

Comparing iron sulfate versus chelated iron for suppression of *Microdochium* patch

Clint Mattox, Alec Kowalewski, Brian McDonald, Emily Braithwaite, and Alyssa Cain
Oregon State University
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Previous research focusing on using iron sulfate to suppress *Microdochium* patch on annual bluegrass putting greens has yielded positive results although often turfgrass thinning or blackening of the turfgrass sward is not considered acceptable. Field trials have shown that applying high rates of iron sulfate in larger carrier volumes or lower rates of iron sulfate in combination with phosphorous acid suppresses *Microdochium* patch while minimizing detrimental effects to the turfgrass. In spite of this previous research, the iron sulfate rates necessary to control *Microdochium* patch still result in turfgrass thinning.

Laboratory trials have suggested that chelated iron suppresses the growth of *Microdochium nivale*, the pathogen responsible for *Microdochium* patch. It is speculated that chelated iron may suppress *Microdochium* patch while not adversely affecting turfgrass quality. Therefore, a field trial was initiated in September 2018 to compare iron applied every two weeks as either iron sulfate or as chelated iron (DTPA) in combination or in absence of phosphorous acid. In order to mimic real-world conditions when the applications are made, replicated golfer traffic is being applied to the plots by walking over the area with golf course shoes during the fall and the winter months.

Treatments include: (M = 1,000 square feet)

- 1) 0.1 # Fe / M as FeSO₄
- 2) 0.1 # Fe / M as FeSO₄ + 3.2 oz. Duraphite 12 / M
- 3) 0.2 # Fe / M as FeSO₄
- 4) 0.2 # Fe / M as FeSO₄ + 3.2 oz. Duraphite 12 / M
- 5) 0.1 # Fe / M as chelated iron (DTPA)
- 6) 0.1 # Fe / M as chelated iron (DTPA) + 3.2 oz. Duraphite 12 / M
- 7) 0.2 # Fe / M as chelated iron (DTPA)
- 8) 0.2 # Fe / M as chelated iron (DTPA) + 3.2 oz. Duraphite 12 / M
- 9) Fungicide Control
- 10) Not Treated Control

Preliminary results suggest both iron sources when combined with phosphorous acid produce very little visual differences in disease suppression. Although, there is some visual evidence that iron sulfate alone may suppress *Microdochium* patch more than DTPA iron. Visual turfgrass density appears to be higher in plots receiving DTPA iron compared to plots receiving iron sulfate. Conversely, iron sulfate treated plots are frequently darker in color compared to DTPA treated plots (Image 1).

Soil testing, digital image analysis, and NDVI data analysis will take place at the conclusion of the first trial year (30th of April 2019).

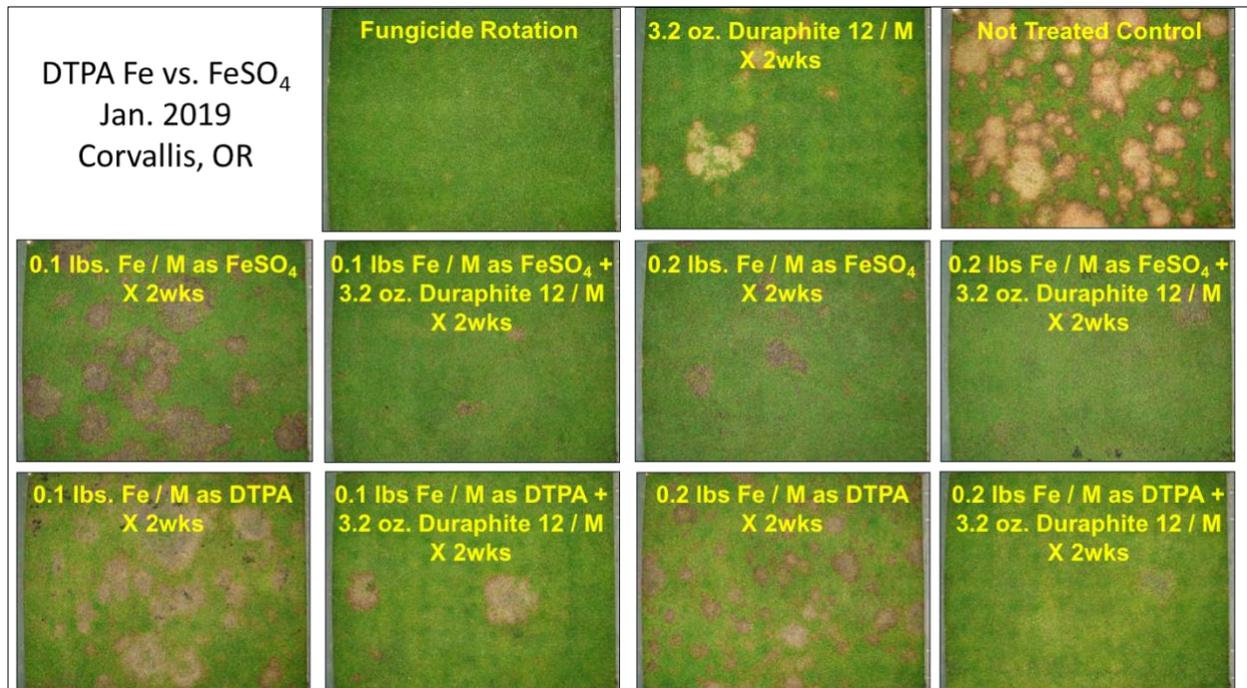


Image 1: Effects of iron sulfate (FeSO₄) or chelated iron (DTPA) in the presence or absence of Duraphite 12 (H₃PO₃) compared to a not treated control and a fungicide rotation on an annual bluegrass putting in Corvallis, OR. For year one of the study, applications began on the 4th of September 2018 and will be applied every two weeks until the 15th of April 19. (M = 1,000 square feet)