

ROUGHING IT

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WHY IS IT THAT roughs are becoming more and more the object of golfers' comments and attention? It wasn't so long ago, after all, that greens were the only areas most golfers concerned themselves with.

Perhaps the answer has something to do with the nature of today's golfers, who expect each area to be consistently perfect every day of the year. The most important factor for many golfers, though, is that the roughs come into play more frequently than they once did. With the advent of lightweight fairway mowing in the past decade, fairway acreage has been halved on many courses, and the widths of fairway landing zones have been reduced from a range of 40 to 50 yards to a much narrower 25 to 35 yards. This change has been a simple economic one; because golf courses could not afford to use lightweight mowers and otherwise intensively maintain 50 acres of fairway turf, they have reduced their fairways to a size they can afford to mow.

It is predictable, then, that more shots will land in the rough, so it is not surprising that golfers are more concerned than ever about the quality and uniformity of the turf in the roughs. Suddenly golf course superintendents find they cannot simply mow the roughs once each week and then forget about them. The superintendent must contend with increased use of golf carts, inadequate fairway irrigation systems, and widespread tree planting.

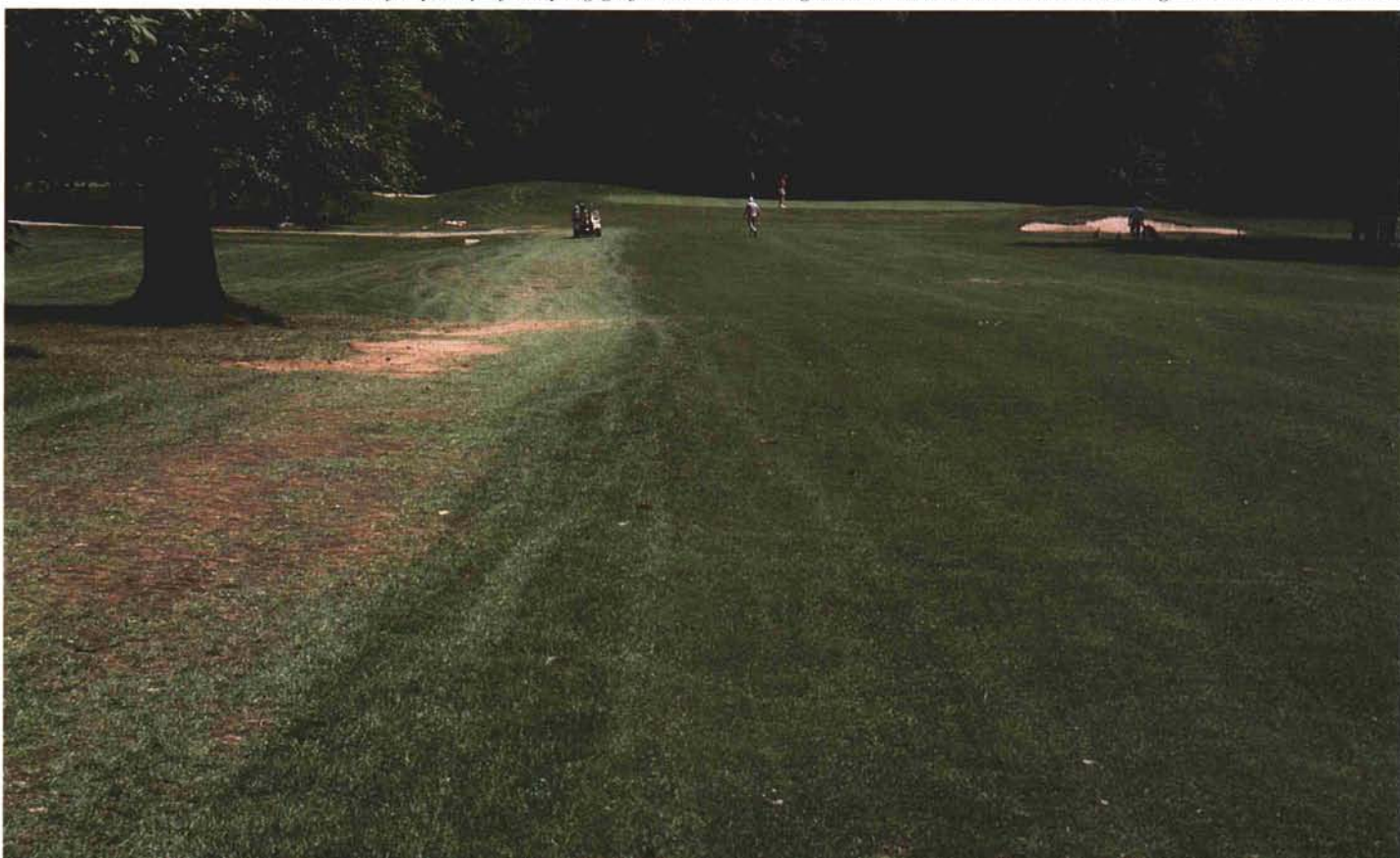
IT IS DIFFICULT enough to maintain uniform turf over broad areas of rough, given the effects of trees, different soil types, and varying terrain. The soil compaction and turf abrasion effects of golf cart traffic, though, can make the job particularly challenging, especially because generally the rough areas most severely affected by cart traffic receive the greatest play.

