

## **Effects of Fungicide Applications during Spring Transition on Overseeded Bermudagrass Putting Greens**

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### **Introduction**

Bermudagrass putting greens located in the northern portion of the transition zone are commonly overseeded with cool-season grasses to provide color, reduce wear due to traffic, provide for a smooth, consistent putting surface and minimize the invasion of weeds when the bermudagrass is dormant. The spring transition period from cool-season to warm-season grasses can be particularly troublesome due to changing environmental conditions, competition between grass species and disease outbreaks. The application of fungicides has been found to have significant effects on the quality of the turf during and after spring transition.

The objectives of this research were to:

- 1) evaluate the effects of spring-applied fungicides during spring transition
- 2) determine the impact of spring-applied fungicides on summer bermudagrass density
- 3) compare the effects of pigmented and non-pigmented fungicide formulations
- 4) evaluate the practice of watering Heritage into the root zone.

### **Material and Methods**

Spring-applied fungicides were selected based on materials found to have effects in prior research, those known to target pathogens commonly associated with early spring conditions, and those with appropriate pigmentation formulations. All 17 treatments (Table 1.) were applied in two gallons water/1000 sq. ft. three times at labeled rates on a 21-day schedule beginning 14 April 2003. The test plots were TifDwarf and TifEagle bermudagrass putting greens overseeded with *Poa trivialis* located in Florence and Bluffton, South Carolina. Plots were rated for turf quality and turf density on a weekly basis beginning 28 April, 14 days after the first application, on a scale of one to nine with one = bare soil and nine = a dense, fine-bladed and uniform turf.

## **Results**

Significant improvements in turf quality and turf density occurred with the application of several fungicides on overseeded TifDwarf and TifEagle bermudagrass. TifDwarf turf quality and density ratings were found to be more responsive to fungicide treatments than those of TifEagle. In one test, statistically significant improvements in turf quality and density were found to persist 42 days after the third application largely due to greater bermudagrass density.

### **Effects of spring-applied fungicides**

In a TifDwarf test, nine of the 17 treatments were found to improve turf quality ratings 14 days after the initial application. At the time of the third application, all 17 treatments were recorded as improving turf quality compared to the unsprayed check plots with some of these improvements persisting 42 days after the third application. The treatments with the greatest improvements in visual ratings were the tank mixes of Aliette Signature + Fore Rainshield and Cleary's 3336 + Fore Rainshield. TifDwarf turf density was found to have a fungicide application response similar to that of turf quality. Several fungicides were found to improve turf density on the first rating date, 14 days after the initial application.

Significant turf quality improvements of TifEagle were first noted on 19 May, 14 days after the second application, and turf quality treatment effects persisted until the final rating date of 30 June, 35 days after the third application. Improvements in turf density ratings of TifEagle were found to occur quicker after the initial application than those in turf quality ratings with turf density improvements recorded 21 days after the first application. The best treatments in the TifEagle tests were Aliette Signature + Fore Rainshield, Cleary's 3336 + Fore Rainshield, and Pentathlon + Heritage.

### **Pigmented and non-pigmented formulation comparison**

The effects of pigmented and non-pigmented formulations of fungicides were compared to determine if pigmented formulations of fosetyl-Al and mancozeb, singly and in combination, were more effective than non-pigmented formulations in improving turf quality and density during and following spring transition. At some point during the rating period, pigmented fungicide formulation combinations (Aliette Signature + Fore Rainshield) were noted as having significantly greater visual ratings than non-pigmented fungicide formulation combinations (Aliette + Pentathlon) in all tests. In single applications, the pigmented formulation of fosetyl-Al (Aliette Signature) was found to be superior to the non-pigmented formulation (Aliette) in the TifDwarf test. Similar effects were not found with mancozeb formulations.

## Watering Heritage into the root zone

All experiments comparing the effects of irrigated and non-irrigated Heritage applications on turf quality and turf density ratings of TifDwarf and TifEagle bermudagrass golf putting greens during spring transition failed to find any statistically significant differences.

**Table 1. Fungicide treatments applied during spring of 2003 on overseeded TifDwarf and TifEagle bermudagrass putting in Florence and Bluffton, South Carolina.**

<b>Treatment</b>	<b>Formulation</b>	<b>Product rate<sup>a</sup></b>
Aliette Signature	80WG	4 oz./1000 sq. ft.
Aliette	80WG	4 oz./1000 sq. ft.
Fore Rainshield	80WP	8 oz./1000 sq. ft.
Pentathlon	75WP	8 oz./1000 sq. ft.
Heritage – irrigated	50WG	0.4 oz./1000 sq. ft.
Heritage	50WG	0.4 oz./1000 sq. ft.
Subdue Maxx	1.1ME	1 fl.oz. /1000 sq. ft.
Vital		6 fl. oz./1000 sq. ft.
Cleary 3336	41F	6 fl. oz./1000 sq. ft.
Aliette Signature + Fore Rainshield	80WG 80WP	4 oz./1000 sq. ft. 8 oz./1000 sq. ft.
Aliette Signature + Pentathlon	80WG 80WP	4 oz./1000 sq. ft. 8 oz./1000 sq. ft.
Aliette + Pentathlon	80WG 80WP	4 oz./1000 sq. ft. 8 oz./1000 sq. ft.
Heritage + Fore Rainshield	50WG 80WP	0.4 oz./1000 sq. ft. 8 oz./1000 sq. ft.
Heritage + Pentathlon	50WG 75WP	0.4 oz./1000 sq. ft. 8 oz./1000 sq. ft.
Cleary 3336 + Fore Rainshield	41F 80WP	6 fl. oz./1000 sq. ft. 8 oz./1000 sq. ft.
Heritage + Cleary 3336	50WG 41F	0.4 oz./1000 sq. ft. 6 fl. oz./1000 sq. ft.
Fore Rainshield Heritage Cleary 3336	80WP 50WG 41F	8 oz./1000 sq. ft. 0.4 oz./1000 sq. ft. 6 fl. oz./1000 sq. ft.

<sup>a</sup> = treatments applied 14 April, 5 May and 26 May