

Fairway Maintenance and Improvement — The Total Approach

by Bruce Williams

Great strides were taken during the 70's in golf course management. During that decade we saw great advances in chemicals, equipment, cultural practices, and fertilizers. The demand for golf courses increased during this period and along with it came the demand for improved playing conditions. Fast and true greens are now expected at most golf courses today. The golfer of the 80's expects only a slight variance in the greens from one golf course to another. It has become a foregone conclusion that the Golf Course Superintendent will provide a high quality putting surface.

Our eyes have now turned to the condition and playability of the fairways. Improved fairway conditions set the better courses apart from the others. This is the demand of the golfers of the 80's. Today I will try to show you some of the approaches we have taken at Bob O'Link Golf Club to improve our fairways and practices that will maintain this improved condition.

It is important to note that, when we speak of fairway maintenance, the Superintendent is usually dealing with the native soils. In many cases we have clay soils located in flood plains which drain rather poorly. We must make the best of whatever conditions the natural soil and terrain provide.


In 1977 we began a long range plan to accomplish two objectives with our fairways. The primary concern of the members was to enhance the playability of the fairways. The natural approach would be to reduce the height of cut and reduce the amount of irrigation. As we all know, this is easier said than done. The secondary concern was that of the Golf Course Superintendent in trying to keep the fairway turf alive at a reduced height of cut and on a reduced irrigation schedule. Things were already tough enough without putting additional stress on the fairway turf.

DRAINAGE — Without a good drainage network it is nearly impossible to establish and maintain good turf. At Bob O'Link, the golf course was working with the original drainage system installed in 1916. Over the years the system had been repaired, updated, and expanded but was not producing optimal results. Over a 3 year period we replaced any of the deteriorating main lines or laterals. On every fairway we installed new laterals as it was cheaper than repairing the existing laterals. Two additional men were employed during those 3 years and on the average we used 5 men on the drainage project Monday through Friday. We installed over 33,000 ft. of 4 inch perforated PVC on 14 fairways and backfilled the trenches to the surface with #5 stone. The project cost was roughly \$60,000 for labor and \$40,000 for stone and drain pipe.

IRRIGATION — The initial automatic controls for our automatic irrigation system were 15 years old and no longer reliable. Timing was erratic and our central control barely holding its own. A decision was made to convert our existing field controllers to the Toro VT 3 system and then install the compatible central control. The project was completed in less than a week and we now have accurate timing for our sprinklers. It's always nice to have a head run for 5 minutes when programmed as such rather than running for 2 minutes or sticking on a station for 60 minutes or longer. The use of solid state controllers, replacing electro-mechanical controllers, enabled

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us to run the system with a high level of accuracy. We currently employ one full-time man to operate, repair, and maintain our irrigation system and pumping plant.

WETTING AGENTS — As I have mentioned, the improvements in our water application and drainage, it is important to note that the use of the wetting agents on our fairways has been a successful program. Our best results were shown using 4 applications of Aqua-Gro at 8 oz./M at 30 day intervals starting May 15th. The wetting agent helped water percolation, drainage, and enhanced root development.

With an improved irrigation system, an improved drainage network, and the use of wetting agents it was much easier to limit the amount of water applied to the fairways. Moisture continuity developed and the number of wet spots and localized dry spots were kept to a minimum. Our objective of drier fairways was met.

The better golfers prefer a tight fairway lie so that they can hit the ball cleanly with the club face and eliminate fliers. In order to do this we must provide a dense, healthy, upright plant so that the ball sits up. The golfer of the 80's now demands higher turf quality on the fairways resulting in greater playability. I will now touch on several areas that are part of our long range program to meet this objective.

MOWING — Several years ago we experimented with the use of lightweight mowing equipment and clipping removal for the fairways. The results after one year of clipping collection with the Turf Pro 84's were outstanding. We followed the work already done by Superintendents such as Al Muhle, Cal Gruber, and Tony Bifano. This topic has been covered at length in recent years so let it suffice to say that the members of Bob O'Link were impressed with the program and we will use 3 new HF-5's with baskets to mow all of our fairways in 1984. Our height of cut on the fairways varied from $\frac{3}{4}$ to 1 inch in the 1970's. We now mow at $\frac{1}{2}$ inch in the beginning of the season and raise the mowers to either $\frac{5}{8}$ or $\frac{3}{4}$ inch depending on stress. What was formerly the low end of our cutting height is now the top end of our cutting height range. By removing the clippings we have noticed a reduction in disease incidence, an increase in the bentgrass population, and reduced temperatures in the turf-grass canopy.

