# Root Knot Nematode of Tomatoes; Evaluation of Non-fumigant Nematicides

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# 2017 Nematicide Evaluation Trial

**The treatments were as follows:**

**1. Control**

**2. Velum 6.5 fl oz/A**

**3. Nimitz 5 pts/A 7-10 days before planting**

**4. Salibro 30.7 fl oz/A**

# Nematode Root Gall Rating

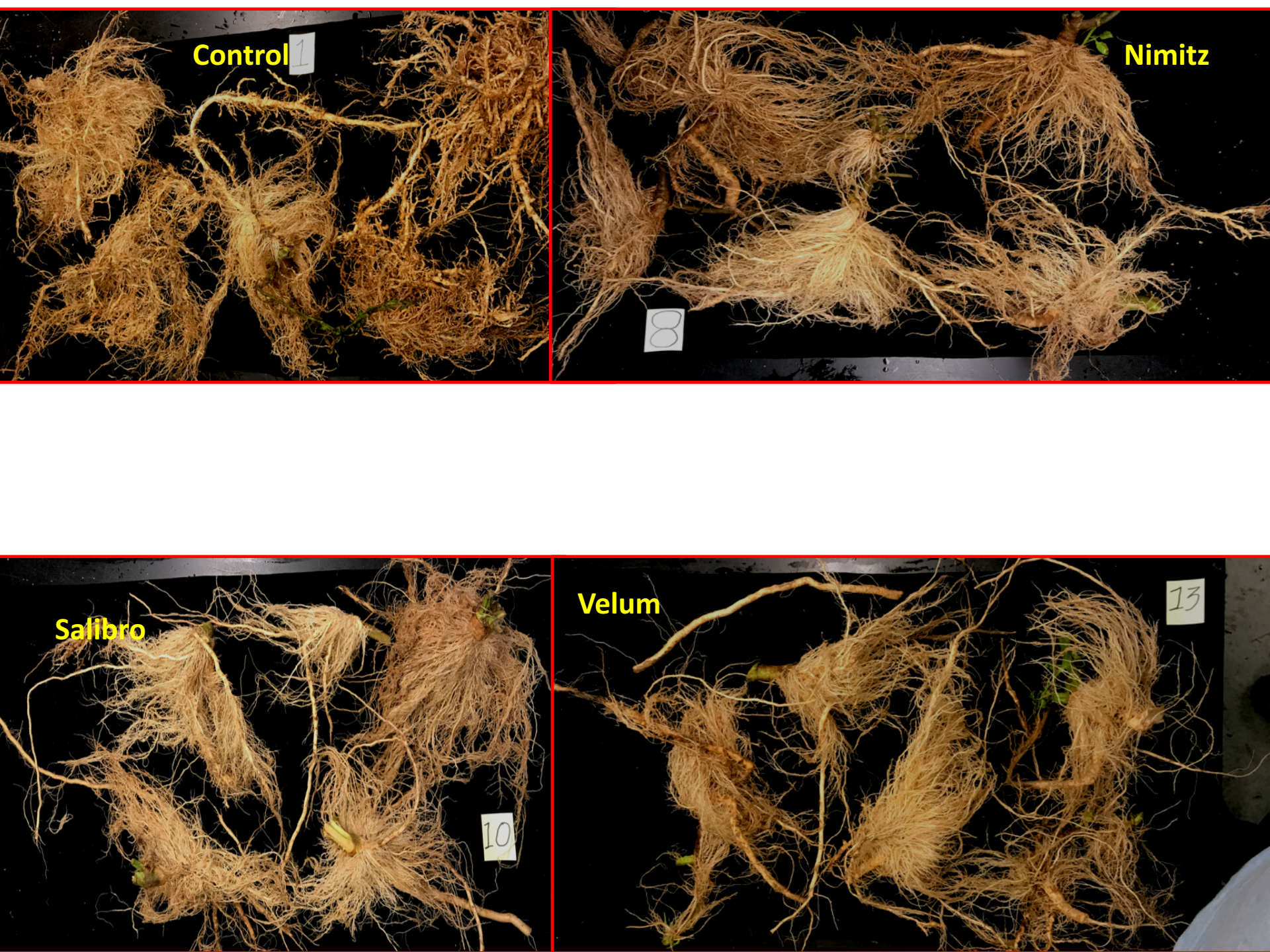
| Treatment | Rating |
|---|---|
| 1. Control | 8.0 A |
| 2. Velum | 3.6 B |
| 3. Nimitz | 1.4 B |
| 4 Salibro | 2.5 B |
| Probability= 0.0019 | |
| %CV= | 54.48 |
| LSD $_{P=0.05}$ | 2.905 |

Treatment 3 was applied on 4/24/17 and the others applied at planting on 5/1/17.

