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Management of Phytophthora ramoram-infested nursery soil with I Trichoderma asperellum

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Disinfestation of Phytophthora ramorum-infested nursery sites is hindered by the inability to mitigate soil, a potential factor in recurrent infections. Current APHIS-PPQ protocols for disinfection include steam sterilization, soil fumigation, or the application of cement over infested soil. However, we present a more feasible alternative for soil mitigation that is being investigated. Recent laboratory studies showed that Trichoderma asperellum (TA) can reduce soil populations of P. ramorum to non-detectable levels within 2 wk. To demonstrate the effectiveness of TA in a nursery setting, fall and spring field trials were carried out at the National Ornamentals Research Site at Dominican University of California. There, forty microplots were inserted into natural field soil in a raised bed and infested with P. ramorum chlamydospores 1 wk prior to treatments. Five treatments, including a nontreated control, a chemical, two commercially-available biological control products, and an experimental T. asperellum isolate (TA1) were applied separately to soil within a given plot in a randomized split-plot design. Soil samples were collected over time and assayed to monitor P. ramorum and Trichoderma spp populations. After 2 wk, P. ramorum populations declined in the plots treated with TA1, while TA1 populations increased over time. These preliminary results suggest that T. asperellum is a promising alternative for managing P. ramorum populations in nursery soils.