

# Managing Lebbeck Mealybug in Florida Citrus: Research Updates

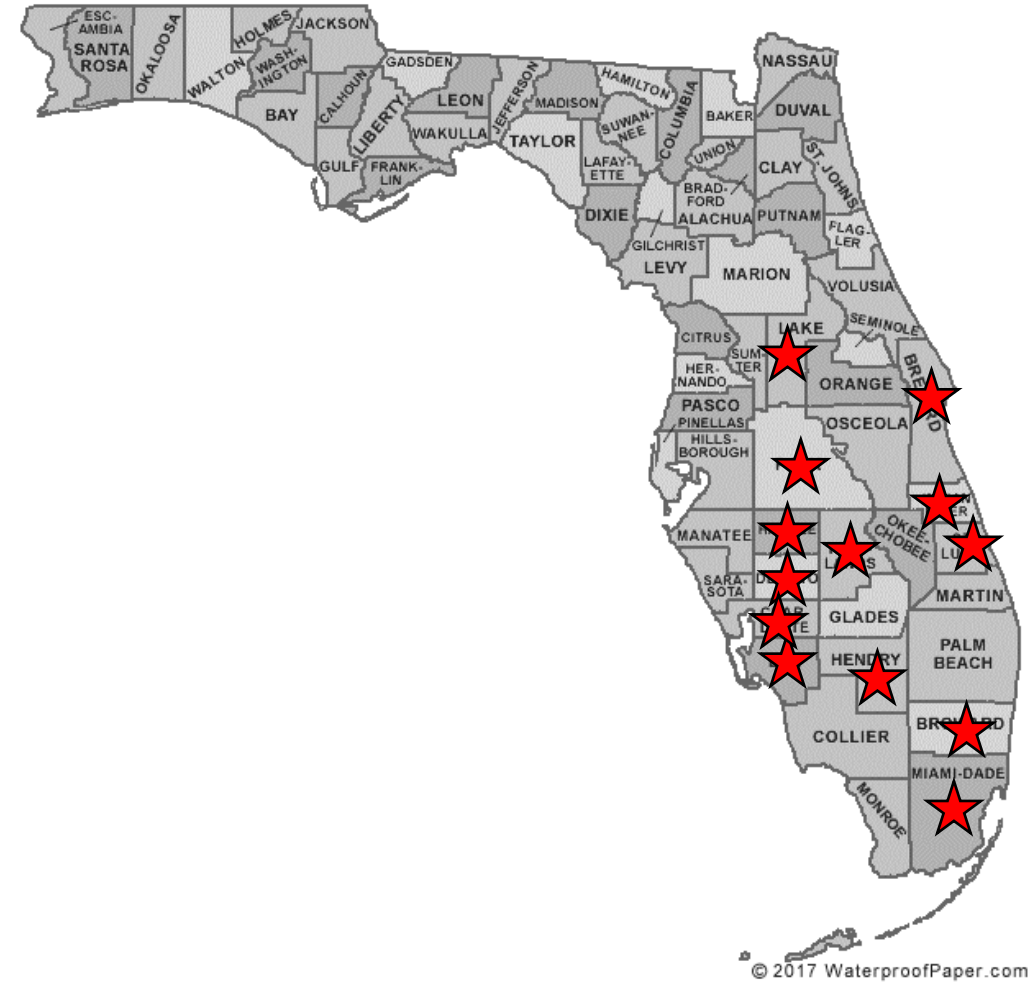
Lauren Diepenbrock, UF/IFAS CREC

- Present in Florida since 2009
- Impacting citrus production since 2019 or sooner
- Can infest all aboveground portions of trees
- Attracted to damage, developing fruit
- Cause fruit distortion and drop, branch dieback



# Distribution in Florida

- Highlands
- Hendry
- DeSoto
- Hardee
- Lee
- Brevard
- Indian River
- Polk
- Broward
- Miami Dade
- Charlotte
- Lake
- St. Lucie
- Hillsborough
- Sarasota
- Pinellas
- Palm Beach