To grow good quality rough turf successfully under variable conditions and

heavy traffic, superintendents must follow the principles of turfgrass science adhered to on greens, tees, and fairways. Fertilization is among the simplest and most effective programs, yet it is underutilized on many courses. Regular fertilization increases turf density and vigor, promoting wear tolerance and recovery from wear and other damage, and produces a more uniform playing surface. It also helps minimize crabgrass and broadleaf weed encroachment. PH levels should be checked and adjusted with limestone, if it is necessary, to obtain the best results from the fertilizer. It is amazing what limestone can do to improve turf vigor on neglected rough areas where low pH levels have existed for decades. Rough areas that are in play should generally be fertilized at least once or twice each year, with heavily trafficked areas given several applications for wear recovery.

Irrigation is critical if good quality roughs are to be maintained, especially in trafficked areas. Irrigated rough turf

The results of a policy of keeping golf carts in the roughs at all times. Note that the damage is worse near the tree.



(Below) A typical undefined fairway/rough border addressed by (right) overseeding with ryegrass at the Knickerbocker Country Club, Tenafly, New Jersey, and by (far right) sodding with Kentucky bluegrass at the Park Country Club of Buffalo, in Williamsville, New York.



is normal in arid parts of the South and West, but it is uncommon in most northern areas where periodic summer rainfall is expected. During a dry summer, though, the only moisture reaching the roughs consists of water that extends from a single- or double-row fairway irrigation system. Sometimes this is adequate; often it is not. A golf course must then accept the decline of the turf, or else expand the irrigation program by running hoses and sprinklers to important rough areas from quick-coupler valves in the fairways. Some have expanded their fairway irrigation systems to three or more rows, to encompass more of the roughs. In important rough areas on the banks of greens and surrounding areas, two-speed heads or supplemental perimeter irrigation systems have become more common and more easily justified from a cost standpoint than systems running along great expanses of rough adjacent to fairways. One way or the other, though, turfgrasses need adequate moisture to grow and thrive.

AERIFICATION and other forms of cultivation are common on greens, tees, and fairways, and are needed as well in rough areas where soil compaction contributes to turf weakness. It should be done as often as needed to overcome the effects of golf cart traffic,

at least several times each year, typically in early spring or fall, when the soil is adequately moist and easy to penetrate. A new twist to the traditional program of aerification involves the use of the Verti-Drain aerifier in compacted areas where cart traffic concentrates. This unit uses long, solid tines that can penetrate to about 15 inches, and produces a kicking action that fractures the layers of hardpan. Soil porosity increases, improving root growth and internal drainage. Increasingly used on greens, tees, and fairways, the Verti-Drain aerifier should be used often in compacted rough areas as well.

Trees are among the most insidious causes of weak turf in roughs, as well as in greens and tees. Turf grown in partial shade will always be weaker and less tolerant of cart traffic than that grown in full sun. Less obvious, perhaps, but equally important, tree roots produce a negative impact on turf growth. They rob the turf of water and nutrients, quickly placing the grass under great moisture stress during dry weather. When stressed turf is then subjected to heavy cart traffic, it becomes thin much sooner than turf in clear areas. The effect of tree roots is often dramatically illustrated in areas where they've been cut, either intentionally or as a consequence of irrigation or drainage installation. Turf on the tree side of the trench is very often

thin, weak, and brown, while the turf on the other side, where tree roots no longer function, is lush, green, and vigorous. Recognizing that strong, healthy turf is more tolerant of cart traffic, and forms a more desirable playing surface, many courses prune roots along the tree lines in their roughs, leaving enough turf between the trench and the fairway to accommodate cart traffic and normal rough play. (See illustration.)

Root pruning around greens and tees typically involves cutting an 18- to 24-inch-deep trench between the trees and the desirable turf area, placing several layers of tarpaper or some other barrier along the wall of the trench to discourage the roots from encroaching, then refilling. Because this procedure can turn into a time-consuming and expensive project when dealing with trees along the perimeter of 18 fairways, some courses use a vibratory plow or stump grinder to trim the tree roots, a practice that must then be repeated every two or three years.

