Pitfalls of renovation

by ALEXANDER M. RADKO,
National Director USGA Green Section

Somehow the golf course superintendent always faces a backlog of problems. The problems may have been built into original design in the form of poor drainage, small tees or imperfect greens. Additional problems may have developed as the course matured, including such things as soil settling, decay of buried trees and other debris or poor air drainage that developed as a result of excessive underbrush and tree growth around tees and greens. Whatever the cause, the remedy is to renovate—to renew the troubled area and to eradicate the problem.

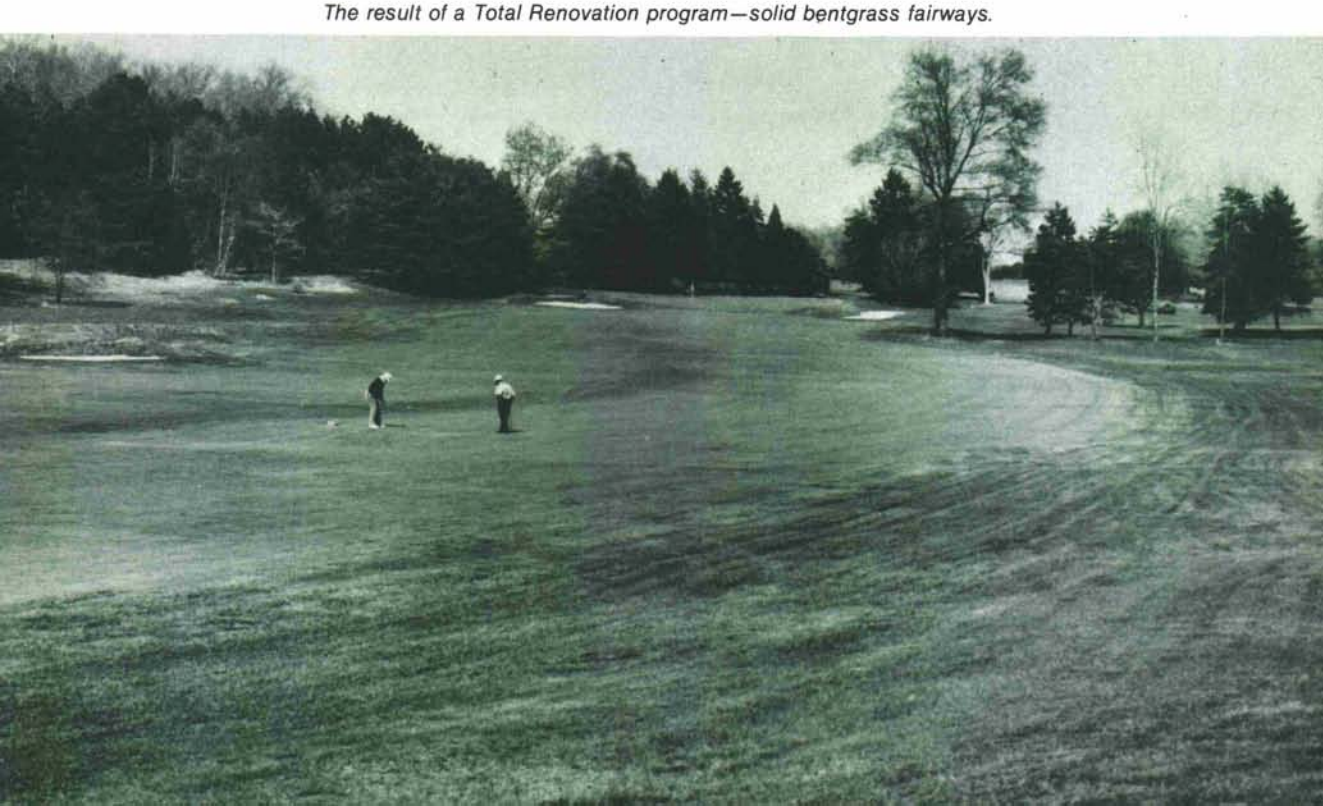
This is not always easy because golf course maintenance crews are limited in numbers and routine maintenance still must be done while the improvement is undertaken. The urge to skimp rather than go all out with renovation work is strong because of membership pressures. Members want improvements, but they get terribly annoyed when the work force is in the way of their golf or if a dues increase becomes necessary. Renovation involves much more than simply doing the work. It involves personalities and complaints and keeping the course playable while improvements are being made. Bear in mind also that often the problem may be one that the superintendent has never tackled before, so he must spend time to study all the ramifications involved. Each renovation problem involves "new wrinkles" and these must be studied carefully before work begins.