## Hosts in Florida other than citrus so far

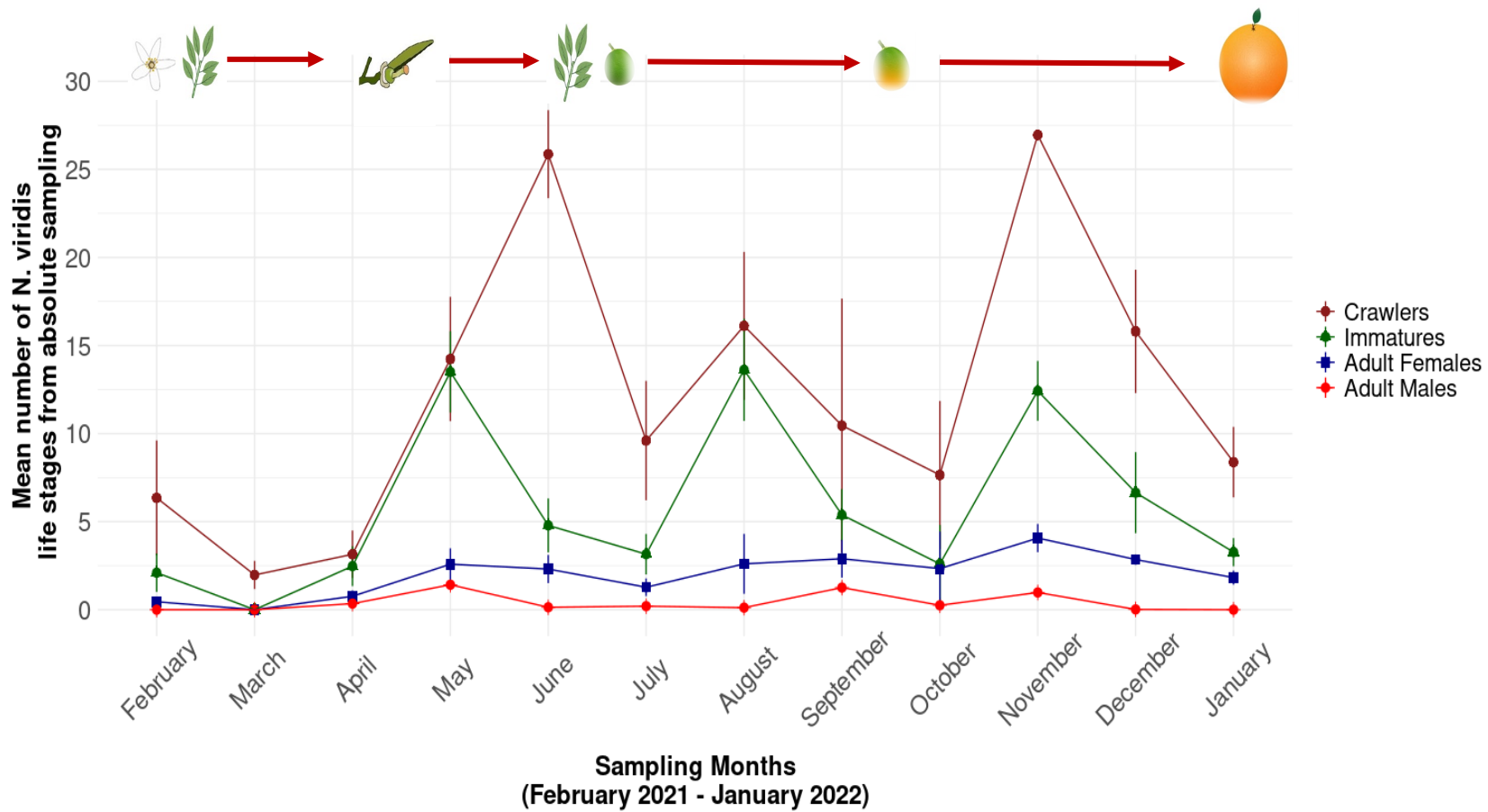
- Jackfruit
- Tamarind
- Mango
- Blueberry
- Grape
- Leechee
- Clerodendrum
- Gardenia
- Japanese fern tree
- Pagoda flower
- Cannonball tree
- Tabog
- Star Jasmine
- Hemp
- Artillery Plant
- Lauren Fig
- Cape Jasmine
- Gardenia
- Bottle Palm
- Jatropha tree
- Oleander
- Brush Cherry
- Succulent sesame
- Cape honeysuckle
- Cuban laurel
- Pothos
- Cotton
- Night-flowering jasmine
- False 'ohe
- Common purslane
- Elephant bush
- China doll
- Dwarf umbrella tree

