

Effect of Potting Media Components on the Persistence of *Metarhizium anisopliae* for Black Vine Weevil Management

Denny J. Bruck
 USDA-ARS Horticultural Crops Research Laboratory
 3420 N.W. Orchard Ave.
 Corvallis, OR 97330
 (541) 738-4026
bruckd@onid.orst.edu

Experiments were conducted in 2005 to evaluate the persistence of the entomopathogenic fungus, *Metarhizium anisopliae*, for control of black vine weevil, *Otiorhynchus sulcatus*, larvae in different types of soilless potting media components. The persistence of *M. anisopliae* was evaluated over a 4-5 month period.

Fungal Persistence

The black vine weevil (BVW), *Otiorhynchus sulcatus* (F.) is a serious pest of nursery crops, particularly in the Pacific Northwest. The fungus, *Metarhizium anisopliae*, has recently been registered by the US Environmental Protection Agency for BVW control. The objective of these studies were to determine the persistence, measured as efficacy against BVW larvae, of *M. anisopliae* in five (coir, fir bark, hemlock bark, peat moss and perlite) common soilless potting media components. Each media component was incorporated with ½ lb/yd³ of fungal granules at potting and fungal persistence determined for 133 days. Experiments were performed with and without plants to determine if the presence of a plant had any impact on fungal persistence. Overall, the fungus persisted well in all of the potting media components tested up to 133 days post application (Table 1). Persistence was somewhat reduced in the first run of the experiment likely due to fluctuating media moisture. In the second run of the experiment with more stable media moisture levels, the percentage of larval infection did not drop below 88% in any media at 133 days post application. It is likely that *M. anisopliae* will persist well and provide high levels of BVW larval control in most of the commercial potting media used in containerized nursery production, particularly those comprised primarily of the media components tested in these studies.

Table 1. Mean (±SD) percentage of black vine weevil larvae infected with *M. anisopliae* at each sample date in each potting media component incorporated with ½ lb/yd³ of formulated *M. anisopliae* granules from two experiments.

Day	Media Component	Experiment 1	Experiment 2
8	Coir	98.13 (4.03) ^{a-b}	
	Fir Bark	98.75 (3.42) ^a	-

	Hemlock Bark	100 (0.0)a	-
	Peat	98.75 (5.01)a	-
	Perlite	100 (0.0)a	-
28			
	Coir	96.25 (5.00)a	95.00 (6.33)a
	Fir Bark	96.25 (8.90)a	92.50 (10.64)a
	Hemlock Bark	98.13 (5.41)a	93.75 (7.18)a
	Peat	98.13 (5.41)a	92.50 (11.25)a
	Perlite	95.63 (8.12)a	91.88 (9.81)a
56			
	Coir	99.38 (2.50)a	95.00 (8.16)a
	Fir Bark	96.43 (8.43)a	92.50 (7.74)a
	Hemlock Bark	97.50 (5.80)a	96.88 (7.93)a
	Peat	97.50 (5.80)a	88.75 (10.88)a
	Perlite	97.50 (5.80)a	71.25 (15.86)b
77			
	Coir	58.00 (23.41)a	95.63 (7.27)a
	Fir Bark	65.63 (18.91)a	95.63 (7.27)a
	Hemlock Bark	66.25 (15.86)a	96.88 (7.04)a
	Peat	67.50 (23.52)a	96.88 (6.02)a
	Perlite	2.50 (7.7)b	96.67 (6.17)a
105			
	Coir	85.63 (15.51)a	89.38 (13.40)ab
	Fir Bark	59.67 (33.40)b	84.38 (15.98)b
	Hemlock Bark	73.75 (25.00)ab	88.67 (13.56)ab

	Peat	81.25 (19.28)a	91.25 (10.88)ab
	Perlite	91.88 (20.07)a	99.38 (4.43)a
133			
	Coir	82.50 (15.71)a	96.88 (4.79)a
	Fir Bark	41.88 (29.26)c	88.75 (13.60)b
	Hemlock Bark	59.38 (27.68)bc	95.63 (6.29)ab
	Peat	75.00 (29.66)b	93.13 (6.29)ab
	Perlite	97.50 (5.78)a	96.25 (7.19)a

^a Means followed by the same letter on the same sample date within a column are not significantly different ($P < 0.05$).

^b Sample not taken.