Only a single application pre-plant or at planting was applied for each treatment.

Five roots per plot were harvested the week of 8/7/17 and evaluated for rootknot nematode galling.

Roots were rated on a scale of 1 to 10 with 1 being no visible galling and 10 the roots being over 90% galled.


Control
1
Nimitz
8
Salibro
10
Velum
13


7
Control


2
Nimitz


Salibro
19


6
Velum

**Nimitz Tomato Trial**

| | Nematode Rating (1 to 10) |
|---|---|
| 1. Control | 4.9 |
| 2. Nimitz 3.5 pt/A @ planting | 3.1 |
| 3. Nimitz 5 pt/A @ planting | 4.5 |
| 4. Nimitz 7 pt/A @ planting | 3.8 |
| 5. Nimitz 5 pt/A @ 7-10 before planting | 2.7 |
| Probability | 0.3531 |
| % CV | 50.06 |
| $LSD_{0.05}$ | 2.534 |

**Class Comparison for Nimitz Tomato Trial**

Control vs All Nimitz Treatments

Sum of Squares = 7.618

Probability = 0.164

Control vs 2. Nimitz 3.5 pt/A @ planting

Sum of Squares = 8.100

Probability = 0.152

Control vs 3. Nimitz 5 pt/A @ planting

Sum of Squares = 0.400

Probability = NS

Control vs 4. Nimitz 7 pt/A @ planting

Sum of Squares = 3.136

Probability = NS

Control vs 5. Nimitz 5 pt/A @ 7-10 before planting

Sum of Squares = 12.100

Probability = 0.084

**Nimitz Carrot Trial**

| | Nematode Rating (1 to 10) |
|---|---|
| 1. Control | 1.8 |
| 2. Nimitz 3.5 pt/A @ planting | 1.4 |
| 3. Nimitz 5 pt/A @ planting | 1.3 |
| 4. Nimitz 7 pt/A @ planting | 2.6 |
| 5. Nimitz 5 pt/A @ 7-10 before planting | 0.7 |
| Probability | 0.0632 |
| % CV | 59.79 |
| $LSD_{0.05}$ | 1.257 |

**Class Comparison for Nimitz Carrot Trial**

Control vs All Nimitz Treatments

Sum of Squares = 0.397

Probability = NS

Control vs 2. Nimitz 3.5 pt/A @ planting

Sum of Squares = 0.400

Probability = NS

Control vs 3. Nimitz 5 pt/A @ planting

Sum of Squares = 0.576

Probability = NS

Control vs 4. Nimitz 7 pt/A @ planting

Sum of Squares = 1.444

Probability = 0.218

Control vs 5. Nimitz 5 pt/A @ 7-10 before planting

Sum of Squares = 3.249

Probability = 0.073

# 2018 Plans

- Evaluate rotation of nematicides
  - Nimitz pre-plant followed by Salibro post-plant
  - Nimitz pre-plant followed by Velum post-plant
- Evaluate applications of transplants with nematicides

# Southern Blight of Tomatoes

- Southern blight is favored by:
  - high temperatures (over 86°F)
  - high soil moisture
  - dense canopies
  - frequent irrigation

# Southern Blight of Tomatoes

- Sclerotium rolfsii
- Survives in soil as hardened structures called sclerotia for at least five years.
- Each infected plant can literally produce tens of thousands of sclerotia.
- A host range of over 500 plants

# Southern Blight of Tomatoes

- Southern blight misdiagnosis
  - is likely if it occurs in areas not known to have previous history.
  - Easily confused with other crown rot diseases.
  - Sclerotia not always present, especially with tomatoes.

# Southern Blight of Tomatoes

- There are effective fungicides
  - flutolanil, penthiopyrad, and tebuconazole
  - Issue is getting fungicides where it is need and when its needed.
- Crop Rotations-limited due to wide host range.
- Soil Fumigation
  - Metam sodium-shank injection not effective. Must be flooded, surface drip or sprinkler applied.

# Use of Tomato Resistant Rootstock

- Big Power, Beaufort and Maxifort shown to have excellent resistance to southern blight.
- Commonly used now by fresh market tomato growers in South East US and Mexico.

- ***Grafting Tomato with Interspecific Rootstock to Manage Diseases Caused by Sclerotium rolfsii and Southern Root-Knot Nematode***

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Southern Blight Trial at Boswell 2017 – harvest data 9/18/2017

Table 1. Tomato fruit yield of rootstock trial.