# How can we manage to minimize loss?

- Take advantage of seasonal biology when designing management programs
- Use chemistries appropriate to life stages

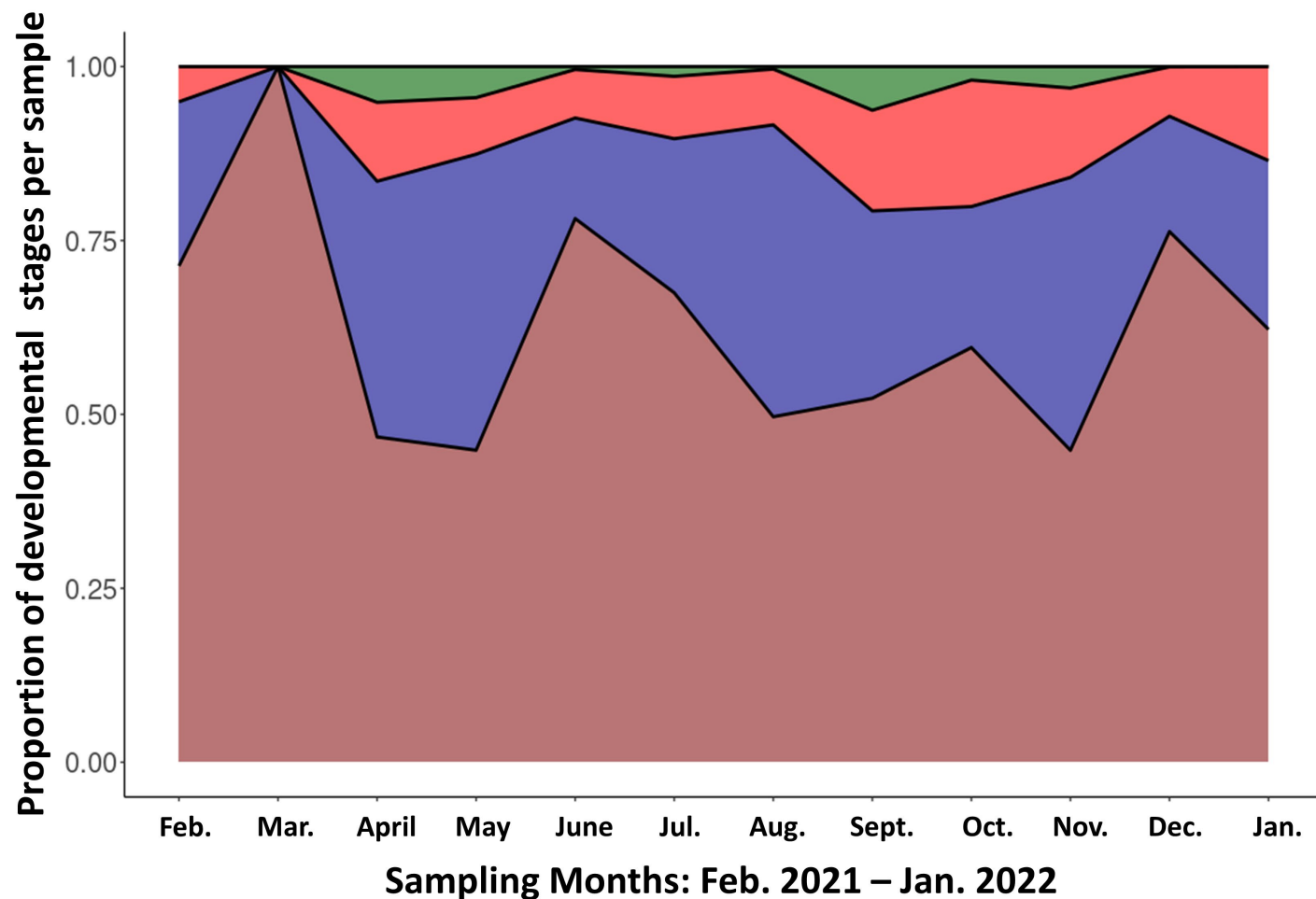


# Population biology



- Reproduction is NOT tied to flush!
- Populations of juveniles concurrent with fruit set in the spring.
- Later population peaks likely tied to reproduction (2-3 weeks), optimal temperatures (fall), and survival despite chemical inputs.