IN THE COOL, humid North, determining which grass species to cultivate had never been much of a consideration. It was generally the practice to establish new roughs with a mixture of Kentucky bluegrass, fine fescue, and perennial ryegrass, allowing each species to predominate in the particular area where it is



most adapted. This remains a good recommendation in the unirrigated ground, but fine fescues will never persist in rough areas that are irrigated, fertilized, and cultivated to accommodate cart traffic.

Kentucky bluegrass and perennial ryegrass form a good combination for the irrigated, trafficked roughs adjacent to the fairways, with the bluegrass contributing recuperative ability and the ryegrass wear tolerance. Trying to renovate bent/*Poa annua* roughs or establish new turf in thin, worn areas by overseeding the bluegrass and ryegrass into existing turf areas, though, presents problems because Kentucky bluegrass lacks competitiveness in the seedling stage, and it is rarely successfully overseeded into existing turf, either by itself or in combination with ryegrass.

This leaves three options for dealing with bent/*Poa* roughs or other existing rough overseeding needs:

1. Use straight perennial ryegrass at a rate of six to 12 pounds per 1,000 square feet, depending on the effect desired. This method sacrifices the recuperative ability and sod-forming characteristics of Kentucky bluegrass. It usually takes at least several years of overseeding to obtain good turf density.

2. Strip the established turf with a sodcutter, or kill it with Roundup, and seed a mixture of 80 percent Kentucky bluegrass and 20 percent perennial ryegrass on bare soil. This perhaps provides the best long-term results, but it requires patience during establishment.

3. Strip the existing turf and sod with Kentucky bluegrass. This method produces immediate results, but it is expensive, and it would require follow-up overseeding work with perennial ryegrass in highly trafficked areas.

AS THE USE of golf carts has increased at many golf courses, and the demand for top-quality fairway turf has grown, it was easy to restrict carts primarily to the roughs and avoid the compaction and abrasion effects carts cause to fairways. It became obvious soon, though, that this policy was having a negative impact on the appearance and playability of the most heavily played part of the rough. The problem is that when carts are restricted to the rough, golfers inevitably drive their carts immediately adjacent to the edge of the fairways. This confines and concentrates the soil compaction and abrasion effects of cart traffic to a narrow band of turf that eventually weakens and thins in direct proportion to the amount of traffic received.

Several different approaches can be taken to deal with the problem. One involves intensifying the maintenance programs in these areas, as discussed previously. Providing adequate irrigation and drainage, cultivating periodically, spraying for weeds, insects and diseases, overseeding as needed, fertilizing regularly, and following through with tree root pruning work would be among the recommendations at most courses.

Bent/*Poa annua* rough areas should be converted to Kentucky bluegrass and/or perennial ryegrass, and predominately Kentucky bluegrass or bluegrass/fine fescue rough turf should be overseeded with perennial ryegrass to increase its wear tolerance. Turf-type tall fescues are being successfully used in some areas, but rarely in the cool, humid North, where Kentucky bluegrass thrives. Finally, keeping the cutting height above two inches on cool-season grasses will increase wear tolerance.

The other approach to dealing with cart damage involves trying to distribute the traffic over a much larger area, thereby minimizing injury to the roughs adjacent to the fairways. This could involve one or more of the following strategies.

- Install cart paths and restrict carts to the paths, a) during wet or difficult weather conditions, b) at all times, c) on certain holes at all times.

- Allow carts to ride the fairways, a) when weather conditions are favorable, b) at all times if the fairway turf can handle it.

- Use painted lines, stakes, or stakes and ropes to direct carts away from the edges of the fairways. These items can be moved from week to week to facilitate good wear distribution.

- Move or remove trees located too close to the edges of fairways, or that restrict cart traffic to narrow, confined areas. Fairway sand bunkers sometimes cause the same problem, but they can often be redesigned or relocated to improve traffic flow.

In dealing with the increasing cart traffic on golf courses today, chances are both approaches will have to be taken to avoid damage to the roughs.

ONE OF THE MORE recent issues concerning the maintenance of roughs has to do with the intermediate cut. Once seen only during championship events on television, the intermediate rough is now routinely found on many courses, sometimes justifiably and sometimes as a faddish reaction to televised golf. Intermediate roughs, usually six to 10 feet wide and cut at a height intermediate between the regular roughs and the fairways, are certainly worthwhile when the regular rough is being cut at a height of 2½ to 3 inches or more. In this case, an intermediate height of perhaps 1½ to 2 inches serves as a penalty for just missing the fairway without being unduly harsh. An intermediate cut is also common on golf courses that have recently narrowed their fairways to accommodate lightweight-mowing programs, thereby placating golfers who would otherwise be irate at having to hit 25-yard-wide fairways.

