

Research Topic: Season-Long Performance of Various Spray Programs on Golf Greens (2008). B.J. Horvath and D.S. McCall, Virginia Tech University

Adverse environmental conditions such as high heat, drought, and/or salinity combined with low mowing heights and disease pressure often leads to 'summer stress syndrome' in the transition zone and northern climates where cool season grasses are managed. This general malaise of creeping bentgrass includes a general decline in turf vigor, limited root function, poor recuperative capacity, and increased disease pressure. Low dose and frequent fertilizer inputs and the use of phosphorus acid (PO_3^-) have previously shown to improve plant health during environmental stress by supplying adequate mineral nutrient needs and up regulating metabolism, including antioxidant and phytoalexin production. **The objective of this study was to evaluate the effectiveness of low dose and frequent foliar fertilizer applications, including those that contain phosphate (PO_4^-) and phosphite (PO_3^-) and one fungicide, Daconil Ultrex, to alleviate creeping bentgrass summer stress.** The results indicate that foliar fertilizer programs, including those that contain phosphite (PK Plus at 6 fl. oz./M) combined with Daconil Ultrex (3.2 fl. oz./M) provide superior quality compared to the untreated control (Figure 1). A foliar fertilizer treatment containing 12 fl. oz./M Gary's Green Ultra, 4 fl. oz./M Nutra Green, 6 fl. oz./M PK Plus, and 3.2 oz/M Daconil Ultrex provided similar turf quality to a rotational pesticide program utilizing 5 different fungicides (Figure 1). This foliar + Daconil Ultrex treatment also provided significantly better color as measured by subjective and quantifiable (Relative Color Index-RCI) ratings (Figure 2). **The results suggest that utilizing a foliar fertilizer program on a 14 day spray interval which contains adequate nitrogen (0.13 lb N/M), phosphate (PO_4^-), phosphite (PO_3^-), micronutrients, and a broad spectrum fungicide will provide excellent creeping bentgrass quality under summer stress. This spray program remains an environmentally conscience and effective approach to any turfgrass stress management program, and is designed to facilitate adequate turfgrass nutrimental needs during environmental stress, including phosphite for plant health, while limiting pesticide use.**

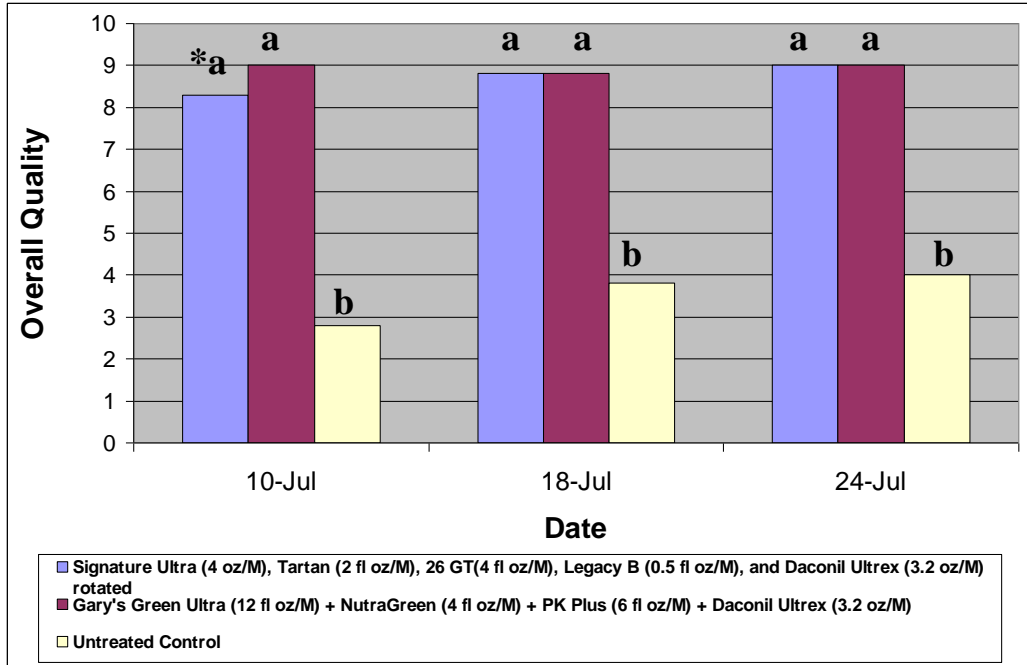


Figure 1. Overall quality of creeping bentgrass exposed to summer stress and treated with foliar fertilizer programs plus Daconil Ultrex or rotational fungicide programs.
 *Means followed by a different letter are statistically different (P=0.05)

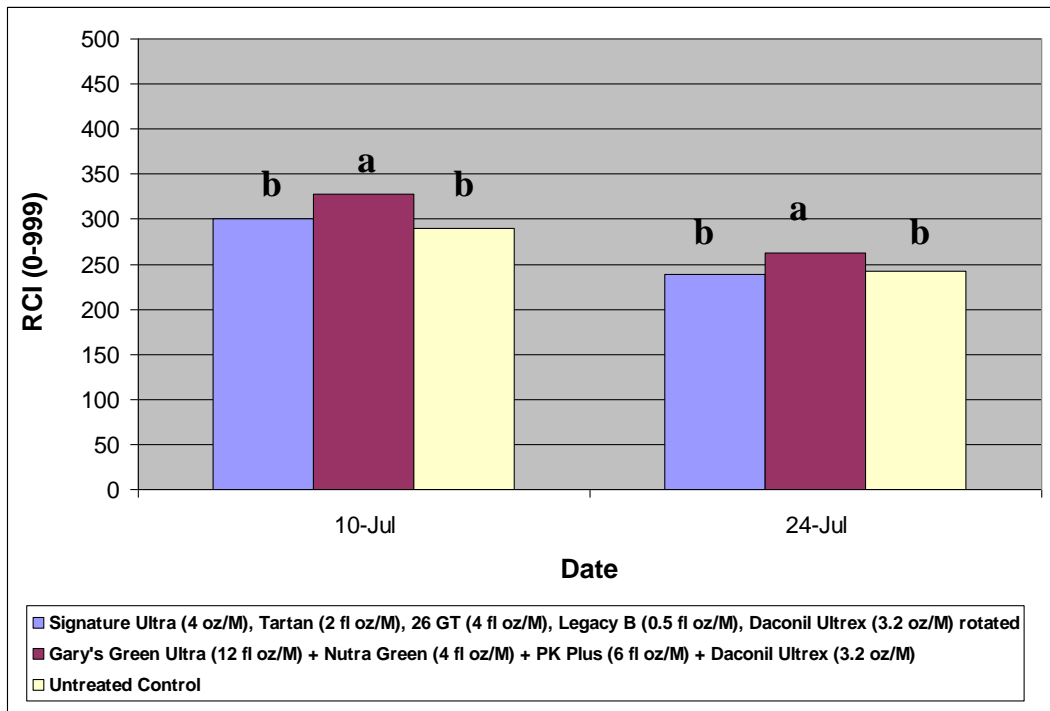


Figure 2. Relative Color Index (RCI) (0-999) of creeping bentgrass exposed to summer stress and treated with foliar fertilizer programs plus Daconil Ultrex or rotational fungicide programs