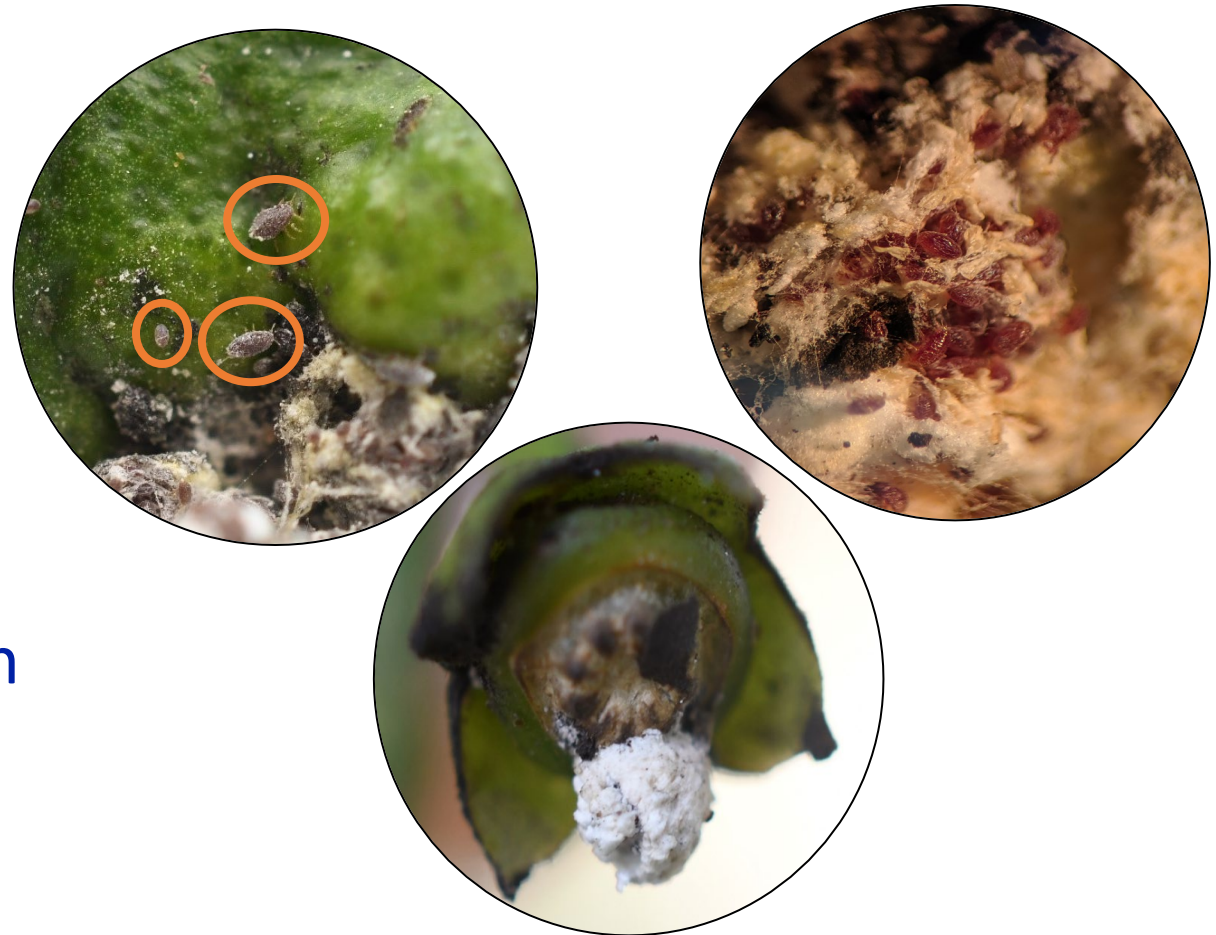
# Population breakdown



- Crawlers make up most of the population all year
  - Easiest to kill
  - Easiest to accidentally move
- Presence of females keeps output of crawlers steady
- Management for juvenile stages and to prevent movement are crucial to getting this pest under control

