

# Use of spirotetramat and fluensulfone in the post-plant management of plant-parasitic nematodes on peach

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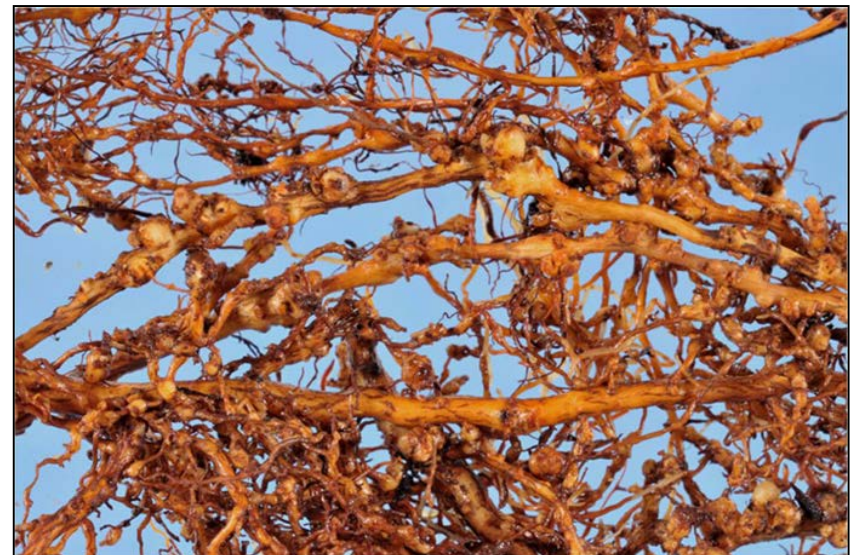
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<http://simpledailyrecipes.com/5200/simpl-peach-smoothies/>

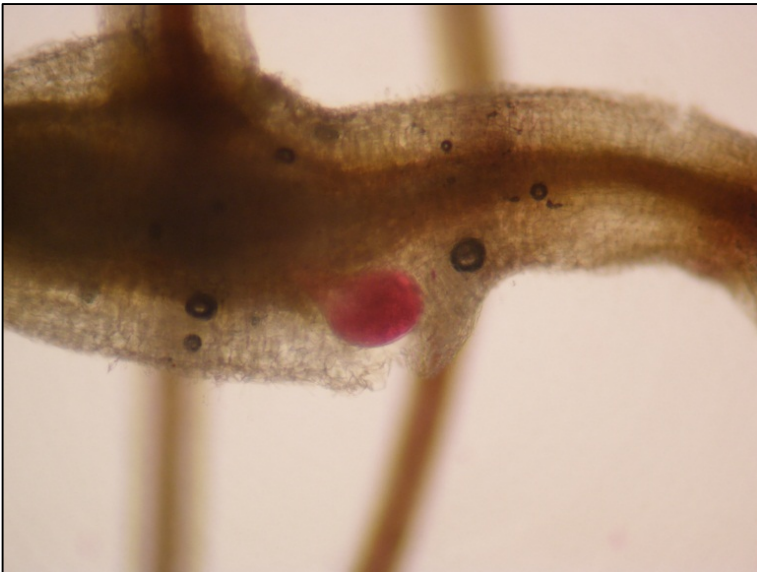


[http://www.freshfromflorida.com/pi/enpp/triology/5001/triology\\_5001\\_nematology.html](http://www.freshfromflorida.com/pi/enpp/triology/5001/triology_5001_nematology.html)

- Introduction
- *Meloidogyne incognita* race 3 on peach
- *Mesocriconema xenoplax* on peach



