

Preventive and Curative Control of Algae on Putting Greens Using Products other than Daconil

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Objectives:

1. To determine the influence of various products on algae control of golf course putting greens.

Start Date: 2007

Project Duration: two years

Total Funding: \$6,000

Turfgrass quality on golf course putting greens receiving few hours of sunlight or exposed to prolonged periods of excessive moisture is often reduced for a number of reasons. Shaded environments generally are associated with poor air movement, excessive soil moisture, and extended periods of leaf wetness. Even greens located in excellent growing environments, but built with no or poor internal drainage, are susceptible to thinning during the stressful summer months. Stress-related injury to the turfgrass often leads to an increased susceptibility to other turfgrass disorders including algae and moss invasion, as well as infection from various turfgrass pathogens.

Algae infestation on closely mown putting greens continues to be difficult to manage. While applications of various fungicides such as chlorothalonil, maneb, and mancozeb have been shown to suppress algae, these products must be applied on relatively short intervals prior to the appearance of symptoms and their efficacy varies. Further complicating the use of fungicides is the exclusion of chlorothalonil from use in specific regions of New England. In areas where chlorothalonil use remains legal, new label restrictions on the total amount of product



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that can be applied and increased time between application intervals may drastically limit the ability to control algae over the course of an entire season.

Previous studies revealed a reduction in algae growth from phosphite-based fungicides and select wetting agents. Although the main purpose of these studies did not involve an investigation of algae, products suppressed algae between 83 and 100% compared to the untreated control. Little information is available regarding the influence of phosphite products and wetting agents on controlling algae. The objective of this study will be to determine the ability of various phosphites and wetting agents to suppress algae; and 2) assess the interaction among effective algae control products and fungicides commonly used on golf course putting greens.

Studies were initiated at the University of Connecticut Plant Science Research and Education Facility located in Storrs, CT. Between 2005 and 2006, a total area of approximately 25,000 ft² was established to either 'Penn A-4' creeping bentgrass (*Agrostis stolonifera*) or annual bluegrass (*Poa annua*) and maintained as a putting green. Both sites were established as a native soil putting green and top-dressed routinely thereafter with sand conforming to USGA guidelines. For all field studies, products were applied with a CO₂ pressurized (40 psi) backpack sprayer equipped with a flat-fan nozzle, and calibrated to deliver 2.0 gal water per 1000 ft². Plots measured 3 ft x 6 ft and arranged in a randomized complete block with four replications.

In a 2006 study at the University of Connecticut, plots treated with a phosphonate fungicide and a select wetting agent had very low levels (3 to 7%) of algae when compared to the untreated control plots (40%). In 2007, three field studies were initiated on the aforementioned bentgrass putting green in Storrs. The first study included the direct comparison of 12 phosphite products and various fungicides for their influence on the development of



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algae. A second study is investigating the interactions among five wetting agents, 6 fungicides, and tank-mixes of each on algae development. In the final study initiated in 2007, the influence of fungicide and phosphite tank-mixes were compared for their ability to reduce algae severity. Algae development with these studies was minimal and trials are ongoing.

In January 2008, a graduate research assistant will be assigned to continue the evaluation of various aspects of the algae project. Field studies will be continued and additional greenhouse and laboratory experiments will be developed. Additionally, microscopic examination seeking to identify and characterize the species of algae present on golf courses will commence. Data collected from these studies will serve as a means to develop best management practices for the suppression of algae on golf course putting greens.

Summary Points

- Algae growth is a chronic problem on thinning golf course putting greens during the summer months.
- Preliminary data suggest that phosphite-based products and select wetting agents can preventively suppress algae development.
- The interaction among wetting agents, phosphites and commonly used fungicides on algae suppression remains unknown.