# Using population biology to plan management actions

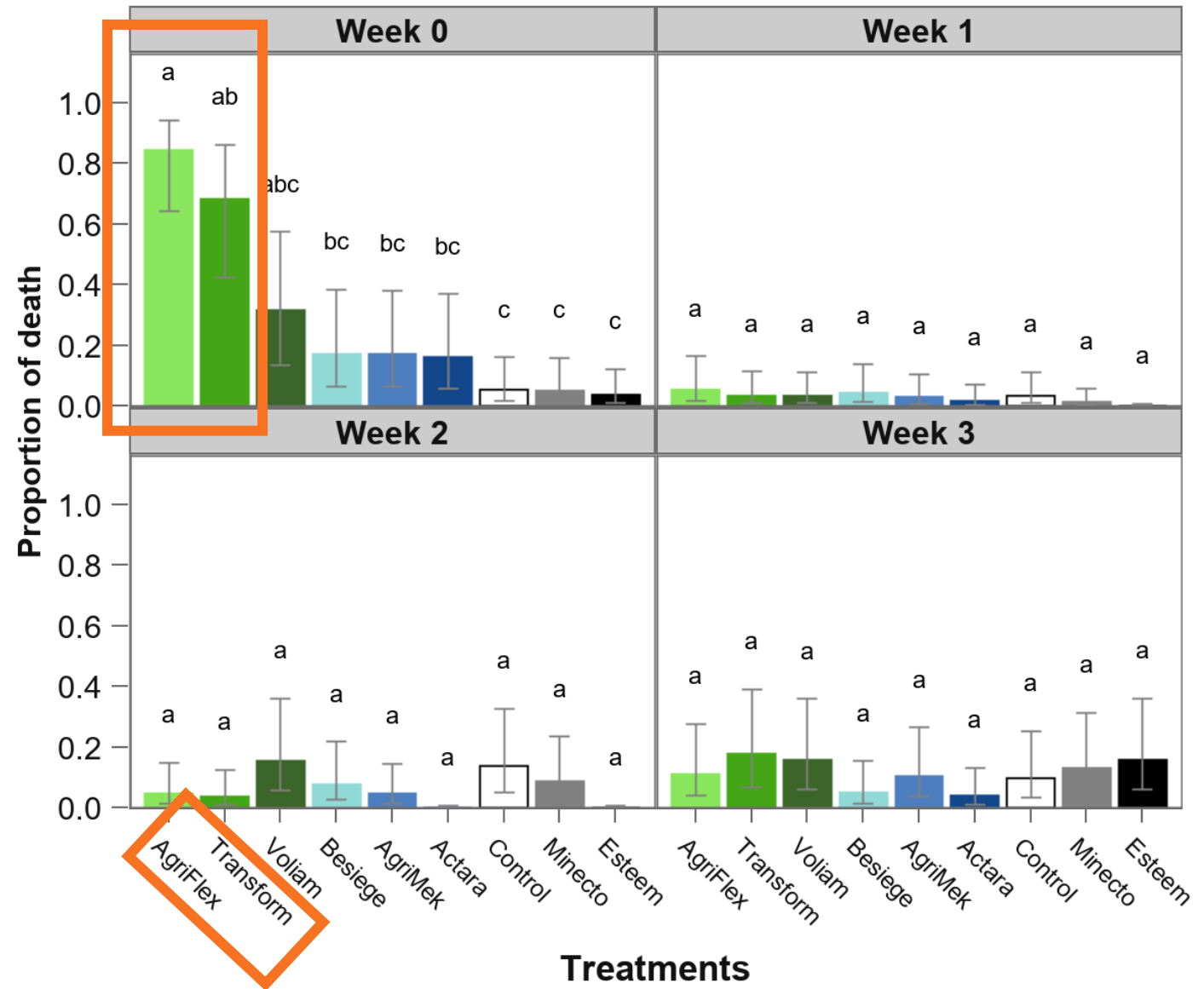
- Crawlers- susceptible to everything, can kill with 435 oil
- Older juveniles- most contact chemistries will reduce their survival
- Females with wax/ovisac- need a systemic or predator
- Eggs- predators or interrupt production