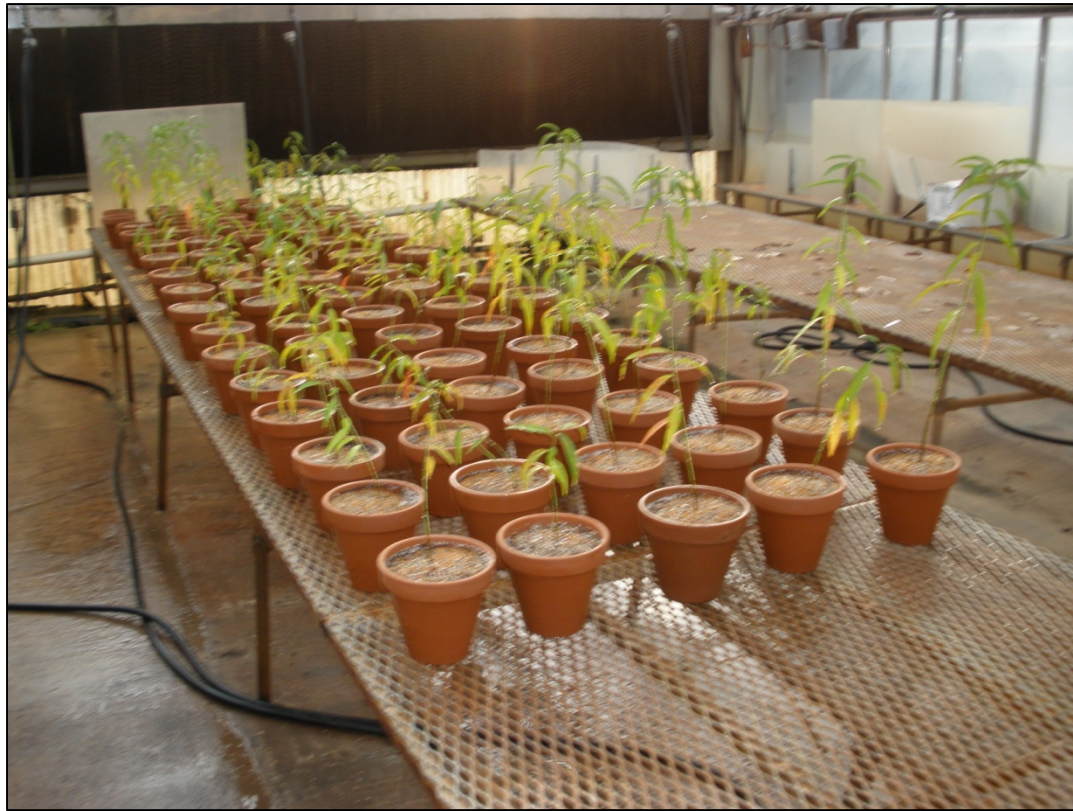
- Peach Tree Short Life (PTSL)
- Disease complex
- Tree mortality caused by cold injury, bacterial canker (*Pseudomonas syringae* pv. *syringae*), or combination of both
- Initiated by the ring nematode, *M. xenoplax*



- Root-knot nematode, *M. incognita* represents 95% of root-knot species present in peach orchards surveyed
- Parasitism reduces tree growth, fruit production, and in severe cases causes tree death

