Citrus arthropod pest management updates

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Arthropods in this presentation

- Lebbeck mealybug
- Snails (*Bulimulus sporadicus*)
- Brevipalpus mites

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Lebbeck mealybug

- Serious pest around the world in citrus growing regions
- Impacts on citrus production:
  - Damage to fruit, leaves, and stems
  - Fruit drop
  - Death of young trees

Global distribution

- Middle East
- Mediterranean
- South African regions
- Australia
- Mexico
- United States
  - Florida
  - Hawaii

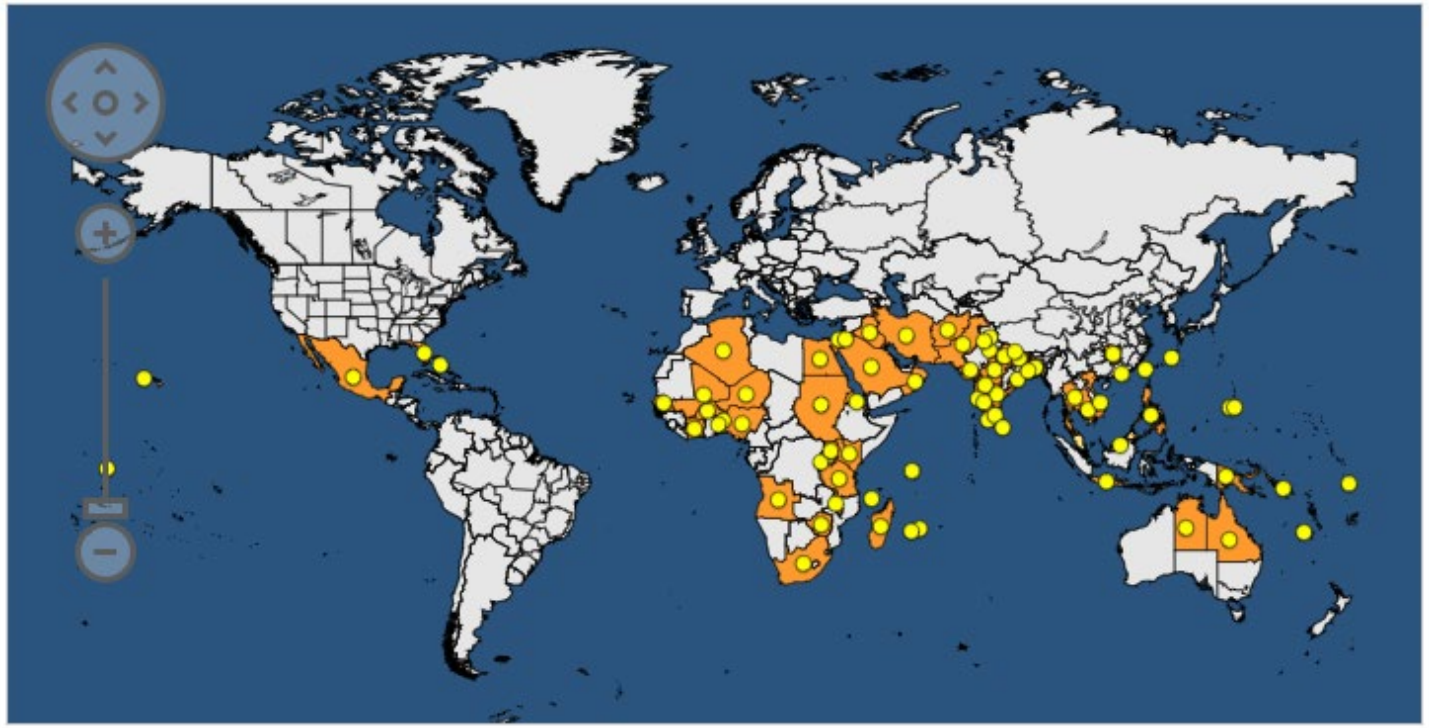

Image Credit: https://gd.eppo.int/taxon/NIPAVI/distribution

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Distribution in Florida

- Commercial
  - Most of central and south Florida
  - Likely in additional counties, just not reported
- Residential
  - Broward
  - Polk
- Non-citrus hosts
  - 27 documented to date
  - Commercial and ornamental crops/plantings
  - Weeds
  - Likely others

