

Application of entomopathogenic nematodes against sciarids in rockwool

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ABSTRACT

Sciarid flies (Diptera: Sciaridae) are common pests in mushroom and greenhouse nursery cultures. Occasionally, they can also make extensive damage to mature plants in greenhouse ornamental and vegetable crops. Although in organic soil and horticultural compost larvae of these insects are effectively controlled with entomopathogenic nematodes, mainly *Steinernema feltiae*, covering of the plant growing substrate with polythene sheet makes rockwool slabs difficult to be accessed by standard application methods.

As the only potential route for nematode introduction into the rockwool slabs is through the plant rooting cube, the nematode ability to disperse throughout the entire slab is essential to overall efficacy. In the reported research dispersion of *S. feltiae* juveniles in the rockwool slabs and their efficacy in controlling sciarids were examined in commercial cultures of greenhouse tomato and cucumber. Nematode application through drip irrigation system was ineffective. In contrast, nematodes applied with a hand sprayer at the rate of 2.5 or 5 x 10⁴ IJ in 10 ml water per individual plant rooting cube dispersed throughout the entire rockwool slab within 4-7 days. No significant differences were observed between two tested rockwool brands. The nematodes effectively reduced pest populations by 73-77, and 85-86% at the rates of 2.5 or 5 x 10⁴ IJ per plant, respectively. It was sufficient to allow the plants to regenerate roots and avoid visible damage to the vegetable culture.

The introduced nematodes could be detected in most samples for at least 5 weeks or longer, if new sciarid larvae were available. After 13 weeks nematodes were still present in almost 40% of examined samples. The obtained results suggest that commercial formulations of *S. feltiae* can be effectively used in control of sciarid flies in greenhouse vegetables grown on rockwool. The nematode action is somewhat slower than in organic growing substrates, but long-term effects are comparable.