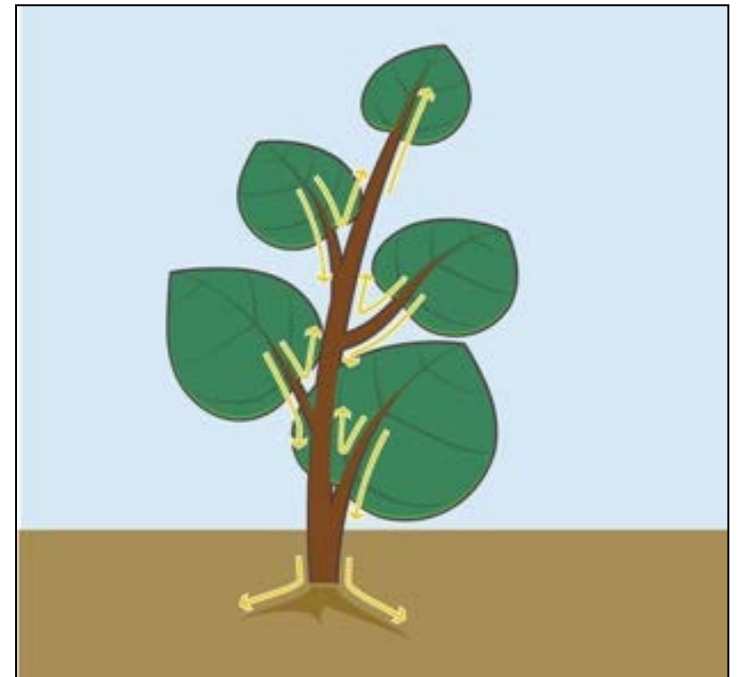
# Objective

- To evaluate new post-plant nematicides for management of nematodes on peach



# Spirotetramat (Movento, Bayer CropScience)

- Broad-spectrum insecticide/nematicide registered for use on peach
- Group 23 lipid biosynthesis inhibitor
- Acts on the fecundity and fertility of eggs when ingested by the organism
- Systemic
- Active within the plant for two or more weeks



<http://www.bayercropscience.com.au/cs/OurCompany/sustainableagriculture.asp>

# Fluensulfone (MCW-2, Makhteshim-Agan Ind.)

- Release expected July 2014
- Fluoroalkenyl group
- Exhibits nematicidal activity, killing the nematode upon contact with the chemical
- Good soil residual activity, multiple modes of action, root systemic, low mammalian toxicity, and no insecticidal effects

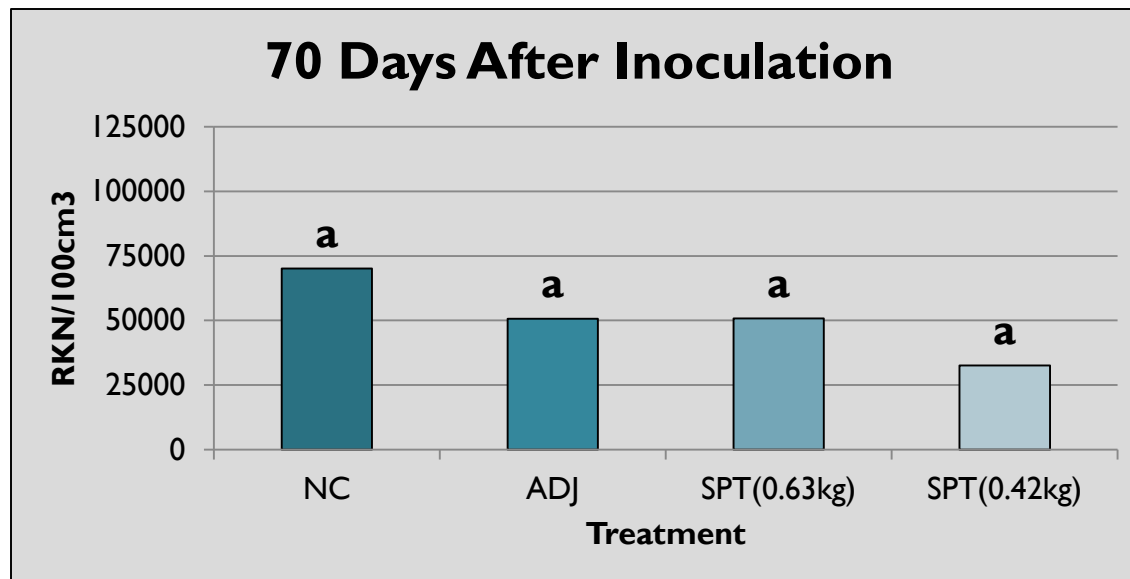
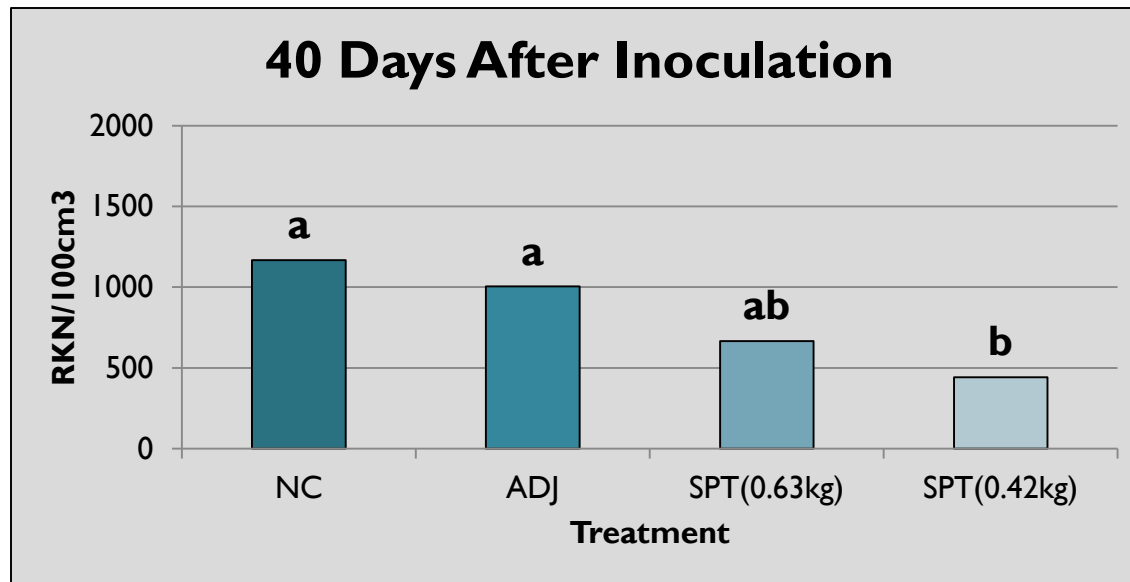
# *M. incognita* on peach