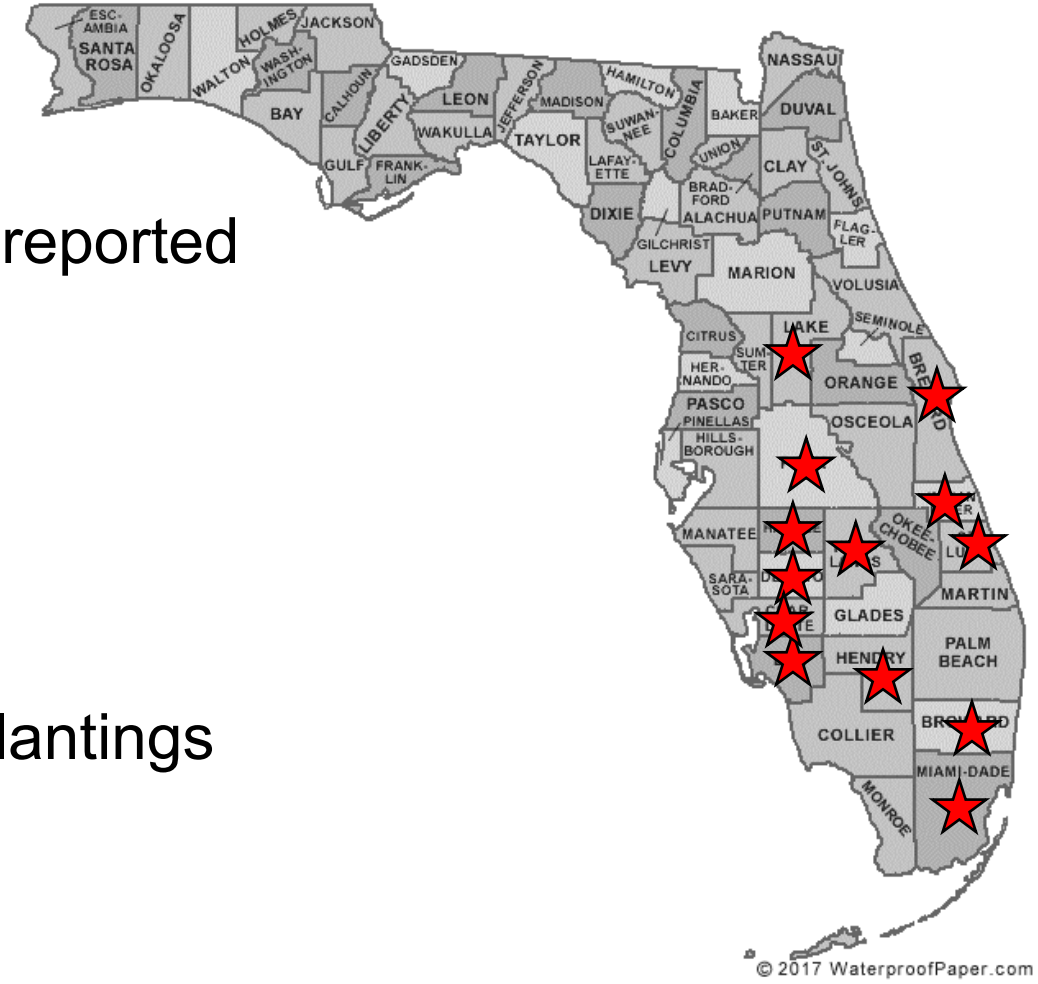

Image Credit: www.waterproofpaper.com/printable-maps/florida.shtml

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Fruit damage

- Damaged fruit will not be marketable for fresh fruit
- Quality of juice is okay IF fruit make it to harvest

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Leaf and stem damage

- Leaves exhibit physical feeding damage
- Excessive sooty mold build up
- May stunt growth on young trees

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Damage to overall crop

- Can kill young trees
- Fruit drop
  - Up to 50% or more crop loss documented in other countries before control was established
  - The amount of fruit drop will depend on infestation levels
  - Observedlebbeck mealybug induced drop occurs earlier than physiological fruit drop

