# NEMATICIDE TRIALS 2020 + 2021

SFNMC 2021 CONTACT MEETING

JULY 19, 2021

Southern Forest Nursery Management Cooperative

**Nina Dowling Payne**

# Background

- Limited nematode control options now
- 

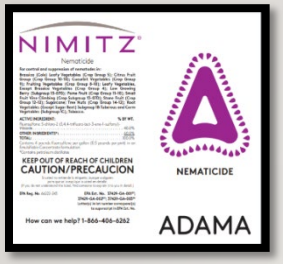


- *"The increasing regulatory pressure on pesticides has affected nematicides more than other products.*

  *With the recent spike in nematicide research, a number of new products (Nimitz, Velum and Majestene) have recently entered the market, and more new products are expected in the near future. Unlike the older nematicides, they more specifically target nematodes. Therefore, they should not be considered fumigant replacements."*

# Background continued

- Nimitz




labeled as a nematicide
active ingredient is fluensulfone 40.0%
pre-plant only
conifer nurseries not on label

- Velum

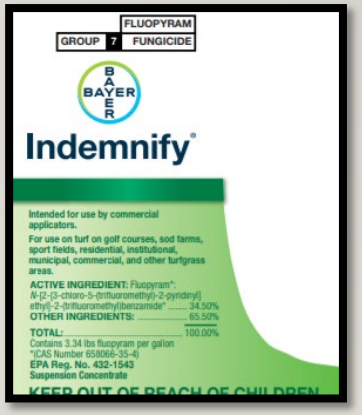

labeled as both fungicide and nematicide
active ingredient is fluopyram 41.5%
conifer nurseries not on label

- Majestene


labeled as biological insecticide and nematicide
active ingredient is heat-killed *Burkholderia*
conifer nurseries not on label

- Indemnify

labeled as a fungicide and nematicide
active ingredient is fluopyram 34.5%
labeled for turf only



# Background continued

- Broadform


labeled as a fungicide
active ingredients are fluopyram 21.4% and trifloxystrobin 21.4%
“field grown and container crops in nurseries” on label
known to be a contact nematicide as well as a fungicide

one ingredient in Stratego fungicide in SFNMC rust trials

# 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 and 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

# 2020 NEMATICIDE TRIAL

- 1 fungicide aka nematicide: Broadform
  fluopyram 21.4% + trifloxystrobin 24.4%
- 1 nursery: ArborGen Bullard TX nursery
- maximum allowable application per acre per year: 27.1 oz.
- apply in nematode hot spot in field last fumigated in 2018
- 4 treatments: 0 sprays - control
  2 sprays - 13.5 oz/ac at sowing + 13.5 oz/ac 21 DAT
  3 sprays - 8 oz/ac at sowing + 11 oz/ac 21 DAT + 8 oz/ac 21 DAT
  4 sprays – 6.75 oz/ac at sowing + 6.75 oz/ac 21 DAT +
  6.75 oz/ac 21 DAT + 6.75 oz/ac 21 DAT

# 2020 NEMATICIDE TRIAL

- By nursery staff: product purchased
  trial laid out
  soil samples taken and shipped to Auburn for analysis
  germination counts made
  seedling samples collected and shipped to Auburn for analysis




*photos by G. Bickerstaff, ArborGen Inc.*

- You had ONE job….*Nina forgot to do nematode soil sampling during the summer!*

Loblolly pine seedling characteristics treated with fluopyram in multiple applications.

| Treatment | June 2020 density/ sq ft (#) | Dec. 2020 density/ sq ft (#) | Shoot height (cm) | Root collar diameter (mm) | Shoot weight (g) | Root weight (g) |
|---|---|---|---|---|---|---|
| Control | 29.3 | 32.3 | 29.6 | 5.20 | 3.38 | 0.66 |
| 2 sprays | 31.1 | 33.8 | 28.9 | 5.10 | 3.35 | 0.67 |
| 3 sprays | 32.2 | 34.1 | 27.9 | 4.96 | 3.03 | 0.63 |
| 4 sprays | 32.6 | 33.2 | 29.3 | 5.00 | 3.22 | 0.62 |

No data on *comparisons* of nematode populations in plots treated with fluopyram in multiple applications.

April 30, 2020 nematode populations in plots treated with fluopyram in multiple applications.

| Treatment | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Total |
|---|---|---|---|---|---|
| Control | 96 | 68 | 36 | 44 | 244 |
| 2 sprays | 26 | 36 | 6 | 88 | 156 |
| 3 sprays | 16 | 38 | 50 | 70 | 174 |
| 4 sprays | 2 | 58 | 60 | 22 | 142 |

# What's next?

- Repeat the trial in 2021 with same product
- Modify quantities of product and timings of applications
- Monitor Nina - to do in-season soil sampling for nematode analysis

# 2021 NEMATICIDE TRIAL

- 1 fungicide aka nematicide: Broadform
  fluopyram 21.4% + trifloxystrobin 24.4%
- 1 nursery – ArborGen Bullard TX nursery
- maximum allowable application per acre per year: 27.1 oz.
- apply in nematode hot spot in field last fumigated in 2019
- 2 treatments: 0 sprays - control
  3 sprays - 8 oz/ac at sowing + 11 oz/ac 21 DAT + 8 oz/ac 21 DAT

# 2021 NEMATICIDE TRIAL

- By nursery staff: product purchased
  trial laid out
  soil samples taken and shipped to Auburn for analysis **thru September**
  germination counts made
  seedling samples to be collected and shipped to Auburn for analysis

*photos by G. Bickerstaff, ArborGen Inc.*

# What's next?

- If we find no seedling damage + good nematode control (*if nematode quantities are sufficient to quantify treatment differences)*, then we will retest this product
- If nematode quantities are not sufficient in 2021 to identify treatment differences, then we may retest this product
- If we find no seedling damage + poor nematode control, then we will continue to identify alternative nematicides to test
- Nematicides we test could be used to extend fumigation in fields with nematode problems

# QUESTIONS?

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