- Determine the effect of spirotetramat and fluensulfone on *M. incognita* reproduction
- Studies were repeated

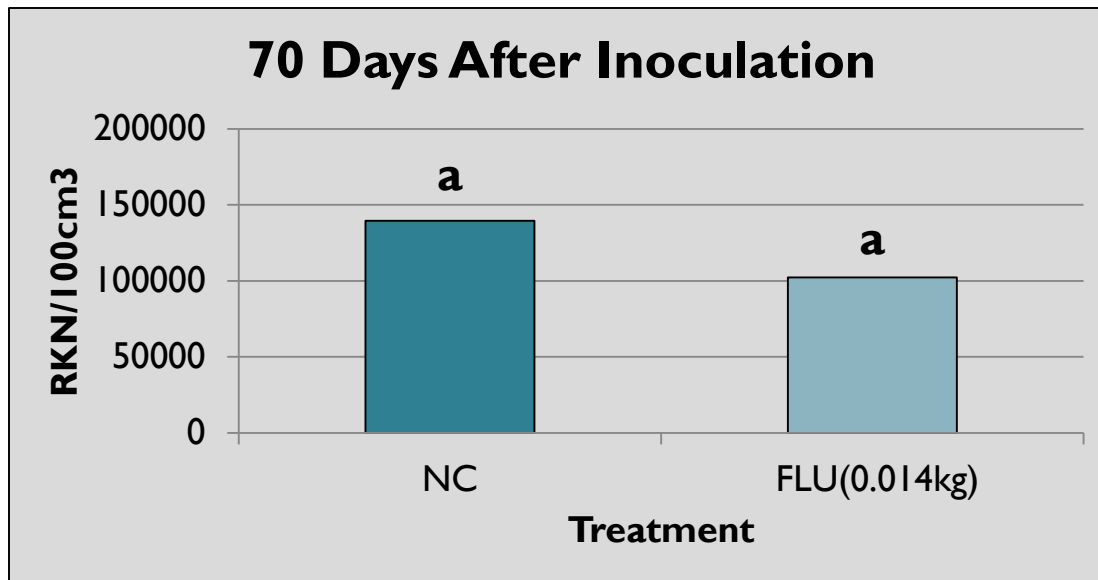
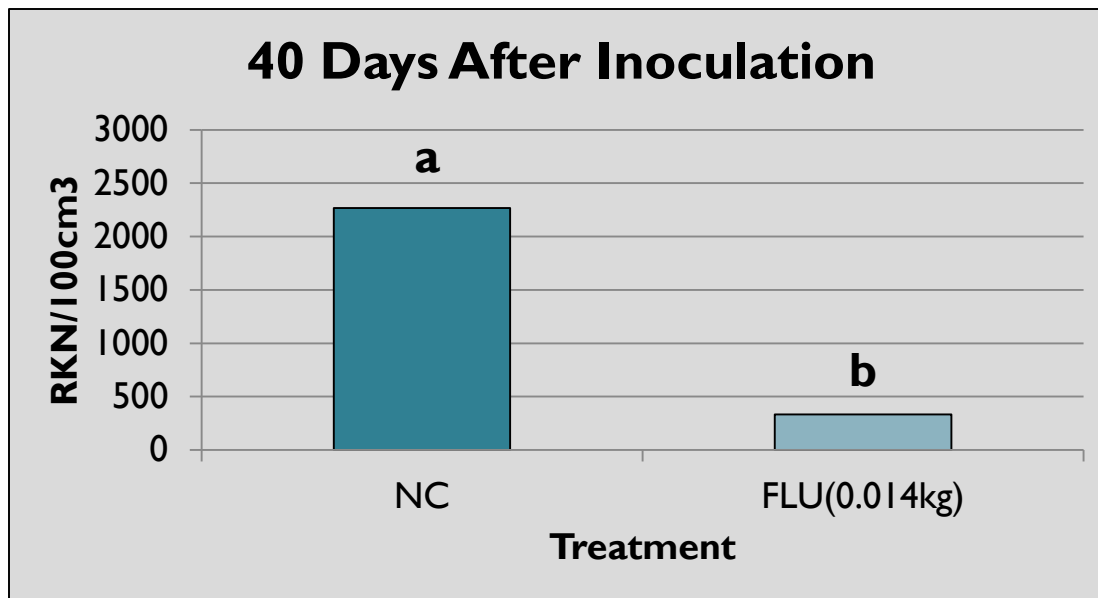




