**Evaluating Effects of Substrate and Water Use Reduction Potential on Disease Risk in Containerized Tomatoes**

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As growers face increasing constraints on water use, understanding the disease risks associated with deficit irrigation (DI) is paramount. Previous studies with *Phytopthora capsici* root and crown rot in tomato indicated that DI increases latent infection and disease risks. This work evaluates how differences in soil/substrate influence DI-associated root and crown rot risk in processing tomato Heinz 8504. We hypothesized that substrates with greater water holding capacity (WHC) would present a lower disease risk under DI, due to fewer drying cycles and less plant stress. We evaluated three substrates:1) Bark (Fafard #52 Metro Mix, low WHC), 2) Hydrafiber (medium WHC), and 3) Peat (LC1, high WHC), and two irrigation schemes: 1) “Saturated” (45% volumetric water content (VWC) and 2) “Deficit” (28% VWC in peat and hydrafiber, 30% VWC in bark). Shoot growth was significantly lower under deficit vs. saturated conditions across all treatments. In inoculated plants, shoot biomass was significantly lower under deficit vs. saturated in all substrate treatments. In the peat, crown rot incidence was significantly greater under deficit vs. saturated conditions, but there was no effect of irrigation on % root necrosis. In bark, % root necrosis was significantly lower under deficit irrigation and in the hydrafiber % root necrosis was significantly greater under deficit irrigation. Under deficit irrigation, % root necrosis was greatest in hydrafiber, followed by peat and bark. These preliminary results suggest that the substrate/soil environment influences the risk of deficit irrigation. In controlled environments, bark appeared to have the lowest risk and hydrafiber the greatest. More work is needed to elucidate the details of that relationship and to translate the experiments to field soils.