

Keeping it green,  
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Oregon State University's turfgrass program is a national leader in researching alternatives to chemically treating golf courses for disease.

By Chris Branam



Forty years after the release of the classic golf comedy *Caddyshack*, one of the enduring images is of greenskeeper Carl Spackler, wearing a floppy hat and sweat- and dirt-stained clothes.

Unfortunately, the general public, and even the average golfer, underestimates the science and engineering that goes into modern golf course maintenance, says Clint Mattox, a graduate student in the Oregon State University Turf Management Program.

“In reality, golf course superintendents are professional staff managers, sometimes with a team of 25 or 30 people, and they’re using fleets of lawnmowers that cost hundreds of thousands of dollars and have been engineered for mowing grass down to three millimeters,” Mattox says.

Alec Kowalewski, an associate professor who directs the Turf Management Program, agrees.

“There are so many things outside of raking bunkers and pushing lawnmowers,” he says.

A number of colleges and universities across the United States have turfgrass management programs, but Oregon State has the only one in the Pacific Northwest. OSU’s program, which centers around improving the environmental

and economic sustainability of turfgrass management, is one of a handful that focus on treating golf course grass with organically certified alternatives to traditional fungicides.

For decades, golf courses relied heavily on fungicides to keep greens and fairways pristine. But in the last 20 years, society’s push for environmental sustainability, especially on the West Coast, has led local and state governments to restrict pesticides and fungicides on golf courses.

That’s why dozens of people — the majority of whom are golf course superintendents and greenskeepers — travel great distances to OSU’s annual field days, including *Microdochium* Patch Field Day held each February on experimental plots and putting greens that cover five acres at the Lewis-Brown Farm in Corvallis.

*Microdochium* patch is a fungus that affects grass in the winter when temperatures are below 60 degrees and the grass is growing slowly. *Microdochium* patch can severely damage annual bluegrass turf when it’s cool and wet for long periods.

This year, a late-winter snowfall blanketed OSU’s research plots, leading Mattox and other students in the program to use rakes and blowers to remove the white stuff so that everyone could see

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what was underneath. More than 30 minutes after the field day had officially concluded, many of the attendees were still wandering the plots, pointing at the grass and flipping through charts that listed organic alternatives to treating the disease.

“There is so much interest from the industry,” Mattox says. “It’s rewarding to talk to people who are using our research. Nobody really has field days in the middle of the winter, especially in turfgrass. It’s pretty cool to see more than 50 people show up to look at turfgrass, especially when there’s snow on the edges of the putting greens.”



Stephen Ward photo



Stephen Ward photo

One of the attendees was Frank Rossi, one of the world's foremost experts on turfgrass science, who traveled 3,000 miles from Cornell University. OSU and Cornell are two of a small number of turfgrass programs in the United States that focus on alternatives to fungicides, Kowalewski says.

OSU's roots as a leader in turfgrass management were planted by Tom Cook, who came to OSU in 1977 to develop a turf and landscape program in the Department of Horticulture. Over the next 30 years he turned OSU into a powerhouse, sending graduates to golf courses in Oregon and across the Pacific Northwest.

In 2001, the Golf Course Superintendents Association of America partnered with Audubon International, an organization dedicated to environmental and community sustainability, to incorporate environmental stewardship into the design, construction and maintenance of golf courses. Many graduates of the turf management program at OSU became early adopters of environmental stewardship in golf course management.

Before his retirement in 2009, several of Cook's former students helped form the Northwest Golf Course Environmental Alliance, which certifies courses that follow strict environmental guidelines, including programs for integrated pest management, limited fertilization and irrigation, and enhancing water quality and wildlife habitat.

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**Far left:** Brian McDonald, wearing a knit cap, provides information to attendees at *Microdochium* patch Field Day held in February 2019 at OSU's Lewis-Brown Farm in Corvallis.

**Left:** One of the putting green experimental plots maintained by OSU's turf management researchers indicates how much of the disease appeared over the winter.

**Right:** Clint Mattox, a graduate student in OSU's Turf Management program, researches organic methods to treat *Microdochium* patch and other diseases that afflict grasses on golf courses.





