

Fairway Renovation at Baltusrol

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One of the most challenging problems facing golf course superintendents today is the contemporary players' demand for high quality fairway turf throughout the season. Turf that will retain uniform texture and vigor and provide a satisfactory lie even under the stress of high temperatures and humidities during July and August is our goal. In too many cases the older, long-established fairways are unable to meet this requirement.

This is our approach to the problem at Baltusrol. I ask the reader to bear in mind that each club's situation is unique. Procedures that have worked satisfactorily for us may be neither necessary nor desirable under different circumstances. But if you have the problem of poor fairway turf, you may be interested in the program we have followed.

Our fairways consist of the typical northern mixture of bentgrasses and *Poa annua*. The summer of 1968 was hot and humid in this part of the country. By mid-August we had lost practically all *Poa annua* and the fairways were in terrible condition. I first contemplated aerating and slicing them in several directions and then overseeding. However, years of thatch accumulation was such that the thatching machine tore out enormous sections of sod, some as broad as the hood of an automobile, leaving large areas of bare soil.

This situation, together with newly germinating *Poa annua* and a moderate infestation of goosegrass, convinced me that the scorched-earth method would yield the best long-range results, and would certainly be no more unsightly or unplayable than conditions already existing.

After several discussions with my Green Committee Chairman and visits by Al Radko, Eastern Director of the USGA Green Section, and Dr. Ralph Engel of Rutgers University, the Board of Governors agreed to complete renovation of three of our worst fairways as a trial. We decided to work on two-thirds of the fairway only, leaving one-third untouched so that play could continue: our members could always count on 18 holes in play.

The results of the trial were most satisfactory, and we decided to proceed with total renovation of 29 holes over a three-year period—1969 through 1971. The seven fairways we are not including in the program were done 15 to 20 years ago by my predecessor, Ed Casey, who began a similar program. Unfortunately, it had to be abandoned because of adverse member reaction, but those seven fairways were the best on either of our courses many years after the job was done.

In the third week of July, 1969, all fairways to be renovated were sprayed with sodium

Allen Grogan, Green Committee Chairman (left) and Joe Flaherty, Superintendent, inspecting the renovated portion of fairway on left. Note Poa annua on unimproved one-third



arsenite at a rate of 20 pounds per acre, a dose strong enough to kill all vegetation. After burning was complete, we made two passes over the treated areas with an aeroblade to break up the dead grass and thatch for subsequent removal. All dead material was then pulled off the fairways with a York rake and removed to our compost.

A large percentage of old root fibers remained in the soil. However, these later proved to be a distinct advantage in the prevention of excessive hardness of our heavy clay soil during the first year of new growth when the young grass was not sufficiently mature to provide a cushion of turf. The old root material also held the soil against erosion during heavy rains. It enabled free use of the tractor and spreader to reseed thin areas with no concern about tracking. Players were able to enter the renovated areas to retrieve golf balls, even after a rain, without sinking in mud and disturbing the grade of the fairway. This year when the new fairways are opened for play, I anticipate that this root fiber will provide more comfortable walking for our golfers until the grass has matured into a resilient turf. It provided many advantages.

With removal of the old thatch completed, we now had bare soil, and seedbed preparation was initiated. My first concern was to incorporate lime as deeply as possible into the soil. We applied lime to the treated areas at the rate of two tons per acre, followed by six to eight

passes over the fairway with aerating machines.

These were set to the maximum possible depth. The transport wheels were completely off the ground and the machines were actually rolling on the spoons alone. We thereby achieved incorporation of the lime to a depth of about four inches and undoubtedly relieved soil compaction to the greatest possible degree.

We then made two more trips across the area, at right angles to each other with the aeroblade, pulverizing the soil clods that remained.

The new fairways were seeded to a mixture of 60% Astoria and 40% Seaside bentgrass at the rate of 90 pounds of seed per acre. An 8-foot seeder was used and spread the seed satisfactorily without the necessity of mixing it with any fertilizer carrier.

All areas were dragged with a 10-foot section of cyclone fence to cover the seed. This did the job very well and required no weights or attachments. One trip over the seedbed with our fairway rollers and the application of 200 pounds per acre of 10-6-4 fertilizer completed the operation.

Bentgrass germination and coverage was again very satisfactory by October 15, and no winter damage apparent as of April 1, 1970. There is very little *Poa annua* on the renovated fairways, and I'm quite certain that the bulk of the *Poa* seed present was removed with the old thatch last August.

