Methods for Successful Nematode Trialing

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Syngenta Crop Protection
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Steps for Successful Nematode Trialing

- Nematodes
- Design the Trial for Nematodes
- Give Your Nematodes Their Favorite Food
- Sample Where the Nematodes Are
- Analyze and Report Samples Correctly
Finding Nematodes

- Sample to Confirm!
Infesting Nematodes

- Infested soil/roots
  - Maximum protection from the elements

- Direct inoculation into transplant hole (under the plant)

- In-furrow sprays and through drip lines is not recommended
Nematode Gardens: Dedicated areas for nematode trialing

Feed your nematodes all year!!

www.nemaplex.ucdavis.edu
### Trial Design for Nematodes:

**SCN egg count variation – real life example**

Inside an area, approximately the size of two pick-up trucks, SCN egg counts can go from 0 to 6,400 eggs/100 cc of soil.

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**Trial Set-Up:** "Aggregation of SCN egg population densities in a small area of naturally infested field research plots near Ames, Iowa. Each small rectangle represents a plot measuring 10 feet by 20 feet. The number in each rectangle is the number of SCN eggs per 100 cc soil as determined from a 10-core soil sample from each plot."  

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1 Greg Tylka, Iowa State University
Trial Area Nematode Distribution
Trial Area Nematode Distribution
RCBD: 7 treatments, 4 row plots, sample center 2
Trial Area Nematode Distribution
Paired Plot - Checkerboard: 7 treatments, 2 row plots
% of Trials with Significant p-value for Nematode Ratings

2017

RCBD
26 trials
85% not significant
15% significant

Checkerboard
18 trials
78% significant
22% not significant
Variety/Hybrid Selection

- Nematode tolerance levels vary widely within crops
Nematode Sampling

● Tools and Methods

● ALWAYS sample in good moisture

● Soil Samples
  - Transect the root zone
  - Mix several cores per plot

● Root Samples
  - Be gentle
  - Get as much as possible
Nematode Sampling

- Root-knot nematodes
- Fall-Spring Sampling: Non-crop
  - Soil Samples
    - # J2’s per 100cc of soil
- In-Season: 30 – 60 DAP
  - Root Samples
    - Gall ratings/counts
    - # of eggs per gram of root
Nematode Sampling

- Soybean Cyst Nematodes

- Fall-Spring Sampling: Non-crop
  - Soil Samples
    - # cysts per 100cc soil

- In-Season: 60 – 90 DAP
  - Soil Samples
    - # cysts per 100cc soil
    - # eggs per cyst

  - Root Samples
    - # cysts per gram of root
    - # eggs per cyst
Nematode Sampling

- Root Lesion & Lance Nematodes

- Fall-Spring Sampling: Non-crop
  - Soil Samples
    - # nematodes per 100cc of soil

- In-Season: 30 DAP – R1
  - Soil and root Samples
    - # nematodes per 100cc of soil
    - # of nematodes per gram of root
Nematode Sampling

- Reniform*, Stubby Root, Stunt, Ring, Sting, Needle

- All sample timings
  - Soil samples
    - # of nematodes per 100cc soil

- Reniform
  - In-season root samples
    - # eggs per gram of root
Sample Handling and Processing

● Keep samples cool and out of the sun
  - Do NOT FREEZE

● Communicate with processing lab
  - Know your nematode
  - Processing is different for many nematodes

● Interpret and communicate results accurately
  - Ground truth results
● Contact
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- 318-282-6552