

Fungicide Alternative Management Practices for Microdochium Patch

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INTRODUCTION:

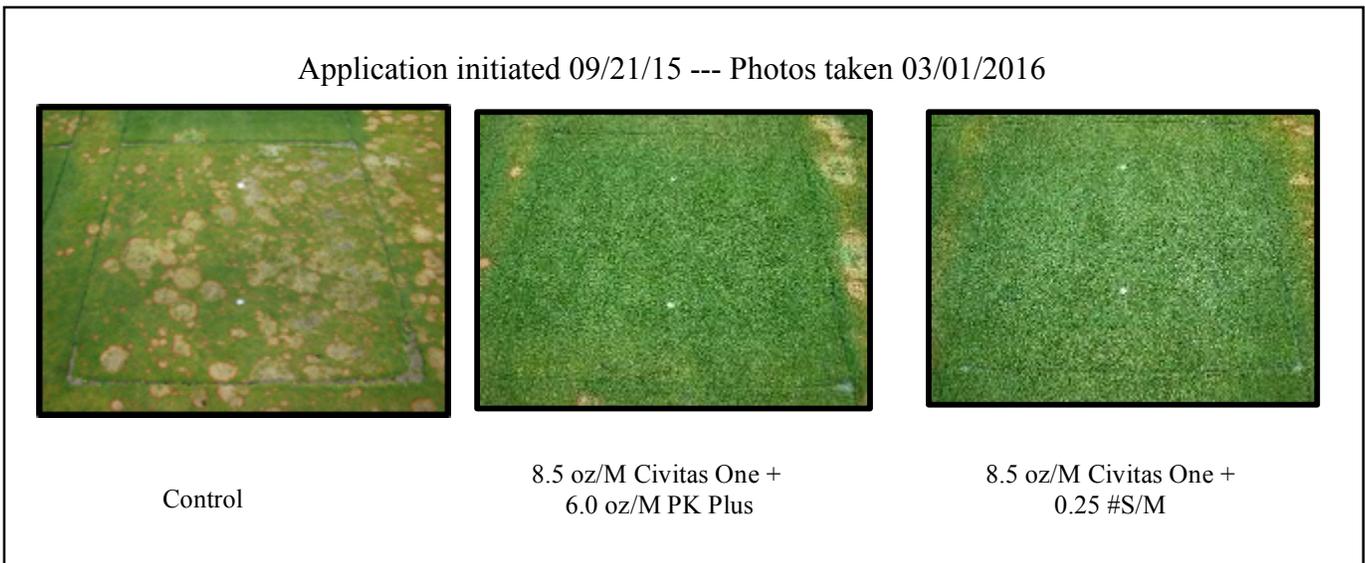
Research that took place during the winters of 2013 through 2015 determined that the mineral oil Civitas One used in combination with PK Plus or Sulfur was able to decrease Microdochium patch severity on annual bluegrass putting greens, although abiotic damage was observed on plots receiving repeated applications of Civitas One in combination with rolling treatments. Early trial results also showed that potassium phosphite applications in combination with sulfur were able to decrease Microdochium patch severity; however, pH imbalances associated with repeated applications of sulfur is concerning. Finally, results also showed that repeated applications of iron sulfate were able to decrease Microdochium patch severity. Even though the results were very promising, these applications also resulted in unacceptable abiotic damage. Even though improvements in Microdochium patch control without traditional fungicides has been gained through these early trials, further experiments are currently being implemented at Oregon State University in order to provide a better understanding of these newer management techniques and to find ways of controlling Microdochium patch without the risk of abiotic damage. Findings from these projects will be used to develop an IPM tool for golf course superintendents dealing with Microdochium patch on annual bluegrass.

CURRENT TRIALS FOCUSING ON ALTERNATIVES TO TRADITIONAL FUNGICIDES:

Six new field trials were implemented in the fall of 2015. Two trials were initiated to assess if lower rates or rotations of Civitas One, PK Plus and/or sulfur in combination with replicated golfer traffic could provide a tool for managing Microdochium patch without resulting in abiotic damage. In addition, a third field trial was implemented to compare other minerals oils to Civitas One to quantify if similar disease severity suppression could be observed. In order to further the research concerning iron sulfate applications on annual bluegrass to control Microdochium patch, two new trials were initiated focusing on spray carrier volumes and also application frequencies. Finally, a sixth trial was implemented to further explore the use of sulfur and two different phosphite products to control Microdochium patch.

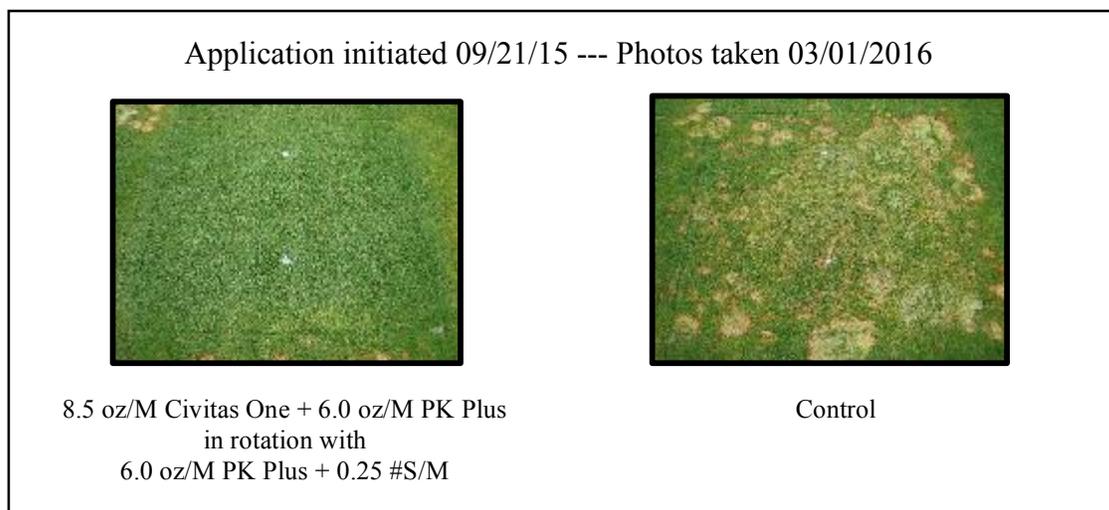
RESULTS:

In regards to the first trial exploring different rates with Civitas One and PK Plus and/or sulfur; preliminary results suggest that applications made every two weeks of Civitas One in combination with sulfur suppressed disease severity although resulted in unacceptable abiotic damage. The highest rate of Civitas One (8.5 oz/M) applied every two weeks with PK Plus also



resulted in some abiotic damage, although to a lesser degree than was observed with the sulfur combinations. Civitas One rates of 4.25oz/M every two weeks did not result in abiotic damage, although some disease (<2%) was observed compared to the control (>25%).

The second trial focused on rotations every two weeks with Civitas One and PK Plus or sulfur in rotation with PK Plus + sulfur. This trial provided very promising results, with applications of Civitas One in combination with PK Plus rotated with PK Plus and sulfur on a monthly rotation resulting in good disease control (<0.5%) and only minor abiotic damage.



A third trial comparing different mineral oils also provided positive results. Preliminary results suggest that all three mineral oils tested (Civitas One, Superior Oil and TriTek Oil), when applied every two weeks in combination with PK Plus suppressed Microdochium patch compared to the control. Some abiotic damage was also observed with these applications, similar to what was observed in the first trial when the highest rate of Civitas One (8.5 oz/M every two weeks) was applied in combination with PK Plus.

Application initiated 09/21/15 --- Photos taken 03/01/2016



Control



8.5 oz/M Civitas One +
6.0 oz/M PK Plus



7.92 oz/M Superior Oil +
6.0 oz/M PK Plus

The fourth experiment focused on spray carrier volumes of iron sulfate applications applied at a rate of 2# FeSO₄/M every two weeks. Preliminary results suggest that regardless of the carrier volumes tested (2.5, 5.0, 7.5 and 10 gallons/M), Microdochium patch was suppressed (<2% disease) compared to the control (>50% disease). Carrier volume provided only minor differences in turfgrass color response. The highest carrier volumes (7.5 and 10.0 gallons/M) did result in higher turfgrass quality ratings on a few rating dates due to a higher turfgrass density in these plots.

Application initiated 09/21/15 --- Photos taken 03/01/2016



Control

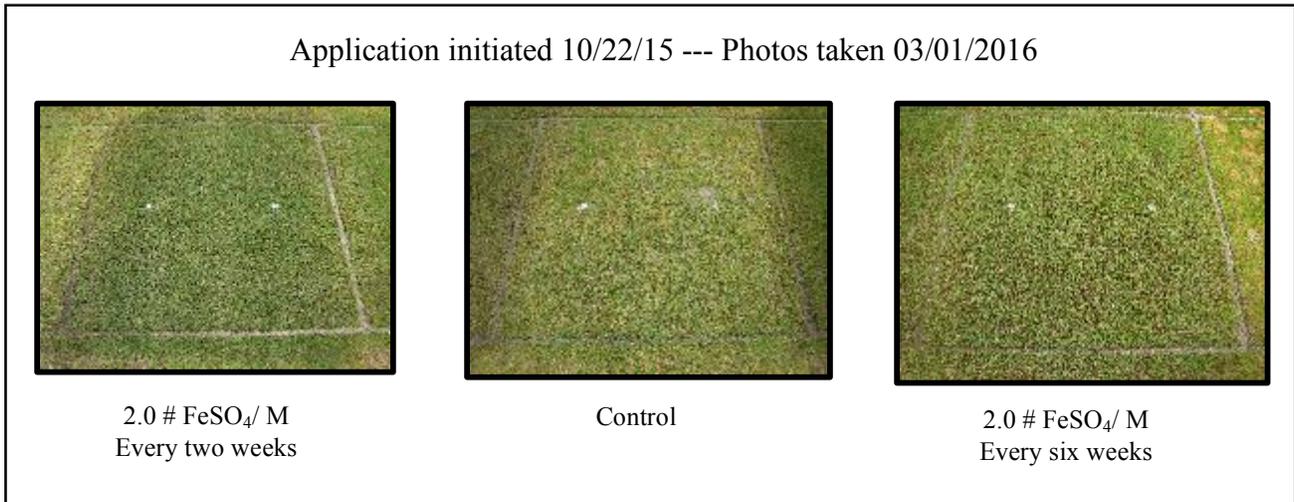


2.0 # FeSO₄/ M
2.5 gal/M H₂O Carrier



2.0 # FeSO₄/ M
10.0 gal/M H₂O Carrier

The fifth experiment dealt with timing of 2# FeSO₄/M applications. Preliminary results suggest that applications occurring every two weeks provided better control of Microdochium patch compared to applications every four, six or eight weeks.



The sixth experiment focused on sulfur, potassium phosphite products and the combination of sulfur and potassium phosphite. Preliminary results suggest that the highest disease suppression is achieved with applications every two weeks of either potassium phosphite product (PK Plus and Duraphite 12) applied in combination with sulfur (<5% disease) compared to the control (>20% disease).