- ‘Lovell’ peach seedlings
- Spirotetramat study treatments included:
  - two rates of spirotetramat (0.42 and 0.63 kg ai/ha)
  - water control
  - nematode control
  - adjuvant control
- Fluensulfone study treatments included:
  - fluensulfone (0.014 kg ai/ha) drench applied
  - water control
  - nematode control
- Each treatment replicated in a randomized complete block
- All plants, except water control, inoculated with 20,000 eggs and treatments applied 10 days later
- Soil samples collected 40 and 70 days after treatment inoculation



Two experimental runs combined, n = 14 replications,  $P \leq 0.05$



Two experimental runs combined,  $n = 12$  replications,  $P \leq 0.05$

- **spirotetramat**
  - Effective at lowest rate (0.42 kg ai/ha) 40 DAI, lost efficacy 70 DAI
- **fluensulfone**
  - Effective 40 DAI, lost efficacy 70 DAI



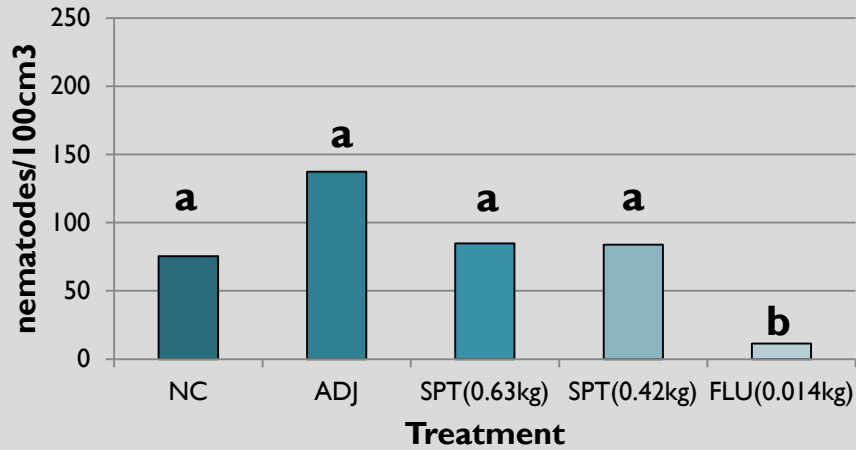
# *Mesocriconema xenoplax* on peach

- Similar to previous experiments with *M. incognita*
- Determine the effect of spirotetramat and fluensulfone on *M. xenoplax* reproduction

