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Derek York
Iowa State University

Marcus Jones
Iowa State University

Nick E. Christians
Iowa State University, nchris@iastate.edu

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Recovery of Ball Mark Damage to Varying Fungicides

Abstract

The objective of the 2010 ball mark damage recovery study was to evaluate the effects of fungicide application on the time required for ball mark recovery of creeping bentgrass (*Agrostis stolonifera* L.).

Keywords

RFRA1008, Horticulture

Disciplines

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Recovery of Ball Mark Damage to Varying Fungicides

RFR-A1008

Derek York, graduate student
Marcus Jones, graduate research assistant
Nick Christians, university professor
Department of Horticulture

Introduction

The objective of the 2010 ball mark damage recovery study was to evaluate the effects of fungicide application on the time required for ball mark recovery of creeping bentgrass (*Agrostis stolonifera* L.).

Materials and Methods

The study was conducted independently on T-1 and Memorial creeping bentgrass at the Iowa State University Horticulture Research Station, Ames, IA. Treatments included an untreated control and four fungicide treatments (Table 1). Individual plots measured 3 ft × 3 ft (9 ft²) and were arranged as a randomized complete block design with eight replications. Each of the plots was mowed at a uniform height of 0.5 in. twice a week. Irrigation was applied to maintain the grass with no drought stress.

The initial fungicide treatments were applied on May 27. BAS 50017F was applied at a rate of 0.7 fl oz/1,000 ft²; Honor was applied at a rate of 1.1 dry oz/1,000 ft²; BAS 50017F and BAS 59516F were applied together as a tank mix at 0.54 fl oz/1,000 ft²; and 1.0 fl oz/1,000 ft², respectively; and Heritage TL was applied at 2.0 fl oz/1,000 ft².

On June 3, one week following the initial fungicide treatments, five ball marks were made in each plot using an apparatus with five golf balls cut in half and mounted on a board measuring 16 × 16 in. To simulate the damage from the ball marks, the board was struck with a hammer until the board was flush with the

ground. The five holes were then filled with sand until level with the turf canopy. Photographs of an area measuring 16 in. × 16 in. surrounding the ball marks were taken with a digital camera for later analysis with SigmaScan to evaluate recovery. The first set of pictures was taken on the initial day damage was caused and on a weekly basis thereafter.

A second fungicide application was made at the same rates on June 10, two weeks following the initial application. The original ball marks recovered in one week. New ball mark damage was created with a different method on June 16, one week following the second application of fungicide. The device used a piece of irrigation pipe with a 2-in. cap. The device was struck with a hammer until it was two in. deep in the turf surface. Five simulated ball marks were created in each plot and filled with sand until level with the turf canopy. That same day, the initial pictures were taken for the new ball mark damage. From this point on, pictures were taken every other day until the holes completely recovered.

A third fungicide application was made on June 24 and a fourth and final application was made on July 8. Both of these treatments were made at the same rates as the first two treatments.

Visual quality ratings based on color, density, and overall appearance were taken weekly on a scale of 9–1, with 9 being the highest quality and 1 being the lowest quality. The ratings were taken once a week beginning May 27 and ending July 16. A rating of 6 or higher was considered acceptable turf quality. In addition to visual quality ratings, a visual percent cover and a dollar spot count was conducted.

The pictures of ball mark recovery were evaluated with SigmaScan Pro to determine percent recovery. Roots were harvested from each plot at the end of the study with a 4-in. diameter cup cutter to an 8-in. depth. Sand was washed from the root tissue and the roots were dried in an oven for three days at 67°C and weighed. The samples were then ashed in a muffle furnace at 200°C for one hour followed by 500°C for eight hours. The ashed weight was subtracted from the oven dry weight to determine total weight of the root mass.

Results and Discussion

There were no differences in quality among the different treatments for either cultivar.

Weekly mean visual percent recovery and a mean dollar spot count, along with mean root mass weight is listed in Tables 1 and 2. There were no significant differences in visual recovery between treatments at any of the observation dates. There were differences in the total number of dollar spot damaged areas on July 1 and July 8 for the T-1 and Memorial areas. The least effective material for the

reduction of dollar spot was Heritage. All other fungicide treatments provided satisfactory control of this disease.

Tables 3 and 4 include data on the mean recovery of the ball mark damage for the different treatments for T-1 and Memorial creeping bentgrass. We had difficulty removing background noise from undamaged areas and we were not able to get a complete measure of percentage recovery. The numbers in the tables are useful for comparing one treatment to another within dates, however.

Most dates where significant differences occurred among treatments for T-1, the differences were improved recovery in the fungicide treated plots, versus the control (Table 3). Only on July 14 was there a difference observed between fungicide treatments. At that date, Honor was the most effective material.

In this study, applications of fungicides to the turf did not consistently hasten the recovery of damage from ball marks.