Lebbeck mealybug seasonal population development

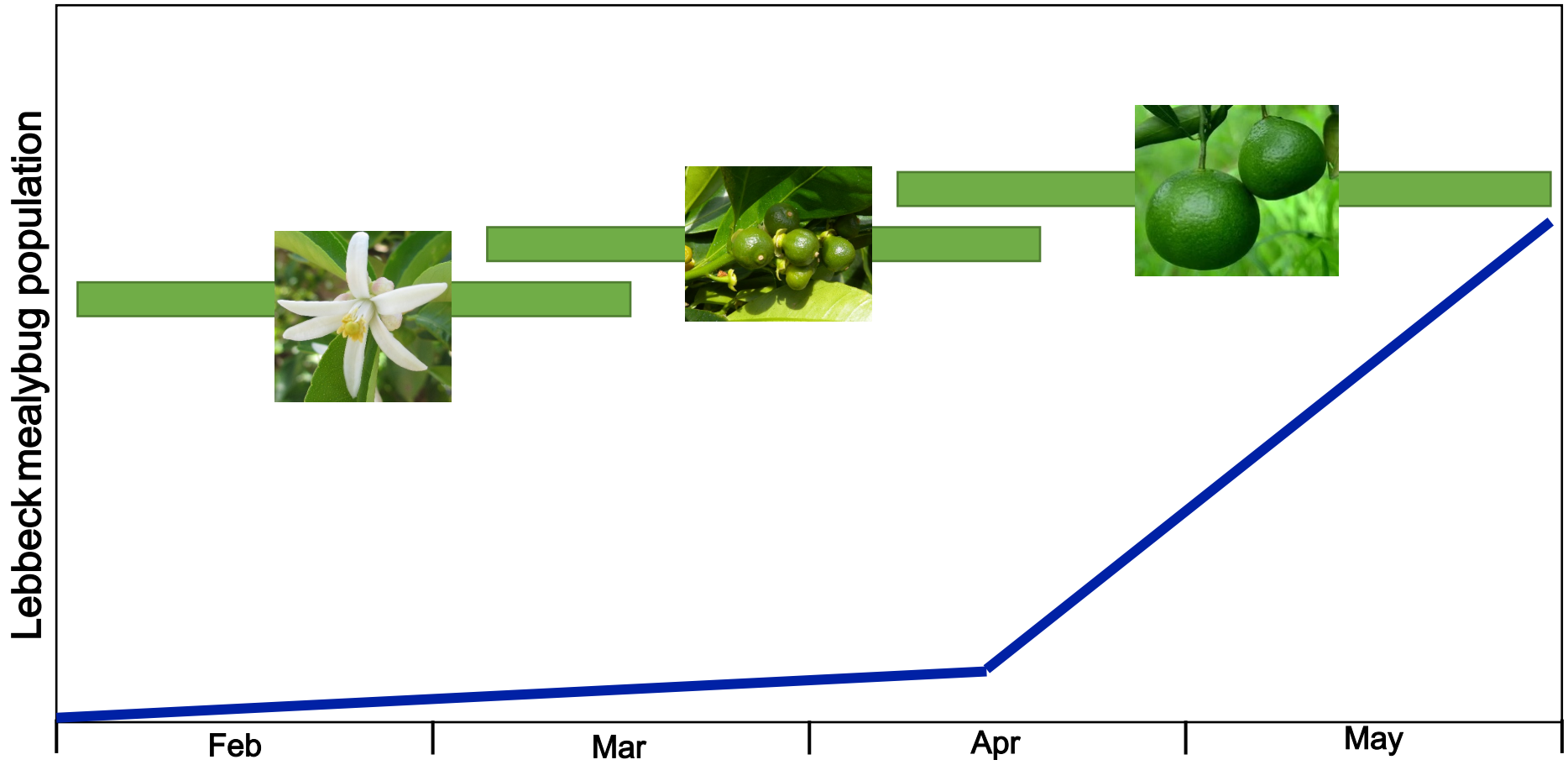

Image credits: upload.wikimedia.org/wikipedia/commons/4/43/Flower_of_Citrus_jambhiri_(8350037018).jpg , https://www.agric.wa.gov.au/citrus/fruit-size-management-citrus?nopaging=1, https://pixabay.com/photos/citrus-oranges-fruits-4487354/

