




STORY AND PHOTOS BY LARRY AYLWARD, EDITOR IN CHIEF

Thinking-Man's Superintendent



Jeff Carlson is always looking for alternative ways

He earned an English degree but Jeff Carlson ended up working in the golf course maintenance profession. With that background, the literary Carlson could write a book about how he has become one of the brainiest golf course superintendents in the business.



The 60-year-old Carlson, superintendent of the Vineyard Golf Club on Martha's Vineyard, is always thinking of ways to do things differently on his course, from controlling dollar spot to killing dandelions, because the links-style course is prohibited from using conventional pesticides. That's quite a challenge, considering the Vineyard is also a high-end private club where golfers, from actor Bill Murray to Boston Celtics star Ray Allen to President Barack

Obama, expect excellent conditions.

"The golf course has come a long way," says Carlson, who has been with the Vineyard since the project was conceived in 2000.

Carlson and his crew rely on organic pesticides and fertilizers, and myriad cultural practices to maintain the course, which gets less than 10,000 rounds a year. Carlson is confident about the practices he has implemented. It's no wonder.

On a recent summer day on Martha's Vineyard, where a slight ocean breeze blows across the island, the turfgrass at Vineyard Golf Club looks healthy and vibrant. Carlson studies the 12th green as he walks across it. There's evidence of dollar spot in the bentgrass, but not enough for even the most persnickety of golfers to gripe about.

While Carlson knows his course's greens look as good as most country clubs' greens, he's not smug about it. He knows a turf disease could arrive



to maintain turfgrass. **He must.**

like a thief in the night, and he doesn't have the arsenal of synthetic fungicides to stop it in its tracks like most golf courses do.

"I'm knocking on wood like crazy," Carlson says.

With English degree in hand ...

Carlson was born near Buffalo but was raised in western Connecticut. He attended Drew University in Madison, N.J., where he earned his English degree. After graduation, Carlson moved to Cape Cod, where his family owned a home. It was 1971, and the well-educated Carlson had no idea what he wanted to do with his degree. But Carlson knew he liked to play golf, so he went to work on the tiny maintenance staff at Brewster Golf Club, a nine-hole course on Cape Cod, which has since changed its name to the Ocean Edge Golf Club.

After a year, Carlson was promoted
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to assistant superintendent at Brewster. He liked the business so much he enrolled at the University of Massachusetts to earn a turfgrass science degree. When Brewster's superintendent left in 1975, Carlson was promoted to the position.

While Carlson has a reputation for being an ecologically minded superintendent, he doesn't believe pesticides hail from Hades. Carlson is a product of his environment, literally, when it comes to turf management. He has worked most of his superintendent life in southeast Massachusetts, near the coast. It's an environmentally sensitive area, where government restrictions on pesticide and fertilizer use are as common as sellouts at Fenway Park. Carlson came to the Vineyard from Widow's Walk Golf Course, an environmental demonstration course in Scituate, Mass., on the coast between Boston and Plymouth. Carlson relied heavily on organic pesticides there, although he used synthetic products sparingly.

There are four courses on Martha's Vineyard — two nine-hole and two 18-hole tracks. Carlson says the other courses, which have been open more than 30 years, are allowed to use pesticides, although they use them minimally.

As expected, there was public backlash when it was announced in 2000 that a new golf course would be built on



Martha's Vineyard, whose residents are very protective of their island and careful not to let in anything perceived as environmentally unwholesome. A "Ralph Nader for President" bumper sticker doesn't stand out in Martha's Vineyard like it would in a place like Peoria, Ill. The locals opposed the course mainly because they were worried any pesticide or fertilizer use could negatively impact the island's water quality.

Dandelion patches are located throughout the course in designated areas.

Meanwhile, Carlson was consulted for the Vineyard project. Developer Owen Larkin heard about Carlson's work at Widow's Walk. Larkin figured he'd have to go down a similar road with his course if he wanted to get it built.

In the end, the course was allowed to be built with a few catches, one being that it had to be maintained organically. That was mollified by the locals, who backed off their protests. Larkin then offered the superintendent position to Carlson, who was apprehensive about taking it considering he wouldn't be able to use *any* conventional pesticides. But after thinking about it, Carlson decided he was up for the challenge.

The cultural king

Carlson is one of the brightest superintendents in the business — because he has to be. Since he can't rely on a synthetic herbicide to remove a patch of clover, Carlson must get creative in his approach to eradicating it.

For instance, Carlson's crew rolls the greens every morning before mowing them. Joe Vargas, the well-known turfgrass professor from Michigan State University, advised Carlson to do this to help control dollar spot. Carlson says he rolled his eyes

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Up close and from a distance, the long-stemmed dandelions resemble wildflowers, not weeds.