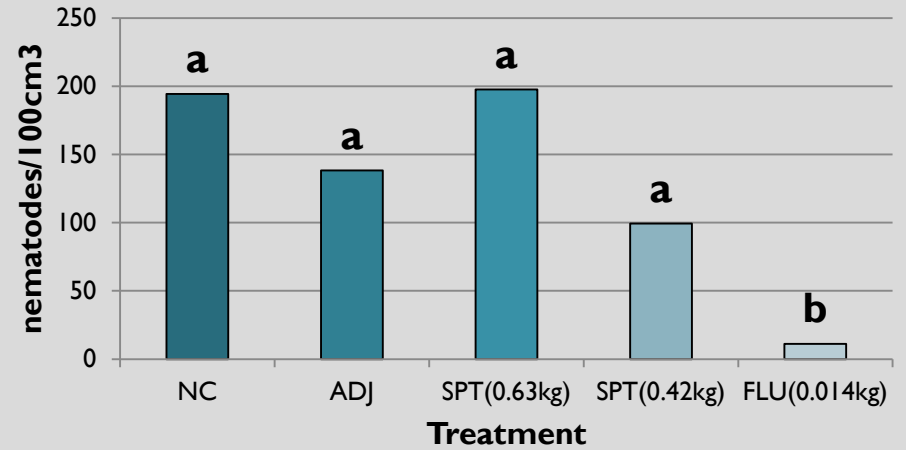


- 'Nemaguard' peach seedlings
- Treatments included:
  - two rates of spirotetramat (0.42 and 0.63 kg ai/ha)
  - fluensulfone (0.014 kg ai/ha) drench applied
  - water control
  - nematode control
  - adjuvant control
- Each treatment replicated in a randomized complete block
- All plants, except water control, inoculated with 1,000 nematodes and treatments applied 10 days later
- Soil samples collected 30, 60, and 90 days after inoculation