Microdochium patch is a fungus that affects grass in the winter when temperatures are below 60 degrees and the grass is growing slowly.

The North American golf course industry needs research on chemical alternatives to treating grass, Kowalewski says, because cities, states and whole countries (like Canada and France) have banned the timing and use of chemicals on golf courses. In Oregon, Portland Public Golf courses use a restricted list of pesticides and conduct minimal applications as they follow integrated pest management protocols.

As a result, the majority of the people who attend OSU's turf field days are course superintendents that want disease-free putting greens and also want to minimize chemical use, he says.

"Golf courses across the world are trying to figure out ways to manage their putting greens with less money and less environmental impact," he says. "Here in Oregon, it's a major concern because protecting our natural resources is a big priority for people. So, we are testing a lot of pesticide alternatives that haven't been explored yet, and trying to develop innovative pest management programs.

"Not a lot of other people are doing this work," he says. "Having pesticide alternatives is a rare commodity. Only a few programs specialize in it."

Kowalewski cites the interest in Mattox's research. He draws large crowds for the field days as well as when he travels both domestically and internationally to share his research. Mattox worked at golf courses in Japan and Germany before becoming golf course superintendent of the Arnold Palmer-designed Vignoly Course in Paris.

The course in France had to close the putting greens anywhere from six hours to two days every time a fungicide was applied. Like most northern European superintendents, Mattox was also dealing

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**Left:** OSU's Turf Management Program's experimental plots provide information used by golf course superintendents to treat Microdochium patch and other diseases that damage putting greens.

**Right:** Emily Braithwaite, far left, provides an update on methods for controlling Microdochium patch at the field day in February.



with *Microdochium* patch, so he began corresponding with OSU researchers about the disease. Mattox decided to move to Oregon and enroll in OSU's turf program so he could research full-time the alternative methods of controlling *Microdochium* patch on annual bluegrass putting greens.

Kowalewski, who took over the turfgrass program on Dec. 31, 2012, took a roundabout way to turf management. The Michigan native, who wrestled collegiately at Michigan State University, initially pursued a bachelor's degree in studio art before he got a summer job at MSU's turfgrass research center. He switched his major to crop and soil sciences with an emphasis in turf management.

"Young people think of becoming doctors or lawyers, but they never talk about wanting to become a turfgrass scientist. It's such a niche," Kowalewski says. "Turf management is a great career. One of my

objectives is to get to high school students and tell them this is a great career to go into."

Brian McDonald, now in his 19th year as a researcher in the OSU turf program, focuses on annual bluegrass nutrition, diseases, weed control and moss control on putting greens. He describes himself as a cross between a superintendent and a researcher, because he has to conduct field trials on putting greens that are the same as those at a golf course, lending validity to his findings.

"What I do is give information to superintendents to help them do their job better," he says. "There are different weather conditions, different fertilizers, different growth regulators, different fungicides, different mowing heights — you combine all those together and different things can happen. I take a complex system and try to make it understandable." | **OAP**



## TAKING to TURF

Alec Kowalewski, who wrestled at Michigan State and started out as a studio art major, isn't alone on his staff in taking a circular route to turfgrass management.

Emily Braithwaite, a faculty research assistant, has a similar story. She was a biology major at Rutgers University in New Jersey who saw an advertisement to work on the Rutgers research farm for a summer.

"I just fell in love with it and never looked back," she says.

Braithwaite conducts integrated pest management trainings in Oregon schools and serves as co-investigator on two multi-institutional research projects funded through the U.S. Department of Agriculture Specialty Crops Research Initiative. One involves promoting the use of fine fescues as a low-input, sustainable alternative to other cool-season grasses. The other involves classifying herbicide resistance in annual bluegrass.

Brian McDonald was a certified public accountant before he went back to school to get a bachelor's degree in horticulture at OSU with the goal of becoming a golf course superintendent. Immediately after graduating, he took a position as a turfgrass research assistant and is now the program's senior faculty research assistant.

**Left to right:** Turfgrass researchers Emily Braithwaite, Alec Kowalewski, and Brian McDonald at Trysting Tree golf course.



Stephen Ward photo