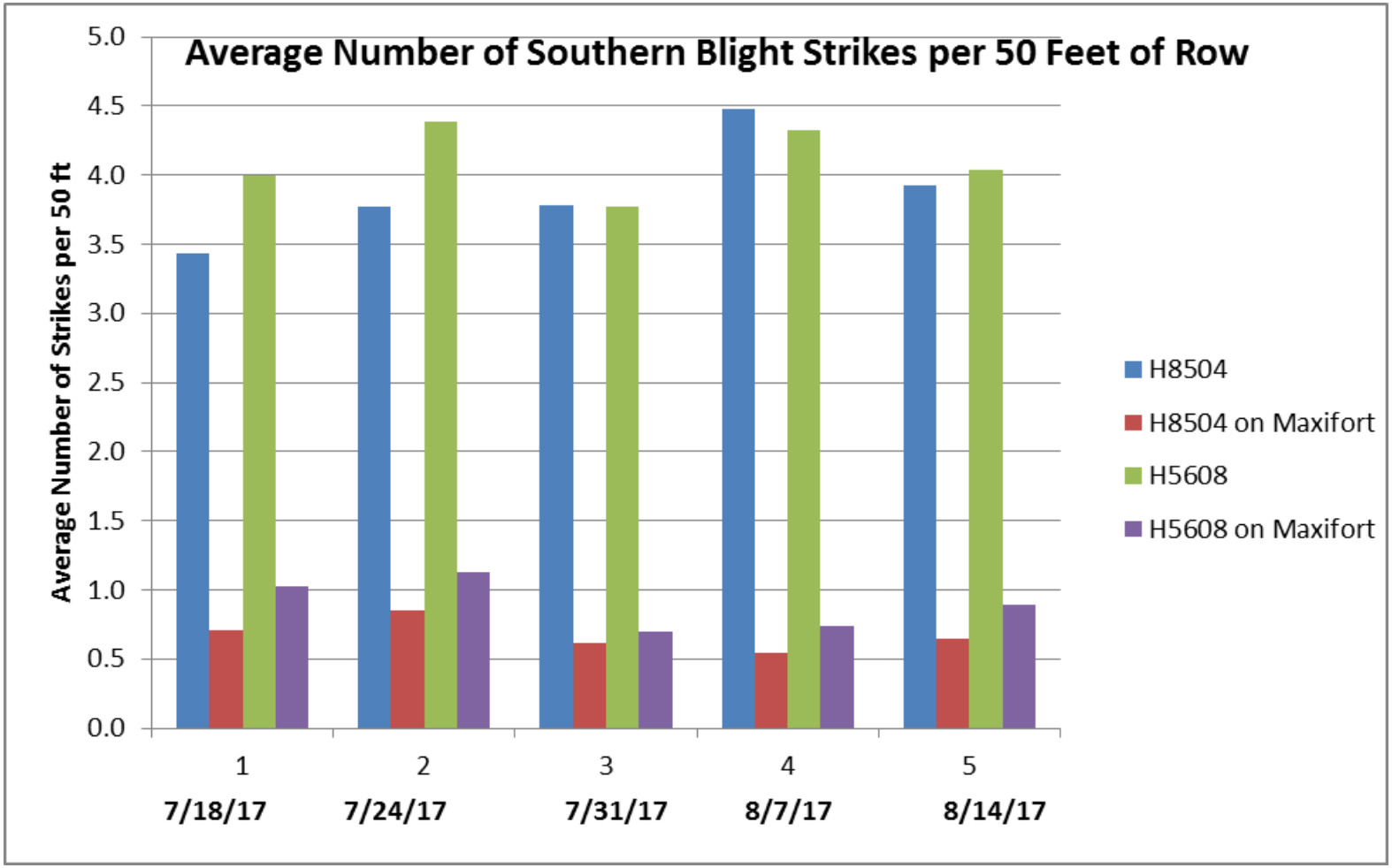
| | | Average Weight in Lbs per plot (600 ft x 5 ft) |
|---|---|---|
| 1. | H8504 | 1331.1 AB |
| 2. | H8504 on Maxifort rootstock | 1638.9 A |
| 3. | H5608 | 1214.3 B |
| 4. | H5608 on Maxifort rootstock | 1644.9 A |
| | Probability | 0.0678 |
| | % CV | 23.58 |
| | LSD p=0.05 | NS |
| | LSD p=0.10 | 318.6 |

Contrast Comparisons

Normal transplant versus on Maxifort rootstock

Sum of Squares=953865.143

Probability = 0.011


Average Number of Southern Blight Strikes per 50 Feet of Row
Average Number of Strikes per 50 ft
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1
7/18/17
2
7/24/17
3
7/31/17
4
8/7/17
5
8/14/17
H8504
H8504 on Maxifort
H5608
H5608 on Maxifort

# Conclusions

- Resistant rootstocks are effective in managing Southern Blight.
- These rootstocks may solve many other soil-born issues.
- Costs of producing tomato seedlings with resistant rootstock is the major issue.
  - Commonly used in fresh market tomatoes.

# Thank You!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