From Forest Nursery Notes, Summer 2009

137. Detecting *Phytophthora* in recycled nursery irrigation water in east Texas. (ABSTRACT). Steddom, K. Phytopathology 99:S124. 2009.

Detecting Phytophthora in recycled nursery irrigation water in East Texas

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Phytopathology 99:S124

Recycling irrigation water is a common practice in East Texas nurseries. Several different methods were evaluated in an attempt to develop a robust and sensitive method of evaluating the impact of Phytophthora on nursery production. Ponds were tested by either filtration of 1, 10 or 100 ml water samples, floating leaf baits in ponds for 24 hours, or placing leaf baits in 1-gallon water samples for 24 hours. Of the seven ponds tested in 2007, 47 of the 49 samples tested positive. An additional 6 ponds were added in 2008. Of the 44 samples tested in 2008 and early 2009, 31 were positive. Filter methods frequently estimated higher populations with lower quantities of water, suggesting inhibition of spore germination at higher volumes. Bacterial contamination became more apparent during the summer resulting in failure of the filtration methods. When colonies were isolated from BPARPH agar from leaf baits, directly inverted filters, or spreading of washed filters, 22%, 60%, and 88%, respectively, of the isolates showed evidence of bacterial contamination. Quantification using filter methods did not function well in the summer for this region. Baiting methods allowed for more successful recovery of isolates for speciation and was most effective at detecting the presence of Phytophthora in recycled nursery irrigation water.