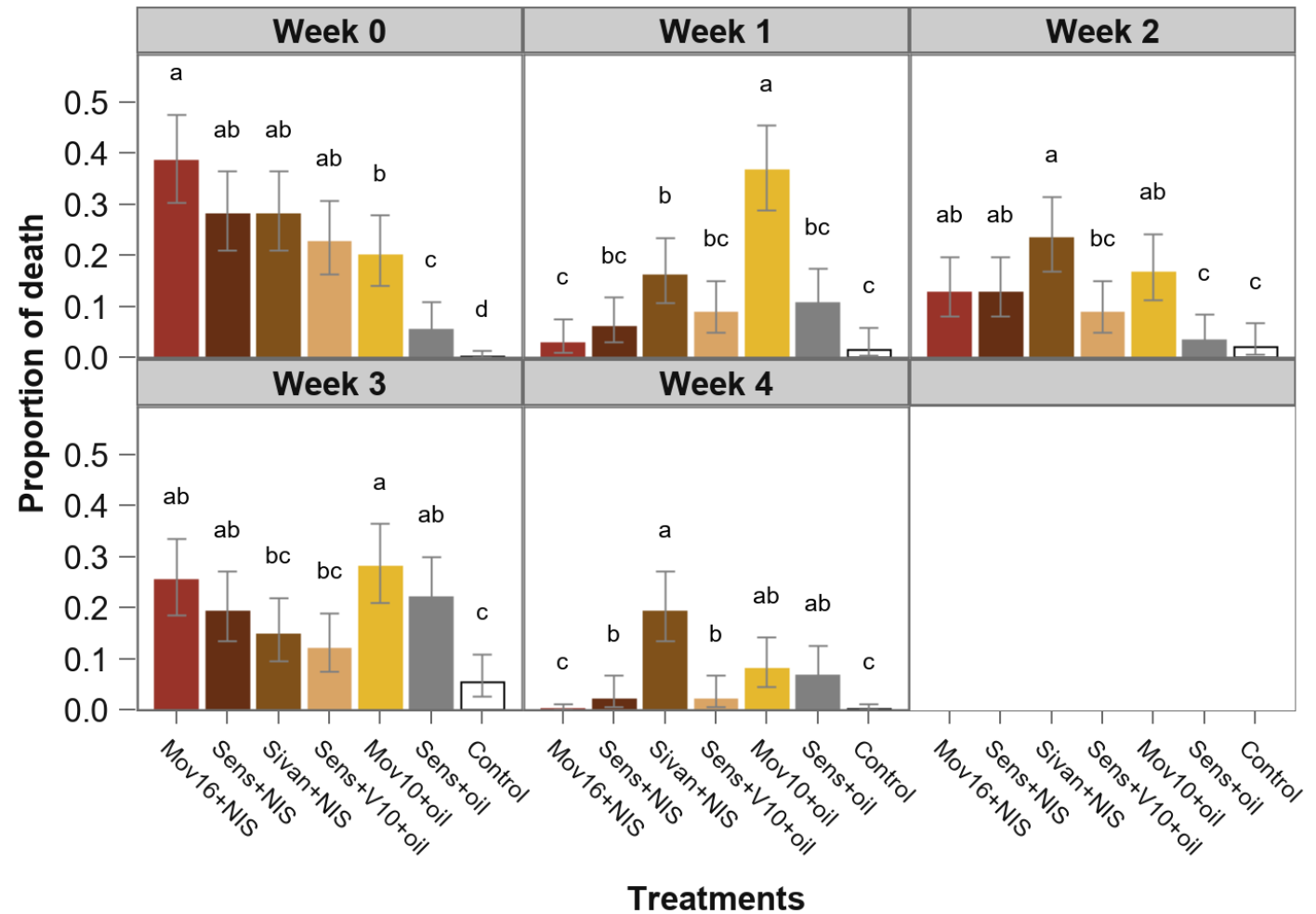
# Contact chemistries

- Field aged, leaves removed and tested in lab
- No residual past week of application
- Agriflex and Tranform have over 60% mortality of juveniles in first week
- Voliam Flexi 30% mortality in first week
- Good options for population growth stages (juvelines)

