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Diversity of Phytophthora species identified in a nursery irrigation runoff water containment basin of eastern Virginia

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Capture and use of agricultural runoff water in containment basins for irrigation is of strategic importance to the ornamental horticultural industry in the light of growing global water scarcity. However, this practice may recycle destructive plant pathogens. The primary objective of this study was to determine the diversity of Phytophthora species present in a containment basin at an eastern Virginia nursery. Whole leaves of Rhododendron catawbiense cv. 'Boursault' were used as baits and placed mostly in surface water at different locations for 7 days. Baits were retrieved, rinsed and transported in a cooler to the lab. Recovered leaves were surface-sterilized in 0.525% hypochlorite for 30 seconds, rinsed in deionized water twice then plated in 10-cm Petri dishes with PARP-V8 and PARPH-V8 agar. Emerging colonies were identified to species level using colony PCR-SSCP, morphology and DNA sequencing. The baiting was performed from 2005 to 2008 at monthly intervals for the first year and quarterly thereafter. A total of 21 Phytophthora species were identified. These include P. aquimorbida, P. cactorum, P. citrophthora, P. cryptogea, P. gonapodyides, P. hydropathica, P. inso/ita, P. irrigata, P. inundata, P. megasperma, P. nicotianae, P. pini, P. polonica, P. pseudosyringae. P. sansomeana, P. syringae, P. tropicalis and several new taxa. The implications of finding such diverse Phytophthora species in a single basin is discussed