The first step in renovation is to diagnose the problem. For example: the problem may be one of all greens draining in one direction—to the front—making the approach excessively wet. Good shots to the green fail because they fall short and the approach is so wet that the ball just "dies" as it lands. The diagnosis; a poor drainage pattern; the solution: to improve the drainage run-off, to run it from the wet areas into rough areas, away from play. This must be done by collecting all the water that seeps to this area, and moving it away from this prime target by means of tile drains.

Almost any operation performed on the golf course might be classified as renovation. However, for purposes of this article, the term "renovation" refers to large-scale operations such as fall overseeding, major drainage improvements, rebuilding or enlarging tees or greens and any other project of major proportion.

Of course the first move in renovation is to diagnose the problem. Once determined, the problem is then written up covering all aspects of remedying the cause, a listing of materials required, cost estimates and each step in logical succession is outlined. The plan or program of renovation is prepared for the Green Committee Chairman

The result of a Total Renovation program—solid bentgrass fairways.



Fundamental problems must be corrected before renovation is undertaken.

and other club officials to inspect and relate to interested parties what will be done, at what costs, when and at what inconvenience to the golfer. Nobody likes unpleasant surprises, least of all golfers. A well-communicated plan goes a long way in smoothing over the "hurt of renovation." Having no plan or just "flying by the seat of your pants" can only mean trouble; something is always left out and something always goes wrong. Do not enter the renovation processes loosely. Have a complete outline of your plan.

Considerations in Fairway Renovation

The task might be overseeding the course to introduce permanent grasses into predominately *Poa annua* turf. The first step here is to check the pH and nutrient levels of the soils to see if they are suitable for growing the grasses you are going to plant. Next you must check drainage problems. If not corrected, no amount of renovation will cure a soggy low area from dying out annually after heavy summer rains. Next, you must use some sort of *Poa annua* suppressant. If not, the new seed will be taken over by the existing or new *Poa annua* that evolves after the aeration and thatching process. Very little new seed will germinate; it will be crowded out by *Poa*. There is no better way to perpetuate *Poa annua* than by annual aeration in early spring and late fall. If no *Poa annua* suppressant is used, you might best save your money, time and energy. *Poa annua* is going to win.

Choosing the right seed or stolons is important. Choices for the northern climate for fairways include the bentgrasses, bluegrasses, fescues and ryegrasses. Simply sowing the seed doesn't assure success because there are pitfalls in using some of these grasses on established turf. For example, any attempt to introduce a Kentucky bluegrass seed into a predominately *Poa annua* turf is virtually impossible. The bluegrasses take up to 21 days to germinate and this gives *Poa annua* too much of a head start in establishment. On the other hand, seeding Kentucky bluegrasses, the new perennial ryegrasses and fescues into predominately Kentucky bluegrass fairways is a good practice. This can be successfully accomplished! Seeding bentgrasses into an existing Kentucky bluegrass stand will provide results, since bentgrass germinates much quicker—usually within 7 days. Ryegrasses and fescues also are quick germinators; hence they do well in any established turf when they are overseeded.

Choosing the right seed mixtures and the correct seeding rates are also most important to successful overseeding. Normally lighter rates are recommended because of the limited space allowed by the thatch for new seed. If a thoroughly new seedbed is prepared (fallow ground), then full seeding rates are essential. In some cases, seed treatment is required so that the new grasses will not be affected by diseases after germination.

In the South, the choice of grasses is much

easier. The great Tifton varieties prevail. They have revolutionized golfing turf in the southern states. The Green Section has supported the research of Dr. Glenn Burton since 1946 and his work has made these developments possible.

The correct timing of each renovation process is extremely important. For example, there are several materials available for the control of *Poa annua*. What you use dictates subsequent steps to follow since the toxicity residual lingers and will affect what you seed as well as the *Poa annua* seed which is already present. Bensulide (Betasan or Presan), benefin (Balan), or DCPA (Dacthal) require a 3-month waiting period before new seed can be successfully established because of soil toxicity residuals. On the other hand, the use of growth retardants or non-selective contact herbicides such as Paraquat or Round-Up allow you to introduce new seed within days of application. The non-selective herbicides produce a scorched earth result; all vegetation is killed. With growth retardants correctly applied, only the *Poa annua* and the new perennial ryegrasses are killed off; other permanent grasses survive.