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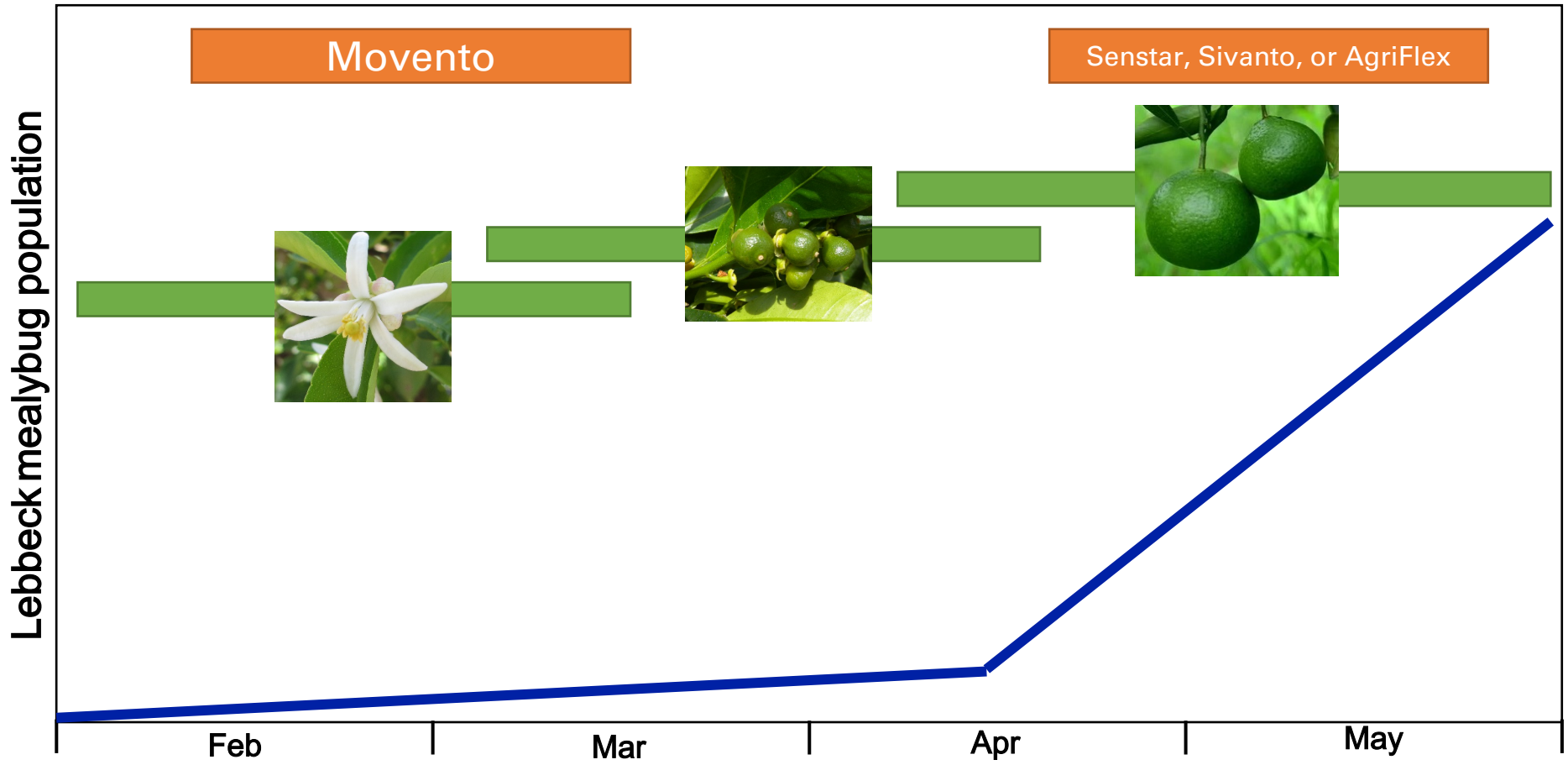
Timing insecticides to population development (in progress)



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When to use what for lebbeck mealybug*

- Early season management with systemic materials will reduce likelihood of fruit loss
- Contact materials can work well for clean up BUT
  - Kill predators, which are important for long term control programs
  - Are not silver bullets – a subset of the population will survive under the wax
- *Stay tuned – this is ongoing work
  - We will be looking for a site for a year-long management comparison study in 2022. Please email Dr. Diepenbrock (ldiepenbrock@ufl.edu) if you would be interested in working with us.

