

Four Years Experience With Filtration Systems in Commercial Nurseries for Eliminating *Phytophthora* Species From Recirculation Water¹

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Abstract

In a four year project, three different filtration systems were tested under commercial nursery conditions to eliminate *Phytophthora* spp. from irrigation water. Five nurseries were involved in the project. Slow sand filtration systems were tested in three nurseries. In the fourth nursery, a filtration system with lava grains (Shieer® Bio filtration) was tested and in the fifth nursery, a constructed wetland was investigated. The average filtration capacities per year (2003 until 2005) were between 30,000 and 100,000 m³ water for the three sand filtration systems, about 46,000 m³ for the lava grain filtration system and approximately 5,000 m³ for the constructed wetland filtration system.

In total, between eight (constructed wetland) and 11 (the other nurseries) water samples were taken in May, August and October from 2003 until 2006 before and after filtration and were tested for the occurrence of *Phytophthora* spp. in the laboratory.

Preliminary results from 2003 until August 2006 indicate that the frequency of water samples with *Phytophthora* in the three nurseries testing the slow sand filtration was between 36 percent and 91 percent. All three sand filtration systems eliminated *Phytophthora* completely; in none of the samples taken just after filtration were these microorganisms detected. In the nursery with the lava grain filtration system, about 55 percent of the pre-filtered water samples tested positive for *Phytophthora*. *Phytophthora* was detected in only one sample after filtration. This sample was taken after the filtration system was switched off. At the constructed wetland, about 89 percent of the water samples taken from the water reservoir were contaminated with *Phytophthora* spp. After filtration about 37 percent of the samples were still contaminated. The slow sand filters have lower construction costs, annual costs and costs per m³ filtered water but have lower volume filtration capacities than the lava grain filter system (Shieer® Bio Filter).

Key words: *Phytophthora ramorum*, sudden oak death, ramorum blight, water, nursery, control, filtration systems.

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