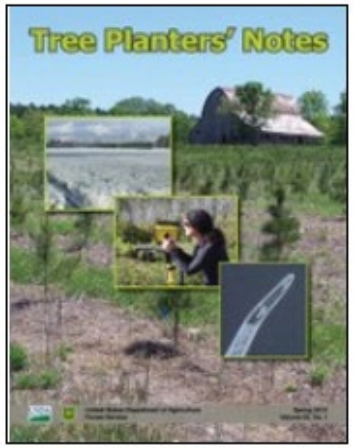
2020 NEMATICIDE TRIAL

SFNMC 2020 VIRTUAL CONTACT MEETING

JULY 20, 2020

Southern Forest Nursery Management Cooperative

Nina Dowling Payne



Tree Planters' Notes
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https://rngr.net/publications/tpn/55-1

Southern Forest Nursery Management Cooperative

Nematode Damage and Management in North American Forest Nurseries

Michelle M. Cram and Stephen W. Fraedrich

Plant Pathologist, Forest Service, Forest Health Protection, Athens, GA; Research Plant Pathologist, Forest Service, Southern Research Station, Athens, GA

Abstract

Plant-parasitic nematodes can affect seedling production in forest nurseries when host seedlings are developmentally vulnerable, nematode populations are high, or opportunistic pathogens are present. Soil fumigation has been important for plant-parasitic nematode control in forest nurseries. Regulatory changes and rising costs of fumigant application are expected to affect nursery pest management programs. In the future, management strategies for the control of various nematodes will increasingly depend on the biology of the nematodes and hosts. This article provides a brief review of nematode problems that affect seedlings in forest nurseries, symptoms of nematode damage, and nematode control practices.

Introduction

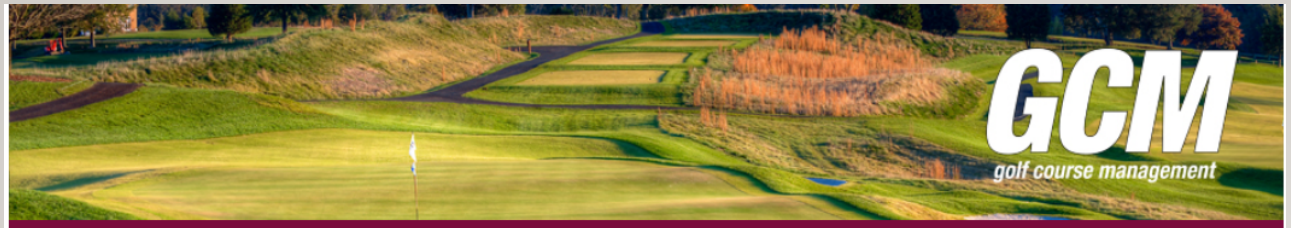
Nematodes have long been associated with bareroot seedling damage in North American forest nurseries and some plant-parasitic species cause significant stunting and chlorosis of seedlings (Hopper 1958, Johnson and others 1970, Sutherland and Sluggett 1975, Peterson and Riffle 1986, Fraedrich and Cram 2002). Plant-parasitic nematodes are microscopic worms that feed on plants by removing the cell contents with a hollow, needle-like mouthpart called a stylet, which functions much like a straw (figures 1 and 2). Some plant-parasitic nematodes remain in the soil and feed by repeatedly thrusting their stylets into seedling roots. These nematodes are referred to as ectoparasites. Other plant-parasitic nematodes are endoparasites and invade root systems to feed inside the root tissues. Among the numerous species of plant-parasitic nematodes, many are specialized to attack various types of plant tissues including leaves, flowers, stems, and roots; however, most damaging nematodes are soilborne and feed on roots (Shurtleff and Averre 2000). In some instances, root diseases can develop from the interaction of the physical damage caused by nematode feeding and soilborne fungal pathogens that colonize the wounded root tissues (Dwinell and Sinclair 1967, Shurtleff and Averre 2000).

The environmental conditions in most forest nurseries are ideal for many species of plant-parasitic nematodes. In addition to high host densities, bareroot nurseries are typically located on well-drained sandy soils that are irrigated regularly. Highly porous soils, where pore sizes exceed 30 microns, allow for the free movement of most plant-parasitic nematodes. Large

Figure 1. A translucent, worm-shaped stunt nematode (*Tylenchorhynchus ewingi*.) (Photo source: Stephen W. Fraedrich).

Figure 2. Head of a *Tylenchorhynchus ewingi* nematode with a clearly visible stylet. (Photo source: Michelle M. Cram).

Read in online ag/turf newsletter:



GCM

Home > GCSAA Websites > GCM > 2017 > July > **New golf course nematicides**

Read the entire July 2017 issue of *GCM* »

FROM THE JULY 2017 ISSUE OF GCM *MAGAZINE:*

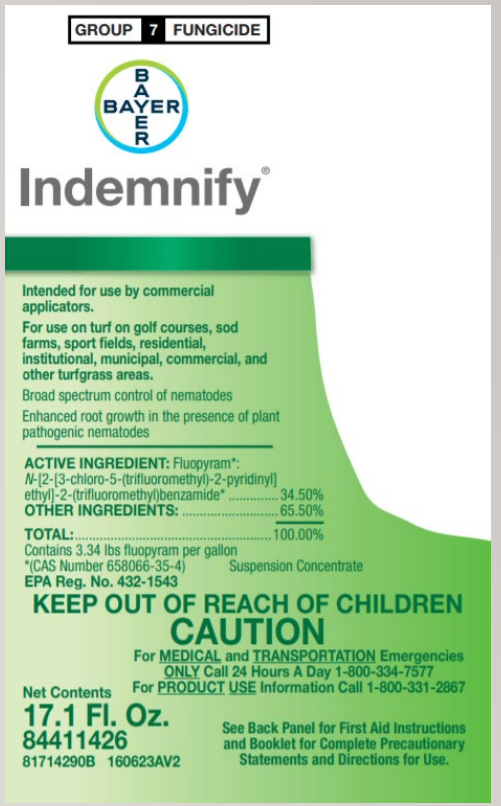
NEW GOLF COURSE NEMATICIDES

New nematicides are filling the gap left in the toolboxes of superintendents who relied on Nemacur, but a single product will likely not be sufficient to replace the old standby.