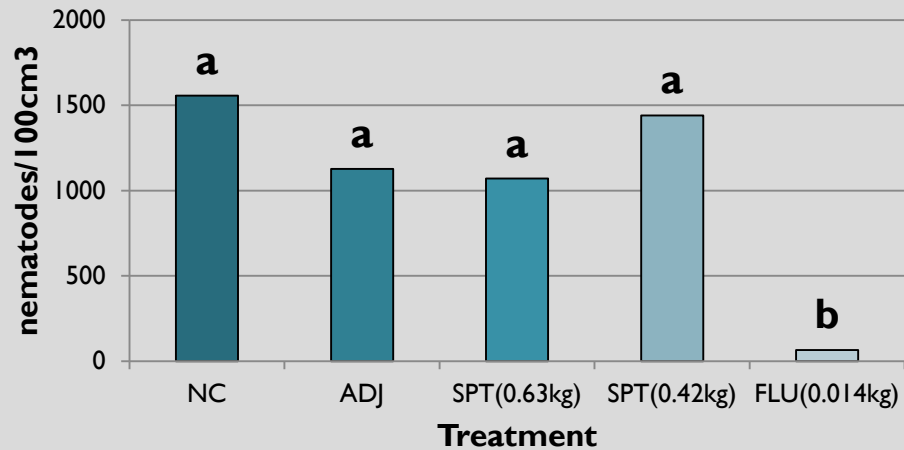
### 30 Days After Inoculation



### 60 Days After Inoculation



### 90 Days After Inoculation



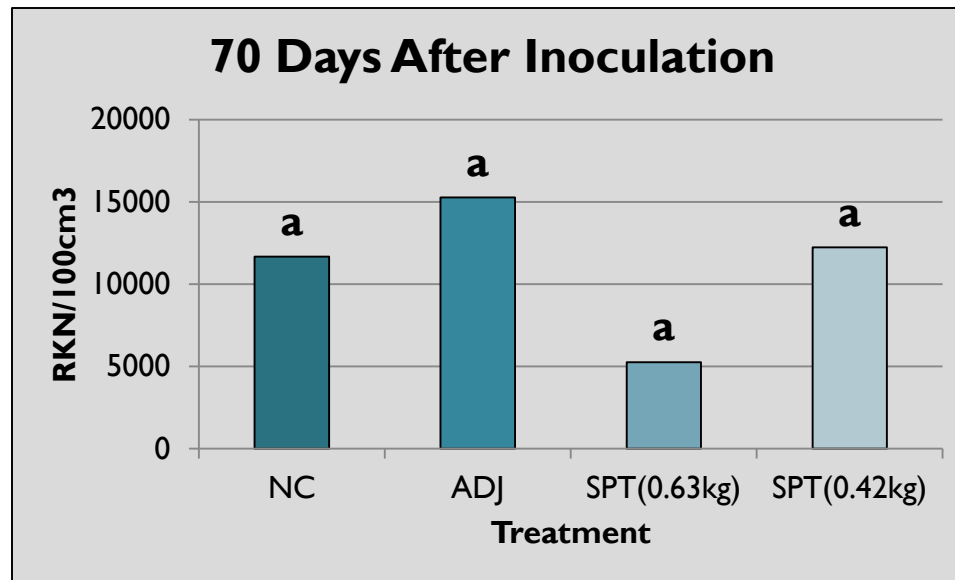
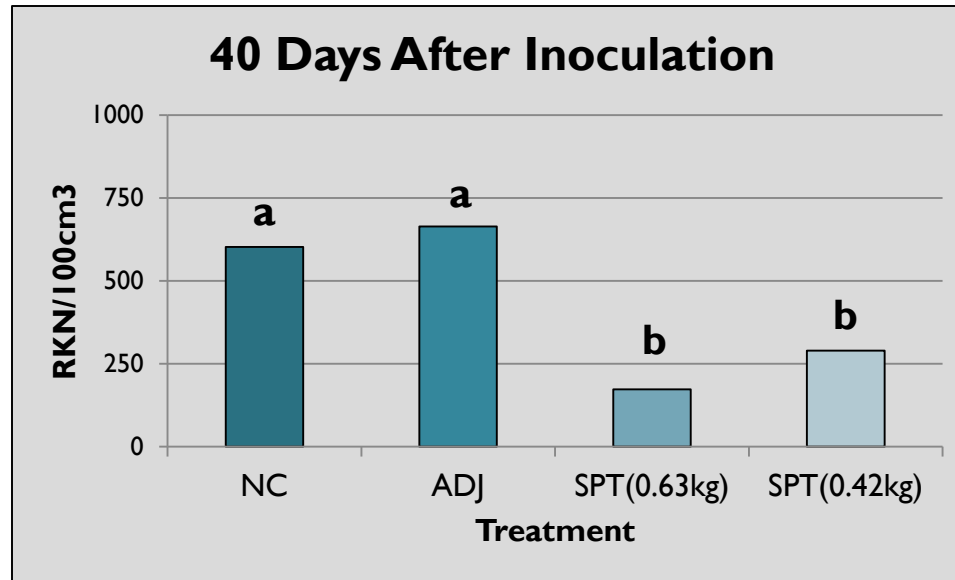
Two experimental runs combined, n = 13 replications,  $P \leq 0.05$

# Dual Application of Spirotetramat

- Evaluate the effect of two sprays of spirotetramat at both rates on nematode reproduction and plant growth
- Study conducted with both root-knot and ring nematode, in the process of being repeated
- Set up similar to other studies, except a second application was applied 30 days after the first spray
- Treatments:
  - spirotetramat (0.63 and 0.42kg ai/ha) applied twice
  - adjuvant control applied twice
  - nematode control
  - water control