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when Vargas first told him of the practice, but he eventually bought into it.

"[The process] knocks the dew off the greens, which means we get a better quality cut because the mowers aren't picking up all that water," Carlson says. "It has cut down on dollar spot activity. [Rolling] also gives us more green speed, which the members love."

On a foggy morning, a few workers are removing dew from approaches with squeegees. Another team is dragging fairways with a hose to remove dew. Carlson admits his dew-removal program is more intense than the norm, but it's a vital cultural practice to manage turf disease.

"We get rid of dew any way we can," he says. "Dew is full of sugar and creates a nice environment for disease."

Dollar spot is the top disease threat on the course. Pythium also poses problems. Carlson almost lost two greens a few years ago because of a pythium outbreak. Brown patch and copper spot also make annual appearances.

"We get a lot of diseases," Carlson says. "We just have to manage them day-to-day."

Carlson uses biofungicides, including Rhapsody from AgraQuest, EcoGuard from Lebanon-Turf and Civitas from Petro Canada, to control disease weekly. "There are several organic fungicides that work well," Carlson says. "There's real progress being made for managing fungus disease organically."

Scott Houston, business manager for AgraQuest, says biological fungicides have come a long way even from 10 years ago when many of them were perceived as snake oil. "Their credibility is growing," he adds.

Carlson has also relied on improving airflow as a cultural practice to combat turf disease. For instance, Carlson had trees removed around the 17th green.

"We removed the trees and got better air circulation around the green and knocked the disease out just by managing the microclimate," he says.

Being a newer course, Carlson says the Vineyard benefits from having newer grass varieties bred to resist disease better than older types. Carlson says he's impressed with the way Penn A-1 bentgrass fights off disease on the greens.

"We also don't have a lot of annual bluegrass, which is a real vector for disease," Carlson says, adding there's little *Poa annua* on the course's greens partly because it can't sprout amid the dense A-1 bentgrass. The fairways are comprised of fescue and colonial bentgrass, two varieties also known to thwart disease.

It took Carlson a few years to imple-

ment a reliable insect-control program. Early in his tenure, Carlson battled turf-root-eating Oriental beetle grubs that caused damage throughout the course. Matters were made worse when skunks and crows dug up the turf to eat the grubs. "It was really discouraging," Carlson says.

Carlson consulted entomology professor Pat Vittum from the University of Massachusetts on what to do to control the grubs. Vittum recommended nematodes, which Carlson introduced to 40 acres of the course in 2007. "We sprayed all the fairway areas, tees and greens — everything," Carlson says, adding the nematodes have worked splendidly.

Carlson has taken notice of a few new environmentally friendly synthetic insecticides released recently, including DuPont's Acelapryn for grub control. Carlson says Vineyard formed a committee to study the feasibility of using Acelapryn, which received a reduced-risk classification from the Environmental Protection Agency.

"Pesticides are much more benign than they used to be," Carlson says.

Mark Coffelt, DuPont's global development manager, says Carlson probably likes Acelapryn because of its low water solubility, which is one part per million.

"You want that around water, especially on Martha's Vineyard," says Coffelt, who predicts golf courses in 10 years will use a mix of synthetic and organic products.

Weeds are Carlson's toughest challenge. There are no reliable bio-herbicides to kill broadleaf weeds. The course makes good use of dandelions, which inhabit designated areas along maintained turf. Some dandelions are seeding, which isn't a pretty sight, but most of the long-stemmed weeds resemble wildflowers in bunches.

Carlson uses what he calls "organic Roundup" to control weeds. It's actually a machine called the Waipuna,

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made by a New Zealand manufacturer, which wipes out weeds with hot foam. It operates much like a carpet cleaner, with a device that spews hot foam on the weeds and wilts them. Carlson admits it's labor intensive to operate and leaves behind a large carbon footprint because of its diesel engine.

Carlson's best tool to control weeds is the four-member crew he employs to remove weeds manually. The team members work together in sections with large fork-like tools in hands. They remove the weeds from the turf with precision and fill the barren areas left behind with a soil and seed mix. They perform the task 40 to 50 hours a week during the golf season and never complain, Carlson says.

Kwame Kankam, one of the weeders from Ghana, will be the first to tell you it's a thankless job but an important one.

"We don't have to go too deep," he says of the plucking procedure. "It just depends on how big the weeds are."

Carlson uses mostly organic fertilizer. He has received permission from local regulators to use some inorganic fertilizer on greens because lysimeters — devices used for collecting water from the pore spaces of soils and for determining the soluble constituents removed in the drainage — have revealed no nitrate nitrogen leaching.