WILLIAM T. (BILLY) CROW, PH.D.; J. OLE BECKER, PH.D.; AND JAMES H. BAIRD, PH.D.

Read this story in *GCM*s digital edition »

The past two decades have brought major shifts in pesticides — in general and in turfgrass nematicides specifically — because of the implementation of the Food Quality Protection Act of 1996. We have moved away from reliance on a single effective nematicide (Nemacur), through a period without potent nematicide options (4), and into a time where several novel turfgrass nematicides are or will be available. The past two years have seen the launch of three new turfgrass nematicides in most states: Divanem from Syngenta, Indemnify from Bayer, and Nimitz Pro G from Quali-Pro. These three nematicides along with several others released since 2010 provide multiple weapons in the arsenal against nematodes. However, for many, the question remains: Do these



34.5% fluopyram

https://www.gcsaa.org/gcm/2017/july/new-golf-course-nematicides

Southern Forest Nursery Management Cooperative

Email from SFNMC nursery manager with correspondence from chemical supplier:

BAYER

Broadform®

GROUP 7 | 11 FUNGICIDE

Intended for use by commercial applicators.
For use on ornamentals and crops in residential and commercial landscapes, interiorscapes, field grown and container crops in nurseries and greenhouses, lathhouses, shadehouses, and other enclosed structures.

ACTIVE INGREDIENT:
FLUOPYRAM* 21.40%
TRIFLOXYSTROBIN* 21.40%
OTHER INGREDIENTS: 57.20%
TOTAL: 100.00%

Contains 2.10 lbs fluopyram and 2.10 lbs trifloxystrobin per gallon
*(CAS Number **658066-35-4 and 141517-21-7**)
EPA Reg. No. 432-1537 **Suspension Concentrate**
Shake Well Before Use

KEEP OUT OF REACH OF CHILDREN
CAUTION

Net Contents
12 Fl. Oz.
85758497
85761811B 181214AV2

See Back Panel for First Aid Instructions and Booklet for Complete Precautionary Statements and Directions for Use.

For MEDICAL and TRANSPORTATION Emergencies ONLY Call
24 Hours A Day 1-800-334-7577
For PRODUCT USE Information Call 1-800-331-2867

FIRST AID	
If swallowed:	• Call a poison control center or doctor immediately for treatment advice. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Have person sip a glass of water if able to swallow. • Do not give anything by mouth to an unconscious person.
If on skin or clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
In case of emergency call toll free the Bayer CropScience Emergency Response Telephone No. 1-800-334-7577. Have a product container or label with you when calling a poison control center or doctor, or going for treatment.	
NOTE TO PHYSICIAN: Treat Symptomatically.	

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION
Harmful if swallowed, absorbed through skin or inhaled. Avoid contact with skin, eyes, or clothing. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

Bayer

Produced for:
Bayer Environmental Science
A Division of Bayer CropScience LP
5000 CentreGreen Way, Suite 400
Cary, NC 27513

21.4% fluopyram
21.4% trifloxystrobin

BAYER

STRATEGO®

Fungicide

Net Contents:
2.5 Gallons

GROUP 3 | 11 FUNGICIDE

For control of certain diseases and plant health in barley, corn, filberts, oats, pecans, rice, soybean, triticale, and wheat

ACTIVE INGREDIENTS:
Propiconazole (CAS No. 60207-90-1) **11.4%**
Trifloxystrobin (CAS No. 141517-21-7) **11.4%**
OTHER INGREDIENTS*: **77.2%**
Contains 1.04 lb Propiconazole per gallon plus 1.04 lb Trifloxystrobin per gallon. **TOTAL: 100.0%**
*Contains petroleum distillates, xylene or xylene range aromatic solvents.
EPA Reg. No. 264-779

STOP – Read the label before use
KEEP OUT OF REACH OF CHILDREN
WARNING AVISO
Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)
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SFNMC testing in rust trial

Southern Forest Nursery Management Cooperative

Fluopyram :

- Produced by Bayer CropScience
- Testing done in crop and turf applications over 4 years in over 100 field trials
- A SDHI fungicide found to have nematicidal activity (very unusual)
- As a fungicide, is taken up by roots & moved through plant to control diseases
- A contact nematicide inhibiting the production of energy in nematodes
- Has extremely long soil half-life of 6 months to 2 years (unique)
- Binds moderately tightly to organic matter
- Avoid applying prior to significant rainfall within 48 hours to prevent leaching

SFNMC – ARBORGEN BULLARD, TX NURSERY COOPERATION

- Product obtained by SFNMC nursery manager
- Trial designed by SFNMC staff and nursery manager
- Trial installed, soil sampled, germination counted by nursery




photos by G. Bickerstaff, ArborGen Inc.

- TO BE DONE: Trial monitored, final soil and seedling samples collected, seedlings measured at SFNMC lab, soil processed for final nematode analysis at AU Nematode Lab, analysis of efficacy of product

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QUESTIONS?

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CONTACT

Nina Payne
334-844-4917
nina.payne@auburn.edu

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