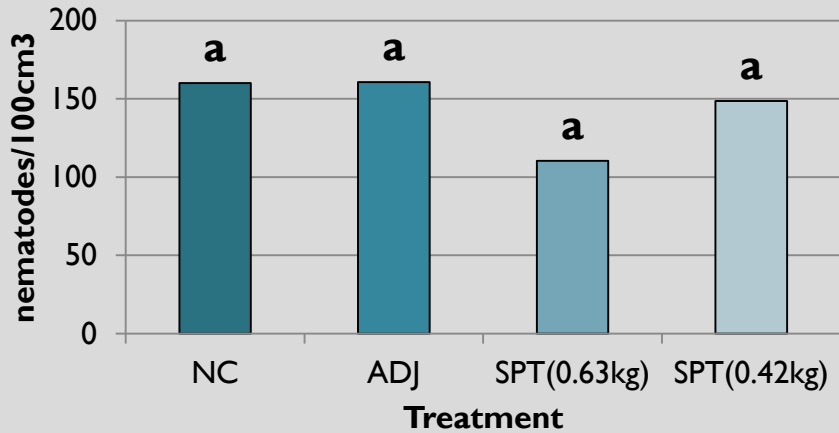
# Effect on *M. incognita* on Peach



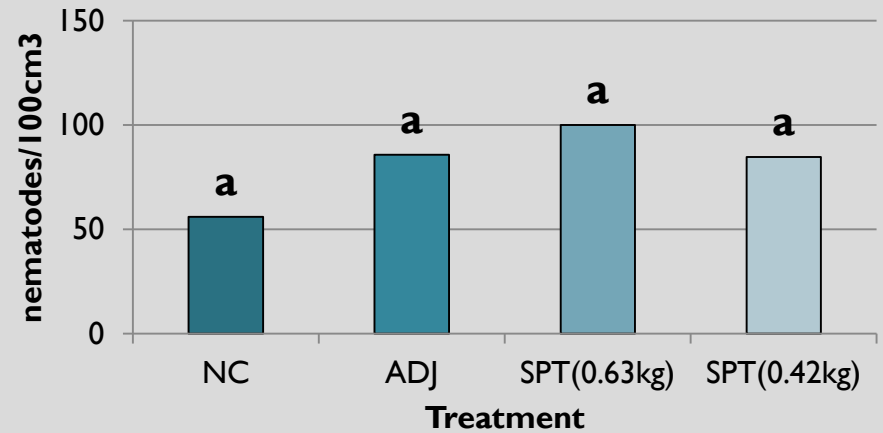
n = 15 replications,  
 $P \leq 0.05$

# Effect on *M. xenoplax* on Peach

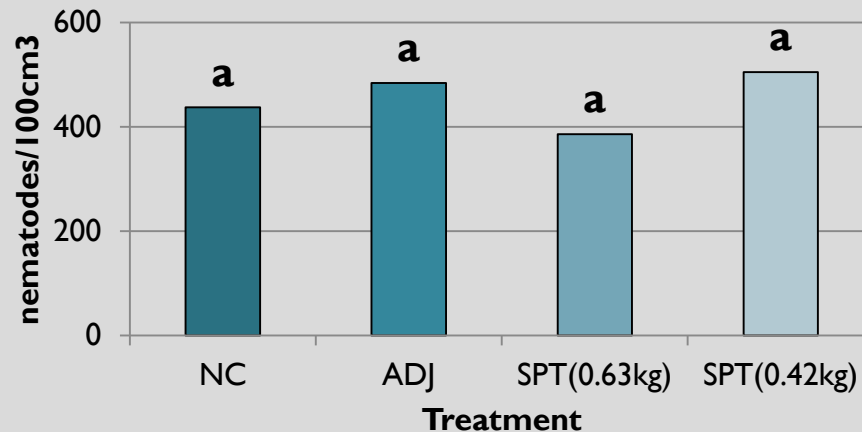
## 30 Days After Inoculation



## 60 Days After Inoculation



## 90 Days After Inoculation



n = 17 replications,  
 $P \leq 0.05$

# Conclusion

- spirotetramat
  - Effective 40 DAI at lowest rate (0.42 kg ai/ha) for the single application
  - Effective 40 DAI at (0.42 kg ai/ha) and at (0.63 kg ai/ha) for the dual application
  - However no difference was observed 70 DAI for root-knot nematode on peach
  - No difference was observed for ring nematode on peach

- fluensulfone
  - Effective 40 DAI for root-knot nematode and 30 DAI for ring nematode on peach
  - Lost efficacy 70 DAI for root-knot nematode
  - Also effective 60 and 90 DAI for ring nematode on peach

# Questions?