The York rake removes the thatch but leaves the root fiber which makes for a comfortable and firm seedbed.



The importance of making seed contact with soil. The presence of thatch, even though burned, prevents new seed from germinating.



On April 9 thru 11 of this year we applied tricalcium arsenate to the renovated areas at a rate of 500 pounds of bulk material to the acre, or approximately six pounds of active ingredient per 1,000 square feet. We plan to continue this program in the future to inhibit *Poa annua* reinfestation.

A Special Situation

Fairways Number 2 and 4 on the Upper Course required a somewhat modified approach. Due to their topography, treatment with sodium arsenite and complete removal of all cover would result in an unjustifiably high risk of topsoil erosion should heavy rains occur before the new grass was well established.

On these two holes we applied tricalcium arsenate over the entire fairway at six pounds per 1,000 square feet in early April, 1969. By August 1 the *Poa annua* was completely eradicated, with isolated patches of bentgrass remaining to protect the slopes from erosion. We then followed the same procedure as on the holes completely burned with sodium arsenite; i.e., aeration, pulverization, removal of the dead material with the York rake, limestone application, more aeration, and finally seeding and fertilization.

I've heard the statement that when calcium arsenate eradicated our *Poa annua*, we would be pleasantly surprised to find a higher percentage of bent in the fairways than we originally thought present. In my case I found quite the opposite to be true. Many areas I had assumed to be colonial bent proved most definitely to be *Poa annua*. Germination of the new bentgrass was just as successful on these two fairways, previously treated with calcium arsen-

ate, as on the areas where the chemical had not been applied before seeding.

Let The Member Know

The most important consideration of all in a renovation program of this magnitude is public relations. The approach must be from a management-public relations viewpoint rather than a strictly agronomic approach. The membership should be well prepared for the considerable, though temporary, inconvenience they will face on the golf course. A letter in which the program was thoroughly discussed was sent to every member. Reasons for the necessity of renovation were carefully explained, operating procedures were outlined and the general scope of the project was detailed. We hoped to obtain not simply forbearance, but enthusiastic endorsement of the program by the membership.

At no time was it necessary to close a hole. As explained earlier, one-third of each hole was left untouched from tee to green, and the renovated portions treated as ground under repair.

This procedure may, at first glance, seem a bit awkward from a viewpoint of efficiency, but we believe the important goal is the treatment of a specified number of acres each year rather than the completion of an entire fairway at one time. Membership complaints are minimized when they can see work progressing as scheduled, and yet have a full 18 holes available for play at all times.

At the beginning of the program the Board of Directors must thoroughly understand that the club is at the threshold of what is, in essence, a long-term rebuilding project, the fruition of which is unlikely to be seen in its en-

tirety for five years. Each member of the Board must be prepared to face considerable dissatisfaction at about the three-year mark, when some members will become understandably exasperated. They are tired of arriving at the club each August to find another section of the course torn up.

The Board must be convinced that the program will yield a great improvement when it is completed, and it must be resolved to see it through to completion even in the face of adverse reaction. In the absence of such resolution, the program will probably never be completed, and would be better not started. The end result would be a golf course that is a patchwork of good and poor turf, creating a drone of dissatisfaction for the indefinite future.

I have described the general approach of our club to the upgrading of fairway turf to a standard commensurate with the modern demands of golf. It is an admittedly drastic method, but in my opinion it's the one that will produce the best results in the shortest time. The areas renovated are completed in one operation; there is no necessity for subsequent treatments in following years except for the maintenance of the calcium arsenate

level. It's an operation which lends itself to organization, mechanization, and efficiency.

Our costs, including labor, seed, lime and fertilizer amounted to \$400 per acre. The major factor which will cause variations in this figure is fluctuations in the price of seed, which promises to be considerable in the coming years. The cost of calcium arsenate is not included in the per-acre renovation figure, since it will be applied annually in the future and, hence, is included in our regular maintenance budget with other herbicides.

I feel that our approach to fairway improvement is worth consideration by clubs facing extensive loss of fairway turf each summer due to undependable *Poa annua* and unmanageable accumulations of thatch. The success of the program depends on careful research of the problems at the particular club, determination of management to pursue it to fruition, and thoughtful organization of the mechanical procedures to be followed so that the job can be done with maximum efficiency. To date, I am very well pleased with the results. At Baltusrol we are on our way to finer summer fairway turf, adaptable to modern demands even under stress conditions.

The thatch is raked into the rough and soon removed.

