increase its cost by just 5¢ per pound or \$2.50 per bag.

Equipment Budget — Mowers must be maintained with razor-sharp reels to prevent pulling up developing seedlings or producing a ragged cut on mature turf. Cool-season grasses used for overseeding perform best when maintained with lightweight mowers to reduce wear and tear on turning areas on fairways. Heavy-duty mowing units are needed for overseeding, scalping preparation, and to effectively penetrate an actively growing bermudagrass canopy to reduce thatch development. Rotary mowing equipment is necessary to produce the highest quality overseeded roughs during winter. To avoid serious scalping of bermudagrass roughs during the summer, reel-type mowing equipment is required. In essence, two complete mowing equipment inventories are needed to provide optimum winter and summer conditions when maintaining both cool-season and warm-season grasses.

Seedbed preparation during overseeding creates a dusty working envi-



Most golfers prefer the dark green color of perennial ryegrass. Unfortunately, due to the improved heat tolerance of the perennial ryegrasses, they compete with the bermudagrass base longer into the summer season.

ronment that can damage equipment. Hydraulic oil coolers, radiators, and air filters become plugged with debris, causing overheating and severe mechanical wear. This increased wear, combined with the additional winter mowing requirements, shortens the useful life expectancy of equipment by 15% to 20%.

Species Selection — Blends of improved perennial ryegrasses typically are used for overseeding due to their rapid germination and establishment rates and dark green color. *Poa trivialis* use is reserved primarily for greens and occasionally tees in moderate climates where more serious transition problems are likely to occur. The slower germination and establishment rates of *Poa trivialis*, however, are found to be undesirable when compared to perennial ryegrass. Fine fescues also have been tried for overseeding, but they cannot match the density and color provided by perennial ryegrass. More recently, research is focusing on developing intermediate ryegrasses that lack the ability to persist into the heat of summer.

Seeding Rate — The normal rate for fairway overseeding ranges from 400 to 600 pounds of perennial ryegrass per acre. It is not unusual, however, to hear reports of seeding rates as high as 800

to 1,100 pounds per acre in the Desert Southwest to improve early season density. Besides nearly doubling the seed cost per acre, these increased rates have a negative impact on bermudagrass the following summer.

Conclusion

Obviously, there are a number of factors that need to be considered in determining if fairway overseeding is appropriate for your facility. In fact, several sacrifices must be made by golfers in order to enjoy excellent overseeded fairways during the winter and spring. Failure to make the necessary concessions will result in an inferior fairway overseeding. More often than not, the difference between what the golfers expect and what can realistically be achieved will add up to disappointment.

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The overseeding grass in the rough was more competitive than at the lower height of cut in the fairways. As a result, the majority of the bermudagrass has been lost in the rough.