

**Research Topic:  
Field Evaluation of Phosphite-Based Products Challenged with Heat Stress and Pythium (2007). B.J. Horvath and D.S. McCall, Virginia Tech University**

*Pythium* spp. cause many diseases of turfgrass roots and/or foliage including Pythium blight, root dysfunction, and damping-off. Cool-season grasses are most commonly damaged by pythium blight in hot, humid conditions including high night time temperatures with high humidity and in poorly drained areas. *Potassium phosphite* ( $\text{KH}_2\text{PO}_3$ ) is an alkaline salt of phosphonic acid and has been shown in previous research trials to suppress pythium blight and improve plant health by upregulating plant defense mechanisms including antioxidants and phytoalexins. **The objective of this study was to evaluate the effectiveness of phosphite-based products in alleviating summer heat stress and control of pythium blight on a perennial ryegrass fairway and applied preventatively.** On August 9, pythium blight became highly active and all phosphite treatments provided adequate suppression of the disease and significantly better than the untreated control (Figure 1). On August 16, when disease pressure became more severe, Signature fungicide provided the best pythium blight suppression followed by PK Plus (4 oz and 6 oz/M) and Fairphyte (4 oz/M). All potassium phosphite treatments performed significantly better than Subdue Maxx fungicide (1 oz/M) and the untreated control on August 16 (Figure 1). With respect to overall turf quality, on August 9 turf treated with potassium phosphite and fungicides displayed significantly better quality than the fertilizer check and on August 16 Signature fungicide, Fairphyte + Gary's Green Ultra, and PK Plus (4 oz/M) provided the best turf quality (Figure 2). **The results suggest that phosphite-based products (including PK Plus at 4 and 6 oz/M) and selected fungicides applied preventatively to perennial ryegrass maintained as a golf course fairway will effectively suppress pythium blight. Fertilizers that contain phosphite ( $\text{H}_2\text{PO}_3^-$ ) should be used as one component to an integrated approach to pythium blight management. In addition, phosphite-based products provided for adequate turf quality and lessened summer heat stress of perennial ryegrass.**

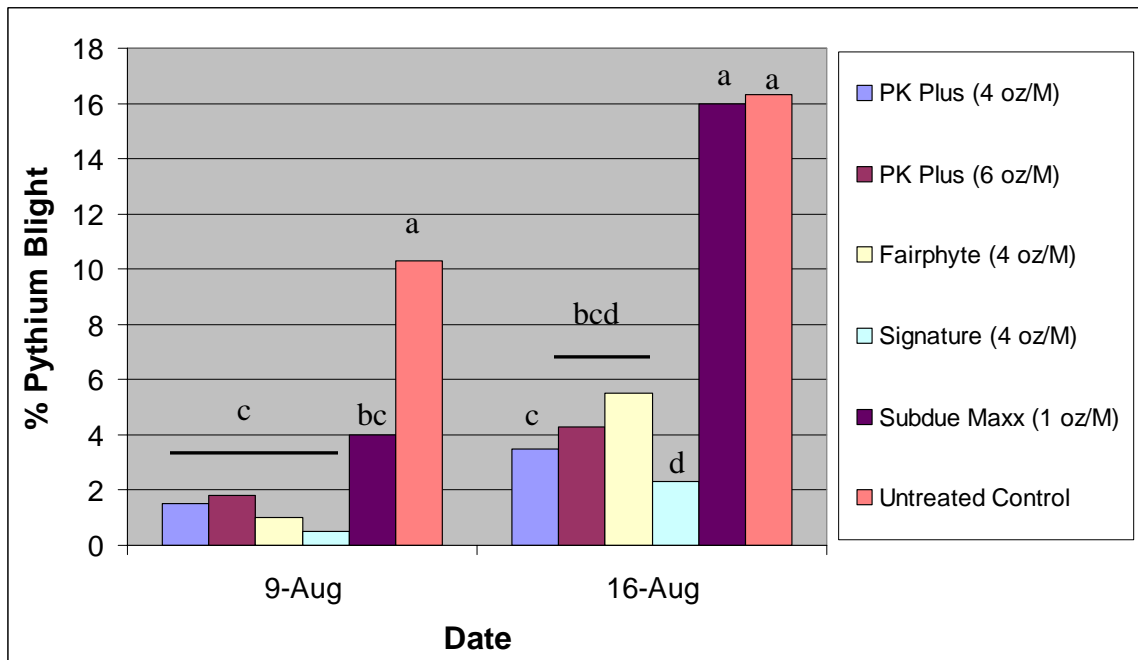


Figure 1. Percent (%) pythium blight of perennial ryegrass after treatment with fertilizers that contain potassium phosphite ( $\text{KH}_2\text{PO}_3$ ) and fungicides.

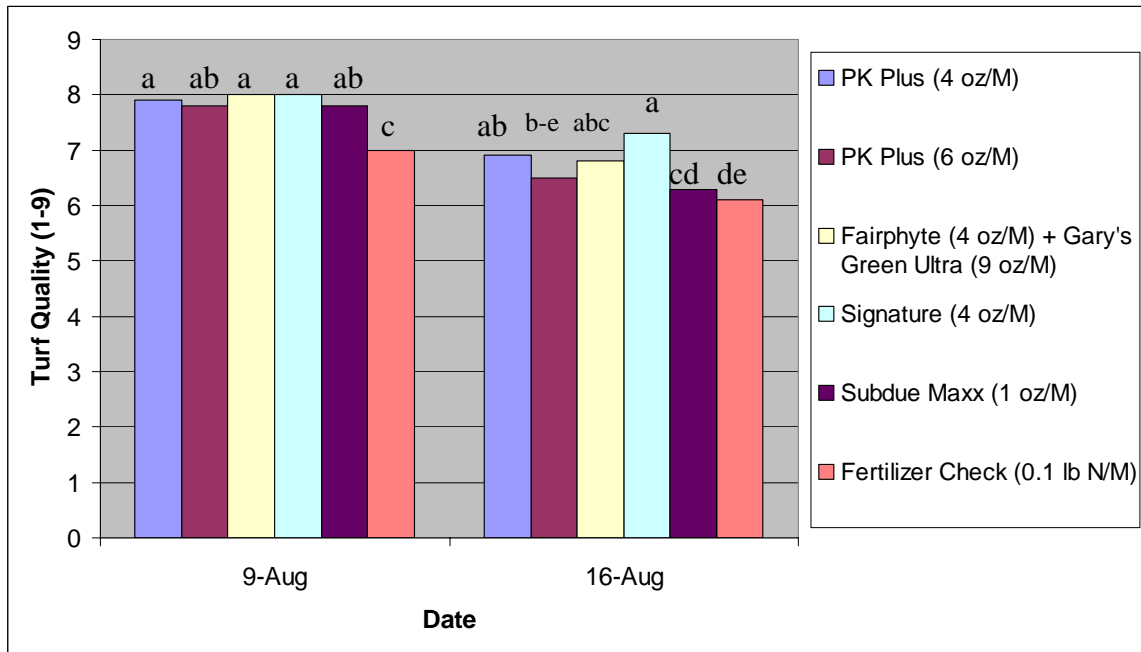


Figure 2. Overall turfgrass quality (measure summer stress) in August on a perennial ryegrass fairway treated with fertilizers that contain potassium phosphite ( $\text{KH}_2\text{PO}_3$ ) and fungicides and under pythium blight pressure.