A good seedbed is essential to a good seed catch. The more open soil, the better the chances the newly planted seed will become established. Thatch and heavy turf growth are the primary reasons for overseeding failure because the newly planted seed never makes contact with the soil, except in aeration holes and grooves made by the thatching operation. Without question, the best preparation is to remove all the turf cover before overseeding. Overseeding fallow ground insures the best catch possible. Other techniques of seedbed preparation include the aeration of an area eight to 12 times prior to overseeding or the use of a thatcher-type seeder in two directions preferably.

Overseeding must often be performed when the turf is in its best condition of the year. *Poa annua* is a strong spring and fall grower but is pitiful in summer! It is the main reason why courses are experiencing so much difficulty yearly. *Poa annua* culture requires you to irrigate more often than you like; to mow more in spring and fall; to apply more insecticides and more disease control applications in the attempt to keep it healthy during the entire season. The extra watering makes the course soggy, causing flyers and softness in greens. Playing to soft greens requires far less skill than playing to firm greens. Soft greens take a lot of the finesse and pleasure out of seeing well-struck shots dance and hold as they should.

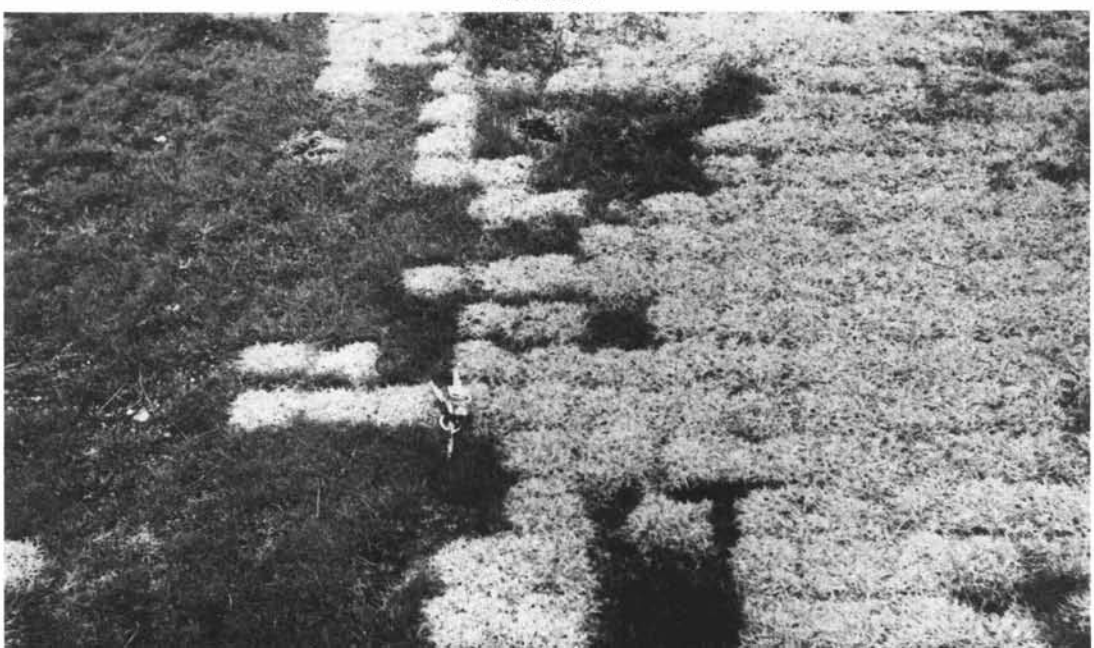
Suppressing Poa annua

The use of growth retardants (MH-30 maleic hydrazide or Maintain CF-125) will eradicate *Poa annua* if correctly used. One of the problems with the use of growth retardants is the fact that you must wait until early October in most northern regions for it to be superlatively effective in *Poa annua* eradication. This prompts a question as to whether to overseed then or to await the following spring to do so, or to attempt overseeding well in advance of October so that new seedling growth can withstand the chemical action of growth retardants. The latter most certainly places the newly overseeded grasses in jeopardy—the same as overseeding into thickly established turf; chances are slim for a good seed catch.

In most cases it would be best to seed late and take your chances that the permanent grasses that remain after herbicide application will make adequate growth before the cold weather sets in. In most cases it is surprising how much permanent grass is present under a thickly grown stand of *Poa annua* after it is suppressed. In some cases just the mere fact that you allow the permanent grasses some growing room will result in a good stand of desirable grasses. Therefore, if too late for seeding in October, take your chances and simply overseed weak areas in the following spring.

