

An Organic Approach to Golf Course Management

An island mandate becomes reality.

BY JEFFREY W. CARLSON



A blend of Tiger colonial and L-93 creeping bentgrasses, with Jamestown II chewings fescue, has produced quality fairway playing surfaces that tolerate the most prevalent disease on the golf course, dollar spot.

In November 1998, I joined a team of developers to build a golf course on the island of Martha's Vineyard, situated just off the coast of Massachusetts. A year and a half and a mountain of paperwork later, this abandoned 148-acre lot subdivision gained approval for a private 18-hole golf course. One of the 36 conditions of approval was that the golf course be managed with natural organic fertilizers and without traditional pesticides. With faith in some of the recent advances in turfgrass research, a concern for the future of pesticide use

in the United States, and a history of not always thinking through the long-term ramifications of my actions, I accepted the position as construction and grow-in superintendent for the new, organically managed golf course, The Vineyard Golf Club.

PLANNING AND CONSTRUCTION

Realizing the challenges that lay ahead, we invested a great deal of time working with the architects Donald Steel and Tom Mackenzie, the USGA Green

Section, and various local universities to determine the most effective construction techniques, help identify potential pest problems we were likely to face, and select grasses and materials that would provide the greatest chance for success. We cleared more than 30,000 trees from the site, disked forest litter into existing topsoil to improve its structure and organic content, and seeded with grasses deemed to be most resistant to the diseases common to the area. All of the greens were lined with plastic, and lysimeters were installed at



Managing dollar spot disease without fungicides can be a trying experience, as illustrated on the experimental practice chipping green. A combination of sound cultural practices and the use of several bio-products have reduced the disease pressure and damage on the regular greens to an acceptable level.

the exit points. Ground wells also were installed along the perimeter of the property to measure nitrate nitrogen leaching on the site.

Evaluating these techniques five years later, I am glad we modified the sandy topsoil, but I wish we had cleared even

more trees and had not been forced to install the liners that have since impacted drainage in the USGA greens. Conversely, we were fortunate to be able to choose from varieties of newer and more disease-resistant grasses, and we have unexpectedly benefited from the

requirement to install the monitoring wells.

The benefit was realized when abutting homeowners reported nitrate levels in excess of the state drinking water standard in their wells. Immediately, all fingers pointed to the golf course as the source of the contamination. Armed with well records that verified that groundwater exiting the property never exceeded the state threshold, the local board of health agent and county water resource planner were able to demonstrate to the homeowners that their individual septic systems were the probable source of contamination. Had we not installed those wells prior to grassing and had we not routinely disclosed our results to the local authorities, the golf course may have been liable for the installation of a municipal water and sewer system at an estimated cost of \$1 million.

THE EARLY YEARS: BATTLING DISEASE

The grow-in period proceeded rather smoothly and the golf course opened with a great sense of accomplishment. A combination of aggressive nitrogen fertility, timely applications of *Pseudomonas* tx-1 (Bioject), and traditional cultural practices typical for a new course made this superintendent feel pretty confident. There was some light dollar spot and scattered take-all patch active by early summer, but it did not seriously impact the turf or playing conditions. Disease pressure intensified as the weather became more severe in the summer. The bottom fell out as dollar-spot disease severely damaged the greens and tees. *Pythium* blight and brown patch, which are rarely problems on Martha's Vineyard, also became active with the unusually high temperatures and humidity occurring that summer.

So, it was back to the drawing board. We re-evaluated our existing programs and modified the organic management plan by reducing nitrogen and water inputs, altering the *Pseudomonas* delivery



Above: During the golf course planning stage, we did not fully comprehend the extent of damage associated with crows and skunks in search of white grubs on an organically managed golf course. Right: An innovative approach is often required when managing a golf course without traditional pesticides. Because no curative means of controlling oriental beetle grubs was available, we instead targeted management efforts against crows, skunks, and raccoons that were damaging the surfaces while in search for the grubs.



system, and supplementing the program with the bio-pesticide Ecoguard. We diligently continued to remove dew every morning and to topdress and aerate the greens both conventionally and with the Toro Hydroject machine. The disease activity eventually waned and the turf recovered everywhere except on the sixth and ninth greens, which were located in more shaded and stagnant growing environments. Forty pitch pines were subsequently removed, and one year later the sixth and the ninth are two of the healthiest greens on the course.