"My contention has always been



Carlson's best tool to control weeds is the crew he employs to remove them manually.

it's not the type of nitrogen source you use as much as it is how you use it," Carlson says.

Carlson believes the turfgrass has come to a point where it's fighting off pests on its own. "I believe there's microbial activity going on in the soil that over time begins to have natural ability to fight disease," he adds.

One thing Carlson has learned is he must use all the tools in his toolbox to manage the course. "There's no silver bullet for organic management; it's a combination of products and cultural practices and grass species," he says.

Carlson says his maintenance budget is a little above average for an 18-hole course in New England. It's not cheaper to maintain a course by not using synthetic pesticides, but it's also not more expensive.

"We pay more for labor than a lot of clubs," he says. "But we use fewer products."

Carlson will not hesitate to tell other superintendents his maintenance program will not work in certain regions, like the transition zone, where it can get very cold in the winter and very hot and humid in the summer.

"Martha's Vineyard has a more temperate climate," he says. "You can't just take this program and convert it in another place."

The last thing Carlson wants is to get another superintendent in trouble with his or her club's members by recommending cultural practices or products that might not work in certain conditions. In fact, Carlson says he reminds Vineyard's members often that he's not allowed to use pesticides, especially when disease hits the greens. The mandate provides him job security.

"I've found our members will tolerate some disease as long as the putting surfaces are totally smooth and the putts roll well," Carlson says.

Carlson says Vineyard is one of two U.S. golf courses that don't use conventional pesticides. The other is Applewood Golf Course in Golden, Colo. But Carlson says there's a distinct difference between maintaining a golf course in the Northeast and maintaining a course in the mountains: disease pressure. Colorado's higher elevation equates to low disease pressure.

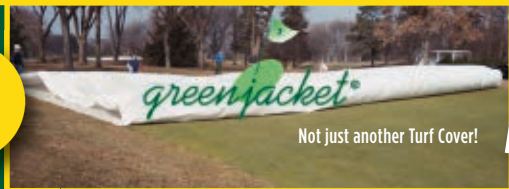
"We get most all of the diseases here," Carlson says.

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A learning experience

A tree swallow darts in front of Carlson's golf car as he cruises down a fairway. It and other species nest in bird boxes, some of which double as 150-yard markers on the course.

Carlson enjoys seeing the wildlife on his course. He believes most superintendents feel the same way and are environmentalists at heart. Carlson also believes most superintendents are responsible with their pesticide use.

But even though most are responsible, Carlson says they may be able to reduce their pesticide use. For instance, if dollar spot breaks out on two greens, a superintendent is usually inclined to spray all 18 greens to prevent the disease from spreading. But Carlson says if the superintendent really wants to cut back on pesticide use, he or she should spray only the greens that are infected. Carlson realizes that's not easy for a superintendent to do, especially if it's indicative dollar spot will break out on the other greens.

"What you learn in a project like ours is it's possible to have a reduction in pesticide use," Carlson says.

Carlson realizes a total pesticide ban on U.S. golf courses would be foolish and unreasonable. That said, he expects superintendents will be forced to cut back their usage if certain government policies are put in place.

Carlson also says a reduction in pesticide use may only happen if golfers are willing to make concessions with visual perfection. For instance, golfers would have to put up with a little bit of dollar spot on tees and some weeds in out-of-play areas.

If a course decides it wants to use fewer pesticides, which equates to less than perfect conditions, then that message must be delivered not just by the superintendent but by others, including the general manager and pro.

"It's a trickle-down effect," says Carlson, who won the President's Award for

Carlson believes most superintendents are environmentalists at heart and are responsible with their pesticide use.

Environmental Stewardship from the Golf Course Superintendents Association of America in 2008.

The education process should also include professional golfers and televised PGA Tour events. But Carlson believes most PGA Tour players don't want to take any chances of lowering the standards on golf courses because they're playing for so much money.

"They don't want to risk having bumpy greens or bad lies on fairways," Carlson says. "They don't even want bad lies in rough."

About that book ...

Michael Willard, one of Carlson's three assistant superintendents, says the course has changed dramatically for the better since he began working at the Vineyard five years ago.

"This is the best it has ever looked," he says. "It has changed 180 degrees."

People, including Carlson's peers, are surprised the course looks as good as it does. Some expect to see dirt and weeds comprising the fairways. Their eyes widen when they see green turf rolling into the horizon.

"I'm really proud of the golf course," Carlson says. "It's a culmination of hard work."

Carlson should write a book about it. With that English degree, he could. ■