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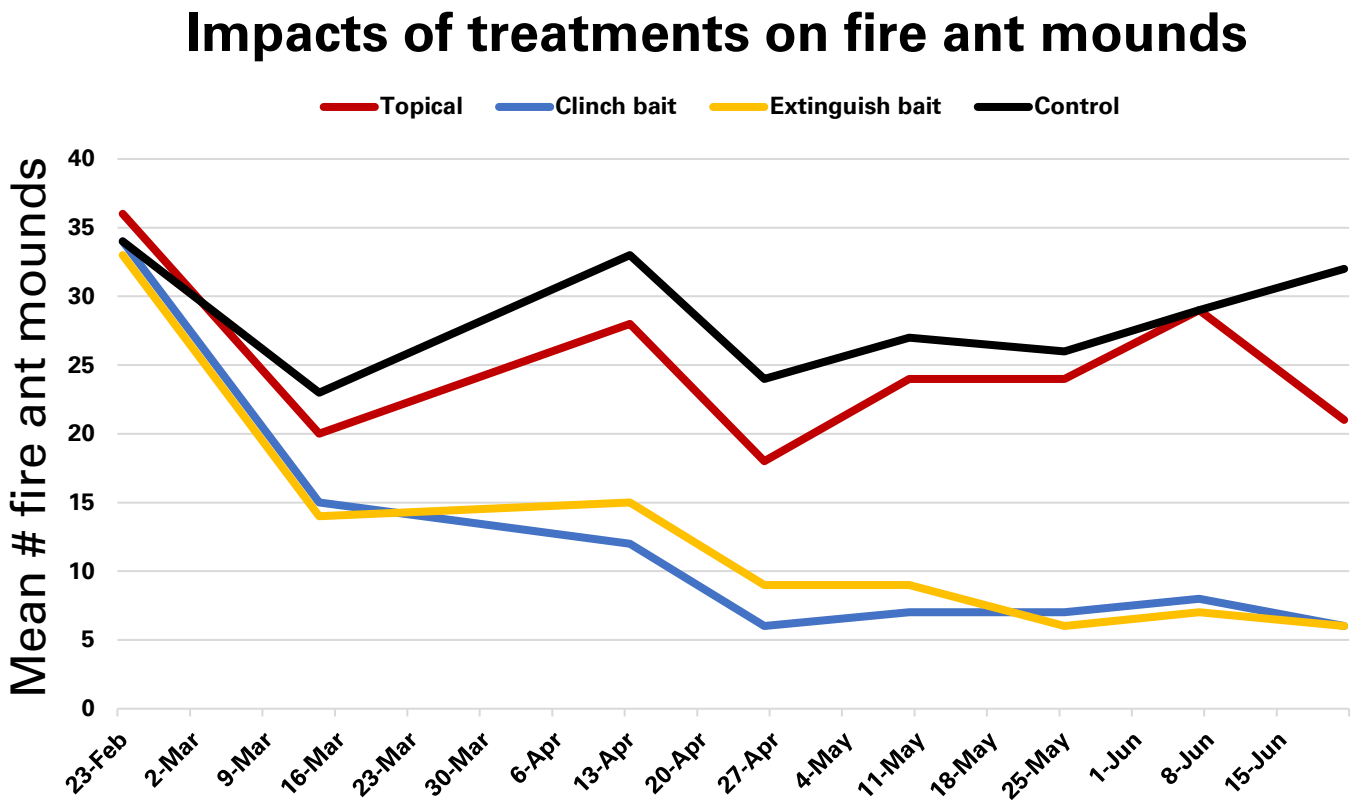
What about ants and lebbeck mealybug?

- Ants have been noticed “farming” this pest
  - Consume sugary honeydew as food
  - Groom mealybugs of fungal spores
  - Some species fight off predators
  - Not all ants present farm mealybugs

- Will managing ants influence mealybug populations?