Bringing seedlings through to successful turf

New seed will germinate in fallow ground, not in thatch. Note that absolutely no seed has germinated in the thatch.



establishment requires skill in watering and some help from well-timed fertilizer application. One pitfall is to apply too much fertilizer and therefore resurrect a *Poa annua* stand from the seed that is everpresent in the thatch and soil. Within two weeks of seeding time, one-half pound of nitrogen provided by a chemical fertilizer (because of the fall application) should encourage seedling growth. This should be followed by another application approximately two weeks later. If growth retardants are used, it would seem logical to follow with a program of dormant feeding because the nutrients applied would be going entirely to the permanent grasses. Here a chemical or organic fertilizer could be used at rates of one to two pounds of nitrogen preferably applied in November and again in January at the same rate.

Prior to any major seeding operation, it is advisable to check out pH levels in the soil and to apply pulverized limestone at rates up to 1,000 pounds to the acre well prior to overseeding. Normally it is best not to exceed 1,000 pounds per acre on established turf because heavier rates will layer the soil, and soil layering is detrimental to good turfgrass management practices. If the soil is turned over and pulverized, then larger amounts of limestone may be added and worked into the soil.

Tee Renovation

Another area frequently requiring improvement and renovation is that of teeing grounds. Tees originally were built on private courses for possibly 300 to 400 rounds of golf per week. Golf in those days (1930s through the mid 1940s) at private clubs was a Saturday afternoon and Sunday morning event. Very little golf was played on weekdays. Occasionally a women's fourball would appear, but rarely did men come out during the week. After World War II, golf became everybody's game, and now play of 300 rounds per day is not unusual.

In an effort to modernize tees, adequate size is of prime concern. The minimum usable space has been defined by Green Section Agronomists as 100 square feet (on par-4 and par-5 holes) for every 1,000 rounds of golf played annually. Double this for par-3 holes where iron play predominates. Thus, if there are 40,000 rounds of golf a year on the course, the par-4 and par-5 tees should average about 4,000 square feet in size.

The soil materials found on tees often require correction. Modern tees are generally built of soils equivalent to those used in greens. Sandy soils that drain well and with subtle surface drainage are preferred. A depth of soil six inches minimum generally is required to improve tees. Furthermore, it is essential to thoroughly settle any new soil brought into place. Too often new soil is placed on the site and overseeded the same day with no thought given to proper settling. The settling of soil between terraces is also important because water funnels into any depression and not only causes a wet area, but also weak turf.

Normally a slight front-to-rear slope is desired on tees to insure good surface drainage. If terraces are present, provision for surface runoff of some type must be made.

Green Renovation

Greens, too, may call for renovation of one sort or another. Unfortunately, many greens should be rebuilt to correct the fundamental fault of poor topsoils and poor drainage. In the early days of construction, putting green soils were rarely modified to provide a medium for good growth. It wasn't until recent years, and as a result of Green Section supported research, that the need for greater amounts of sand and the need for using the right kind of sand were emphasized in putting green construction.

It is most difficult to introduce new ideas in any profession, but it has been my experience that the field of golf course management is one of the fields where new ideas are not quickly accepted, no matter how thoroughly documented. One of these concepts is the physical soil analysis that the Green Section Soils Laboratory at Texas A & M University provides for anyone interested in new construction. The Green Section Soils Laboratory is now located at Texas A & M University, College Station, Texas, and under the direction of two scientists who were prominent in effecting changes that are now defined in the "Refined Green Section Specifications for Putting Green Construction": Dr. Richard L. Duble and Dr. Kirk W. Brown.

A physical analysis determines the correct ratios for mixing the sand, soil and organic matter available at any particular club. The laboratory is also concerned with providing a good growing medium for deep roots, good internal drainage, adequate nutrient and water retention to sustain growth, resistance to compaction and a bulk density reading to determine surface resiliency. If too much clay and silt is mixed into the topsoil, greens will be compact and bulk density readings will be high. If too much organic matter is included in the topsoil mixture, greens will be soft and soggy. Soil tests which provide the physical analysis of soils also give the necessary information on bulk density of your mixture. It is important that your soils meet these requirements before construction is undertaken.

In Conclusion

Renovating and improvement projects are never ending on American golf courses. Perhaps this is part of the heritage we all share—wanting to make things better and never being satisfied with mediocrity! It's a noble goal. And avoiding the pitfalls of renovation will help us move ahead that much faster. No one has yet found a way better than, "Doing it right—the first time!"