On the other hand, it seems ludicrous to maintain a 1- to 1¼-inch intermediate rough when the regular rough is being cut at 1½ to 2 inches. Not only is it an extra expense to maintain the intermediate cut, but the definition between the fairway and the various rough levels is often lost as well. Officials at these clubs insist the intermediate cut is justified because the regular roughs often grow much higher between mowings during peak growing weather. It is better to eliminate the intermediate cut, but make an extra pass each week around the rough perimeter adjacent to the fairways, keeping this area at a more consistent level.

The height of the rough becomes a topic of controversy at many courses, a subject that has no right or wrong answer. In cool-season grass areas, heights of 1¼ to 4 inches or more can be found.

To talk about cutting heights can be misleading, though, because the difficulty of playing from a rough area de-

depends as much or more on the density of the turf as it does on cutting height. Such factors as moisture availability, soil texture, tree effects, grass species, and cultural practices could all affect turf density. For USGA championships, the roughs are designed to invoke a half-stroke penalty. To establish this degree of difficulty, a two-inch height might be all that is necessary at the Girls' Junior Championship, while a height of four inches might be appropriate for the U.S. Open. Thus, the appropriate height of cut at a particular course must be based upon the density of the turf and the desires and abilities of the golfers.

That tractor tires and reel mowers tend to mat the grass down rather than cut it off uniformly causes difficulties in maintaining roughs higher than 2½ to 3 inches, or trying to cut down rough that has grown out of control during a flush of spring growth. In answer to this, more and more courses are switching to rotary mowers. Rotary mowers tend to lift the grass and cut it uniformly regardless of height. They are also much more effective than reel mowers for cutting the tough seed stalks of grasses and broadleaf weeds. Front-mounted riding rotary mowers are ideally suited for trimming around trees and for mowing areas inaccessible to tractor-mounted reel units. They should be standard pieces of equipment at most courses today.

Many women and senior men golfers have a pet peeve: They complain of the

broad area of rough they often must carry to reach the fairway surface from the tee. As alluded to previously, these rough areas were established in an effort to reduce the number of acres that must be maintained with lightweight mowers or at fairway intensity. A reasonable rule of thumb suggests that the fairway should begin not more than 75 yards from the ladies' tee marker, nor more than 125 yards from the regular men's marker, depending on the distance between the various tee areas. An alternative is to maintain a broader intermediate rough cut at the tee end of the fairways, from which most golfers wouldn't mind playing. Also, the addition of forward tees might well resolve the problem on certain holes.

AS ANOTHER faddish trend, many courses today allow the grass to grow to its natural height on mounds, bunker banks, tee banks, and out-of-play rough areas, in the style of Shinnecock Hills, Cypress Point, and some other sand-based American and British golf courses.

Therein lies the key; turf growing on unirrigated, sandy, infertile soils tends to be rather sparse and fine textured, allowing a golf ball to be found and a shot to be reasonably hit even when it grows to a height of a foot or more. As they develop, the seed stalks lend a graceful, flowing presence to the golf course. On the other hand, when this style is

adopted at golf courses where heavy textured soil predominates, the result is usually disastrous.

Allowed to grow unhindered, the blue-grasses, ryegrasses, and other coarser textured species that grow well in heavier, fertile soils, become dense and matted, leaving an unsightly jungle where it is nearly impossible to find your ball, much less play a shot.

Allowing mounds and out-of-play rough areas to grow can be aesthetically effective and save a significant amount of mowing time, but it shouldn't be forced where the conditions aren't amenable. Also, allowing the grass to grow on a mound here and a bank there usually looks contrived and out of place. If it can't be done over broad areas of the course to provide some continuity, then it probably should not be done at all.

FOR MANY GOLF courses, maintaining roughs just isn't what it used to be. Time and money must now be spent on cultural maintenance programs designed to accommodate the heavy use of golf carts and the desire of golfers for a more consistent, uniform playing surface. These changes also lead to large capital expenditures for cart path construction and irrigation system expansion at many facilities. By giving careful consideration to the agronomic needs of the turf, cart use policy, and tree effects, the best decisions can be made for taking the roughshod out of the roughs.



(Above) The dramatic effect of tree root pruning designed to enhance the vigor and density of the rough turf adjacent to a fairway. Greenacres Country Club, Lawrenceville, New Jersey.

(Right) Perennial ryegrass patches survive where nothing else does on a heavily trafficked path across an unirrigated fairway. When it is overseeded into trafficked roughs, ryegrass lends wear tolerance to the turf stand.