Ant removal field trial



- Focused on fire ants aggressive farmers, easy to quantify
- Topical treatment (chlorpyrifos/bifenthrin rotation) and baits applied every 3 months
- So far baits look to reduce fire ant mounds more effectively than topical treatments

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What does ant removal mean for lebbeck mealybug management?

- Area-wide reduction in lebbeck mealybug in treated plots
- Compared to nearby field with all management other than ants the same, lebbeck mealybug is visibly reduced in ant treated plots and predators are abundant
- Ongoing work


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Emerging management challenges

- Newer pest issue: *Bulimulus sporadicus* (snail)
- Resident pest causing damage: *Brevipalpus* sp. mites


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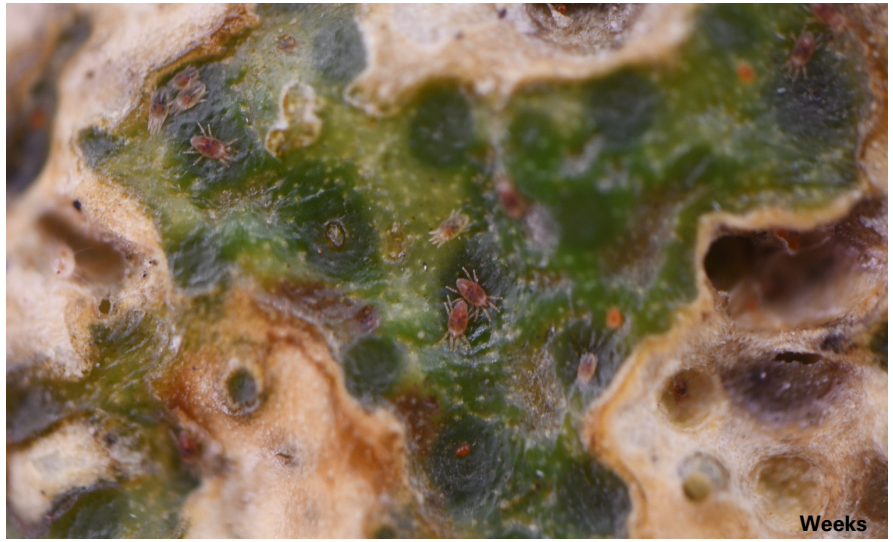
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Bulimulus sporadicus in citrus

- Introduced species from the West Indies
- First found in Florida in 2009, recently emerging as a pest in citrus production
- Appears to mostly consume decaying vegetation (weeds)
- Move into tree canopy as ground warms
- Damage:
  - Clogging emitters
  - Foliage damage in IPCs