FERTILITY — During the early 70's recommendations for fertility on fairways may have been as high as 6 lbs. N/M per year. Research has shown that in the north central part of the U.S. we can now feel comfortable with 3 lbs. N/M annually. With clipping removal we must increase our fertilizer requirements by about 20%. We apply $1\frac{1}{4}$ lbs. N and K/M in December with $\frac{1}{2}$ of the N being Urea and the other $\frac{1}{2}$ sulfur-coated Urea. A $\frac{1}{2}$ lb. application of the same material is used in early May, late August, and in October. The seasonal fertility ratio is 3-1-4. High levels of sulphate of potash enhance the heat and drought tolerance of the turf and make the leaf blades more rigid.

AERATION — Aeration equipment came a long way during the 70's and the new equipment allowed us to take more cores and have deeper penetration into the soil. Some Superintendents actually used a greens aerifier for troublesome spots on the fairways. Well if the Greensaire was beneficial to the worst parts of the fairway, why couldn't it improve the entire fairway? Again we followed the lead of several other Superintendents

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and used the Ryan Greensaire to aerate all of our fairways beginning in 1980. Using 4 aerifiers we aerate 2 fairways per day. Machines are lubricated hourly and oil changed daily. Plugs are dragged with a cyclone fence drag mat and then the residual thatch and vegetative matter are blown to the center of the fairway for pickup. The deep penetration and close proximity of holes gives us a super job. Using this method once a year in the Spring we have reduced our thatch level and aided water penetration into the soil.

PEST MANAGEMENT — Weeds have not been a problem in our fairways with the exception of an occasional patch of clover which we spot treat. Insects were never a problem on our fairways but along with the 80's came a new pest, *Ataenius spretulus*. We treat our fairways with 40 lbs. per acre of Of-tanol 5G to solve this problem. Last season we also treated the fairways for cutworms after finding populations as high as 15 per square foot. Our disease control program is preventative using alternating applications of contact and systemic fungicides.

A typical season would start off with 2 applications of Actidione RZ at 1.2 oz./M in the Spring. This would be followed with:

Bayleton - 1 oz.

Daconil 2787 - 3.7 oz.

Bayleton - .6 oz. + TGF ½ oz.

PMAS - .8 oz. + AD Thiram 2.14 oz.

26019 - 1.5 oz.

Bayleton 1.0 oz.

and for snowmold control PMAS - 1.0 oz. + Thiram 4 oz.

Until 1983 Pythium was not much of a problem and we only spot treated when pythium was visible. With more than 40 days in the 90's last summer Pythium was probably our largest fairway problem and we made five applications of Banol or Subdue at 2 oz/m. Fairways with clippings removed had less Pythium pressure than those mowed with conventional gang units.

ROOT PRUNING — Root pruning has become necessary since the height of cut has been reduced and the application of water limited. The trees that cause the fairway turf the most problems in their struggle for moisture are elms, willows and cottonwoods. Whenever we see a localized dry spot in a fairway with one of these trees nearby, we immediately root prune. A trench is dug in the rough at a depth of 2-3 ft. The trench is lined with tarpaper and then backfilled with gravel.

We are currently experimenting with several products which might improve our fairways.

Evaluation of Tri Calcium Arsenate is scheduled for 1984 and we will also expand the testing of Rubigan, a sterol inhibitor, for the suppression of *Poa Annua*. Aqua Gro and Embark show some promise for reducing seedheads on *Poa Annua*.

Our long range plan for fairway improvement has been quite successful. Our members are pleased with the playability of the fairways. The ball gets more roll and flier lies have been eliminated. It is certain that such a program is not inexpensive. Yet, the cost of improved fairways is not prohibitive. Once the permanent improvements of drainage and irrigation were completed at a cost of \$130,000 then we are only dealing with 3 increased expenditures annually. Mowing with clipping removal costs an additional \$10,000 per year. Aeration with Greensaires costs an additional \$6,000. The use of wetting agents costs \$3,000.

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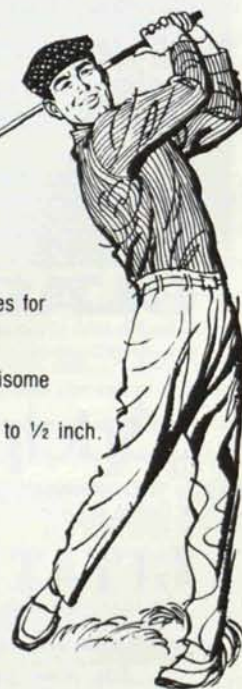
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"April Springboard"

by **Kenneth R. Zanzig**

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