

Project Name: Nematode Efficacy

New	Ongoing	X	Completed	Duration if ongoing or completed:	2016-2023
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Project Description:

Nematodes have routinely surfaced in the biennial survey of grower needs. Recently, fluopyram has been registered for nematode management in turf. However, no new nematicides have been commercialized for ornamentals in the past 20 years and growers continue to have challenges managing nematodes with limited old products that are currently available.

Research Project Abstract (if available):

Abstract from 2017 Nematode Efficacy Summary & Literature Review

Foliar nematodes cause huge damage not only in food crops but also on popular ornamental horticulture plants. This summary includes research from nematode efficacy experiments on environmental horticulture crops during 1999 to 2020. The 36 products tested either as soil or foliar treatments were from different mode-of-action groups and included 26 chemicals, 9 plant oils, and 1 bacterial biopesticide. Products with good efficacy included: abamectin, acephate, clothianidin, dimethoate, insecticidal soap, isofenphos, methiocarb, neem oil, oregano oil, oxamyl and lambda-cyhalothrin. Active ingredients with excellent efficacy included: ammonia hydroxide, *Burkholderia cepacia*, chlofenapyr, cinnamon + clove + thyme oils (32% + 8% + 15%), diazinon, ethoprophos, grapefruit seed extract, imidacloprid, peroxyacetic acid, potassium permanganate, sodium dichloroisocyanurate, sodium hypochlorite, and trichlofon.

Target Species (Phytotoxicity, or common and Latin name of arthropod, pathogen, weed):

Aphelenchoides fragarie
Aphelenchoides sp.
Meloidogyne hapla
Meloidogyne incognita
Meloidogyne sp.

Target Crops (list tested crops if ongoing or completed project)

Hemerocallis sp.
Hibiscus rosa-sinensis
Hibiscus sp.
Hosta sp.
Microlepis strigosa
Saintpaulia ionantha
Salvia greggii

Target Product(s)(list tested products or numbered compounds if ongoing or completed project)

Avid 0.15EC (Abamectin)
 Bountify (MBI 306) (*Burkholderia rinojensis* strain A396)
 Gem-21 (Gem-21)
 GWN-12111 (GWN-12111)
 Indemnify (Fluopyram)
 MBI 203 SC2 (MBI 203)
 MBI 304 (*Chromobacterium subtsugae*)
 MBI 305 (*Burkholderia rinojensis* strain A396)
 NMG-787 (NMG-787)
 RootShield Plus WP (aka BW240) (*Trichoderma harzianum* T-22 + *Trichoderma virens* G-41)
 Tril-21 (Thyme oil)



Environmental Horticulture Program Research Project Sheet

<https://www.ir4project.org/ehc/ehc-registration-support-research/env-hort-extension-resources/>

Product Registration and Research Status			
	Fully Screened (also includes standards)	Partially Screened through IR-4 ¹	Need Data Across Species ?
Labeled Generally & Commercialized	Basamid Chloropicrin K-Pam HL Methyl Bromide Mocap Pylon Telone Vapam, Busan, Nemasol Vorlex		
Labeled Generally But NOT Commercialized			
Labeled for Specific Diseases & Commercialized			
Labeled for Specific Diseases but NOT Commercialized		Indemnify Majestene (MBI-305)	
Not yet registered or Labeled		MBI-304 MBI 306 NMG-787	
No longer available for development			
* IR-4 Data contributed to registration decision – either adding pest to label or not pursuing further research			
1 At least one species screened fully			

Pros	Cons
A new active ingredient (fluensulfone) may be available	Uncertain interest for ornamentals
Several different genera cause nematode diseases and performance may not be similar	
Loss of methyl bromide – need alternatives	
Can be major pest for growers	
Products needed	
Success using phosphites to control beech leaf disease – can this be validated?	

Scope of Project: control of Beech Leaf Disease needed, Fluopyram?

IR-4 Efficacy Trials to Date

Average rating on a scale of 1 – 5 with 1 = 0 to about 50% efficacy (not effective) and 5 = 95 to 100 efficacy (very effective); minimum to maximum rating; number of trials (See table on next page). For product/insect combinations that are blank, IR-4 has not screened this combination.

‘Labeled’ indicates that this disease species or genera is listed on the label. A rating of 2 or lower is considered unacceptable efficacy (*red text*). A rating of 3 or higher is considered commercially acceptable (black text). Non-labeled, completed product/disease combinations (3 or more trials) with an average rating of 3 or higher are highlighted with **green text**. For disease/product combinations that are blank, IR-4 has not screened this combination.

MOA	Product (Active Ingredients)	Foliar Nematode, Strawberry (<i>Aphelenchoides fragariae</i>)	Foliar Nematodes (<i>Aphelenchoides</i> sp.)	Nematode, Northern Root Knot (<i>Meloidogyne hapla</i>)	Nematode, Southern Root Knot (<i>Meloidogyne incognita</i>)
FRAC 7	Indemnify (Fluopyram)	1.0 (1 - 1) n1		3.0 (3 - 3) n1	5.0 (5 - 5) n1
FRAC BM01 & IRAC UNB	MBI 305 (<i>Burkholderia rinojensis</i> strain A396)	2.0 (2 - 2) n1		3.0 (3 - 3) n1	
FRAC BM02	MBI 304 (<i>Chromobacterium subtsugae</i>)	2.0 (2 - 2) n1		3.0 (3 - 3) n1	
FRAC BM02	RootShield Plus WP (aka BW240) (<i>Trichoderma harzianum</i> T-22 + <i>Trichoderma virens</i> G-41)				1.0 (1 - 1) n1
FRAC NC & IRAC UNB	Bountify (MBI 306) (<i>Burkholderia rinojensis</i> strain A396)				1.0 (1 - 1) n1
IRAC 6	Avid 0.15EC (Abamectin)		1.5 (1 - 3) n4		
unknown	MBI 203 SC2 (MBI 203)				1.0 (1 - 1) n1
unknown	NMG-787 (NMG-787)				1.0 (1 - 1) n1