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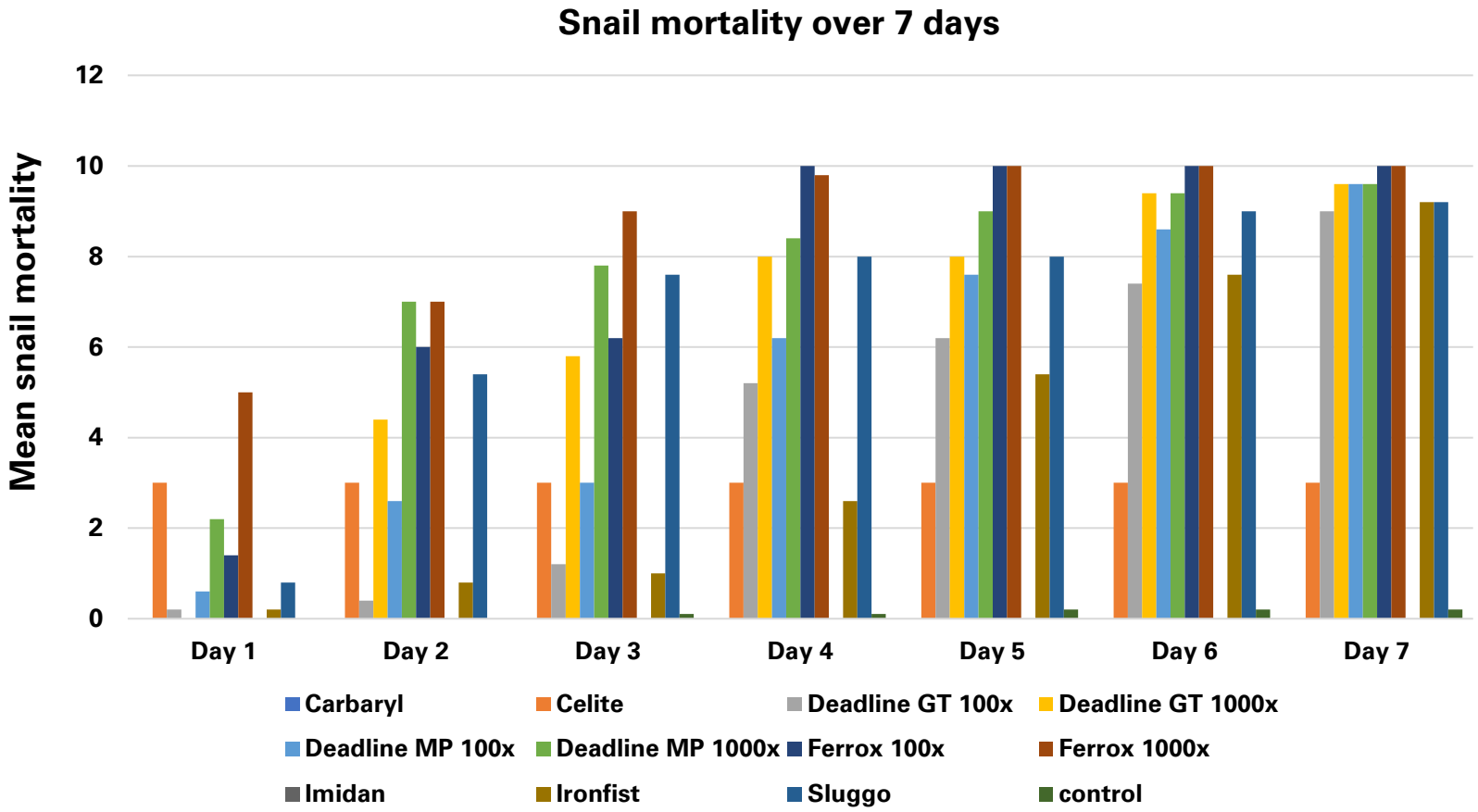
Can I kill them? Probably.



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Interpreting snail mortality data

- All testing was done in lab assays – need a field follow up
- Topical treatments DO NOT KILL SNAILS
- Most baits work well – field trial can determine which are optimal for deployment
- Things that need to be determined:
  - If labelled rates work for this species
  - If snails are attracted to all baits equally
  - When is the best time to apply

Brevipalpus mite damage

- High populations of this species cause damage to fruit
- Leprosis is NOT known to be present i Florida
- If you're seeing damage on fruit, you need to add mite management to your program
- See the UF IFAS Citrus booth for updated miticide information

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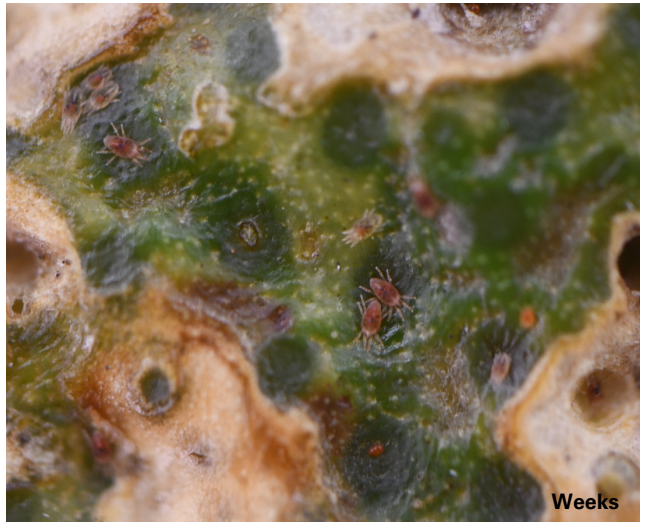
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Please send questions to Dr. Lauren Diepenbrock: ldiepenbrock@ufl.edu

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