YEAR 3: THE YEAR OF THE GRUB

With disease pressure somewhat under control, our confidence once again began to grow, at least until the oriental beetle, *Exomala orientalis*, decided to call

the tees, fairways, roughs, and bunker banks home. The real fun began that fall when a sizeable number of Martha's Vineyard's skunk and crow populations discovered a new food source. At the height of the feeding activity, I measured the damaged surface areas and found that as awful as things looked, we still had in excess of 99% healthy turf on the course. Needless to say, we had to meet this new challenge and are doing so with the help of Dr. Pat Vittum from the University of Massachusetts, who is using the site to investigate several biological control options. We also realized we had to deal with the here and now, so we turned to our own "Carl Spackler," Walter Walodyka, the island's only skunk and crow removal expert. Walter's aromatic pickup truck has become a common site roving over the golf course in spring and fall, trapping

the skunks and crows and removing them from the property. We have learned that organic insect management is much more "in your face" than the timely application of an insecticide . . . just ask our members.

YEAR 4: WHAT LIES AHEAD?

So then what is our next challenge, our new frontier? Our battles with disease and insect pests will continue. We anticipate weeds to emerge as a major challenge in our organic management program. Annual bluegrass and broad-leaf weeds are beginning to encroach into playing areas and roughs. Our current approach is to keep the weeds under control through a hand-weeding program. However, we realize that without a selective chemical means of control, this weed problem will evolve into our next major challenge.

The Vineyard Golf Club

- This is predominately a walking golf course.
- Traffic is relatively low at less than 10,000 rounds annually.
- Less than 1% of the grass on the property is annual bluegrass.
- There are few trees impacting any playing areas, and there are no plans for future tree planting programs.
- The island climate is temperate. The temperature is rarely above 90 degrees, and the wind almost always blows.
- Our members are very aware of the unique restrictions that have been placed on the course and have been steadfast in their support and enthusiasm for their course.

WHAT HAVE WE LEARNED?

- This effort is a work in progress. We anticipate that new challenges will arise, and programs and practices will evolve to meet those challenges.
- The organic limitations force us to be creative and flexible and think outside traditional management parameters.
- A proactive management style is critical for success in an organic turf management program.
- More information about non-traditional pest management is needed if we are going to remain successful in combating pest problems without traditional pesticides.
- Perception of pest damage often varies widely between those who manage the turf and the golfers. We receive very few complaints from the golfers as long as green speed, surface smoothness, and good tight lies are provided.
- The turf manager and golfers alike must adopt a different attitude when working in this new frontier.
- Open communication with the membership and local community is critical to success!

Before any evaluation of the organic management program can be made, qualifiers that have made our programs a success must be acknowledged. The unique location of the golf course provides a temperate climate with frequent wind and moderate temperatures. The

facts that the golf course is new, provides good grass-growing environments, is well drained, and has minimal populations of annual bluegrass are helpful. We also are very fortunate to have informed members who remain supportive of the programs and who understand the unique challenges we face.

Looking back to 2001, I was not sure I would be here in five years to write a story about the organic management program at The Vineyard Golf Club, or that there would even be a course to write about. By combining the latest products and research with an understanding and informed membership, along with an extraordinarily dedicated staff, we have a golf course that everyone is proud of. Last summer our staff received its greatest compliment when one of our members told me he had a guest play 18 holes with him for the first time. Only after they had finished the round and were having lunch did the member have to "remind" the guest that he had just played an "all organic" golf course.

JEFF CARLSON, CGCS, a two-time national winner of the GCSAA's Environmental Leader in Golf Award, supervised the construction and grow-in and is the superintendent of The Vineyard Golf Club.



We anticipate that weeds will become our next major challenge as the golf course continues to mature. We have implemented often labor-intensive, non-chemical means of weed control and continue to search for new alternative management options.