



A commercial sod was used successfully to restore the back corner of this green at Whippoorwill Club in Armonk, N.Y.

Restoring The Past

A look at green restoration techniques.

by JAMES E. SKORULSKI

GREENS CAN SHRINK. It's a fact. Many of us have observed this phenomenon at one time or another. The problem is usually most evident on older golf courses, but it can be seen on newer courses as well. The once uniquely shaped greens evolve into bland spheres. It was common for the dimensions of older greens to be modified drastically when labor and budgets were cut during the Depression and war years, and again when triplex mowing became popular in the 1970s. Repeated turf loss may be another reason for green shrinkage. Small-scale changes can also occur when a staff is overly conservative in mowing the perimeter pass. Southern managers, battling bermudagrass encroachment, can face similar green shrinkage problems.

In recent years, there has been a renewed interest in restoring greens back to their original dimensions.

There are several benefits that can be derived from such a program. Successful restoration provides challenging new hole locations that can bring surrounding hazards more into play and create interesting shots around the green. The additional hole locations can also be helpful for dispersing traffic more widely, a factor that is becoming increasingly important as play and green speed increase on older golf courses.

With all this said, you might think that restoration work is a good idea that should be implemented immediately, right? Well, maybe not. This is not a minor project, and in too many cases the efforts to restore lost green areas are implemented hastily and with little planning. This can result in severe turf thinning or complete turf loss. Initial failures can scare even the most strong-willed restorationists to abandon what was thought to be a good idea. This

scenario does not have to be the case, though. Green expansion, although time consuming and sometimes difficult, can be completed successfully if the program is well planned and the golfers are fully aware of what to expect during the restoration work.

Site Review

The first phase of the project is to determine the green's original perimeters. This can be achieved with help from a golf course architect, the original design plans, or old aerial photographs. The expansion areas often are recognizable as pads with a grade similar to the green itself. The underlying soils should also be similar in nature to the subsoils found beneath the green. Use a soil probe to help make this determination. The grass species in the areas to be expanded are sometimes similar as well, and may offer another clue as to the green's original dimensions. Finally,

take a step back and reevaluate those areas that you believe were once part of the putting surface. Determine if the benefits derived from restoring that particular area are actually worthwhile, and what long-term implications the restoration work may have on your greens maintenance programs.

Determining the greens' original dimensions is probably the easiest part of the restoration process. Developing an actual plan to convert the area back into putting green turf is more difficult. There are several conversion strategies that can be used successfully. The goal is to discover which strategy will be most effective for your specific conditions. The only way to determine this is to closely evaluate the areas you wish to restore.

It is critical to examine the growing environments in which the areas are located. Problems with excessive shade and poor air movement may be the reason why a particular area is no longer a part of the putting green. Do not pursue restoring such areas until the shade and air-movement problems have been addressed. Closely examine the soil profile and especially the thatch accumulation in areas you wish to restore. Poor-quality soils, the presence of soil layers, excessive thatch, or the type of grass are the biggest factors in deciding which restoration strategy is selected.

Other factors that influence restoration strategies are the traffic patterns on the greens and the location of sand bunkers. Areas of heavy traffic always will be more difficult to restore and may dictate complete renovation with sod. It may also be necessary to complete bunker bank renovation work before green restoration is pursued, or as part of the project. Irrigation sprinkler heads, piping, and wiring may also interfere with the restoration. Relocate the irrigation components before continuing the project further.

Developing A Strategy

The conversion strategies involve either gradual adjustments in mowing practices or complete regrassing with sod. Areas with minimal thatch and suitable grass varieties can be converted back to putting green turf through a gradual reduction in mowing height, with the work initiated in cooler periods of mid to late fall. The sod option often is used to convert areas that contain excessive thatch, are composed of inappropriate grasses, or suffer from soil problems. Both methods have

advantages and disadvantages that we shall explore.

A mowing conversion program is probably the most common method to restore collar areas back into putting green turf. Restoring turf cut at a higher height with this approach is more difficult and can result in failure if the mowing height is lowered too abruptly for the existing conditions. The quantity of thatch, in part, will dictate how the mowing conversion is pursued. Excessive thatch creates a spongy surface and elevated crowns, leaving the turf more susceptible to scalping injury. In this case, initiate an aggressive aerification, vertical mowing, and topdressing campaign to reduce thatch

as the thatch reduction program is in progress.

Proceed with the mowing program after the thatch is reduced, the surfaces firmed, and the plant crowns are protected. Late fall is an optimal time to begin slowly lowering mowing heights in increments of $\frac{1}{64}$ inch, on a 7- to 10-day schedule, until putting green height is obtained. A single, well-adjusted walk-behind machine should be used for this operation. Equip the machine with solid rollers to minimize wear stress during the conversion process. Expect some thinning to occur where thatch levels remain great, especially during stressful summer weather periods. Mowing heights can be raised



Nursery sod is carefully installed after underlying soils have been graded and rolled.

levels and firm the surface prior to lowering mowing heights. Such areas can be double-aerified in both spring and fall for this purpose. Remove the soil cores and thatch, and topdress to fill the aerification holes. Smaller-diameter ($\frac{1}{4}$ inch) hollow tines can also be used throughout the season, as necessary. The intensive aerification is helpful for modifying the soils and for overseeding purposes as well. This process may require a full season or more to prepare the areas for a lower height of cut. It may be possible to lower the rough areas to collar height

slightly during periods of heavy rain or heat stress to prevent or minimize the injury. Turf thinning will be less of a problem if the proper steps are taken initially to prepare the grass for the lower cutting heights.

A good quality nursery or commercial sod may be a better and quicker alternative for the restoration work in some situations. This is true if the areas are composed of inappropriate grasses, contain large quantities of thatch, require extensive soil modification, or where traffic is heavy. Utilizing your own nursery sod is the most desirable

option, assuming the nursery soils are identical to soils in the greens. This will help minimize potential soil layering problems and improve establishment success. Consider dedicating a portion of the nursery specifically for the restoration work. The turf in this portion of the nursery can be established using a blend of aerification cores and bentgrass seed. The resulting sod will blend more effectively with the turf in the greens.

Commercial sod can be used successfully as well. Take the time to procure a sod that is grown on a good quality soil that most closely matches the soil at your site. This may not completely eliminate concerns about soil layering, but it will make the establishment easier. Excessive thatch also is a concern when selecting a sod, for obvious reasons. Washed sod is another option that can minimize concerns about soil layering. However, establishing the washed sod in higher-traffic or perimeter areas may be more of a problem.

The sod installation should not vary widely from other sod work. The existing sod, including thatch and adverse soil layers, should be removed. Use your topdressing material to establish a finished grade that blends with

the original grade of the green. Irrigate and roll the surface to firm the soil and assure that the final grade meshes with the green. Install the sod, topdress the seams, and complete a final rolling. A water injection machine is well suited for this work.

Establishment practices are similar to those for any sod and will depend upon the quality of the sod itself. A nursery sod or very good quality commercial sod may require little preparatory work for the lower mowing heights. Sod grown on soils inconsistent with the greens or containing heavy thatch will require more preparation, including vertical mowing, aggressive aerification, and frequent topdressing before the mowing heights can be lowered. Small-diameter hollow-tine aerification is well suited to reducing the thatch or eliminating soil layers during the establishment period. Use the small tines soon after the sod is knitted, and continue with the practice, if necessary, on a four-week schedule as weather permits. Utilize solid tines or water injection for cultivation when weather conditions become more stressful. Aerification with larger-diameter hollow tines should be done in spring and fall, as necessary. Topdress the new sod lightly on a three- to four-week sched-

ule. Use a soft-bristled brush to incorporate the topdressing material carefully into the turf. Utilize mowers equipped with solid rollers to minimize wear injury during the turf's establishment. Mowing heights can be lowered slowly, in small increments, as the sod establishes and the surface firms. Do not rush the process!

Summary

Green restoration can be an intimidating project, especially if you have little experience with the procedure. It is a good idea first to complete a smaller, less difficult restoration project to become familiar and confident with conversion strategies and to show the golfers what to expect. Planning and initiating a large-scale restoration program will be simplified as a result. Green restoration is a worthwhile program that can bring new interest and challenge to a green complex. Thorough planning, patience, and maintaining an open line of communication with the golfers will make that program a success.

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Expanding a bent green into a Poa annua collar produced this result.



A restoration attempt fails as mowing heights were lowered too rapidly. Excessive thatch left the surface prone to mowing injury.