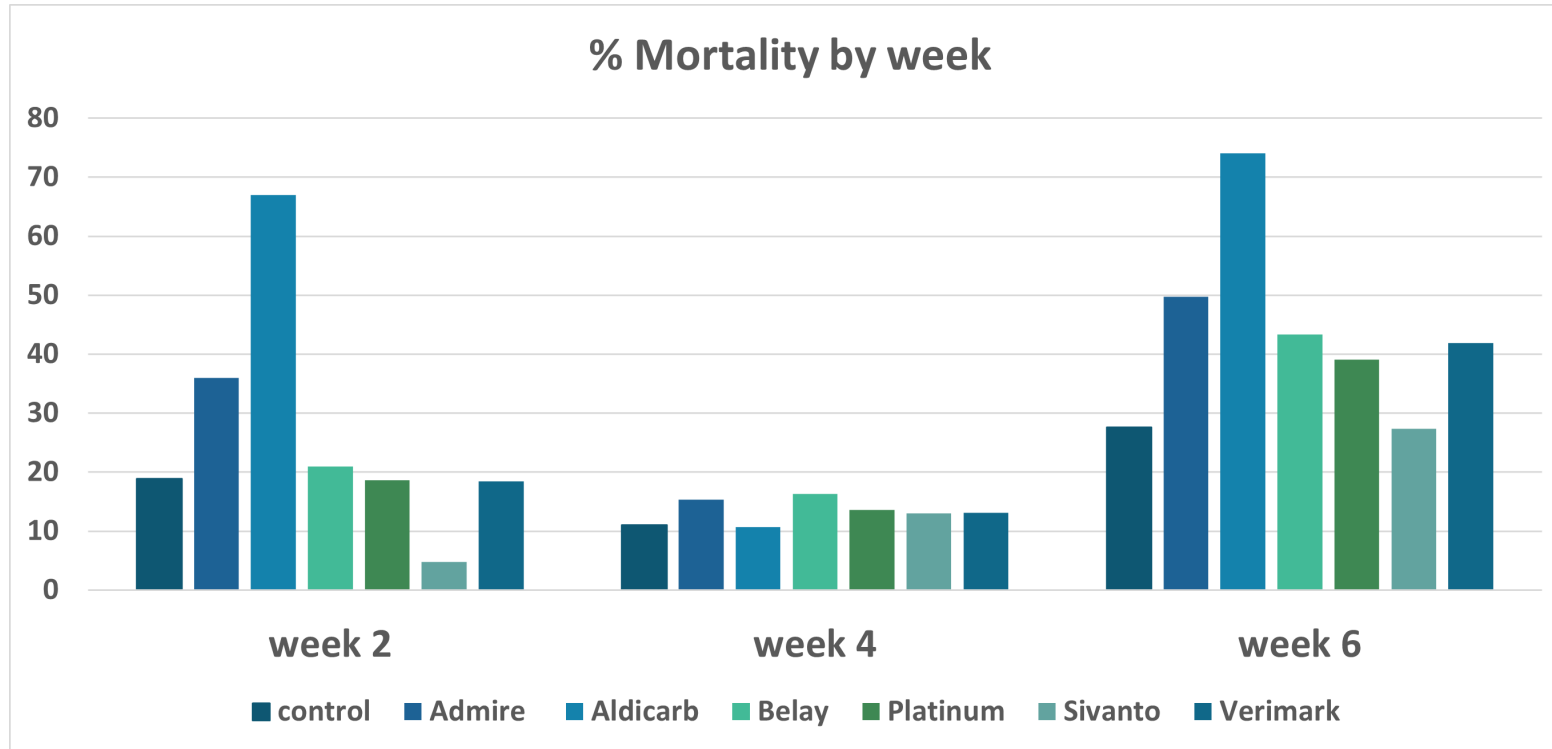


# Systemic foliar applied chemistries

- Field aged, leaves removed and tested in lab
- Week 0 had surprisingly high mortality for systemic materials (NIS/oil effect?)
- Latter weeks mortality fluctuates as product builds up and could be influenced by movement of material through trees in grove



# Soil applied chemistries

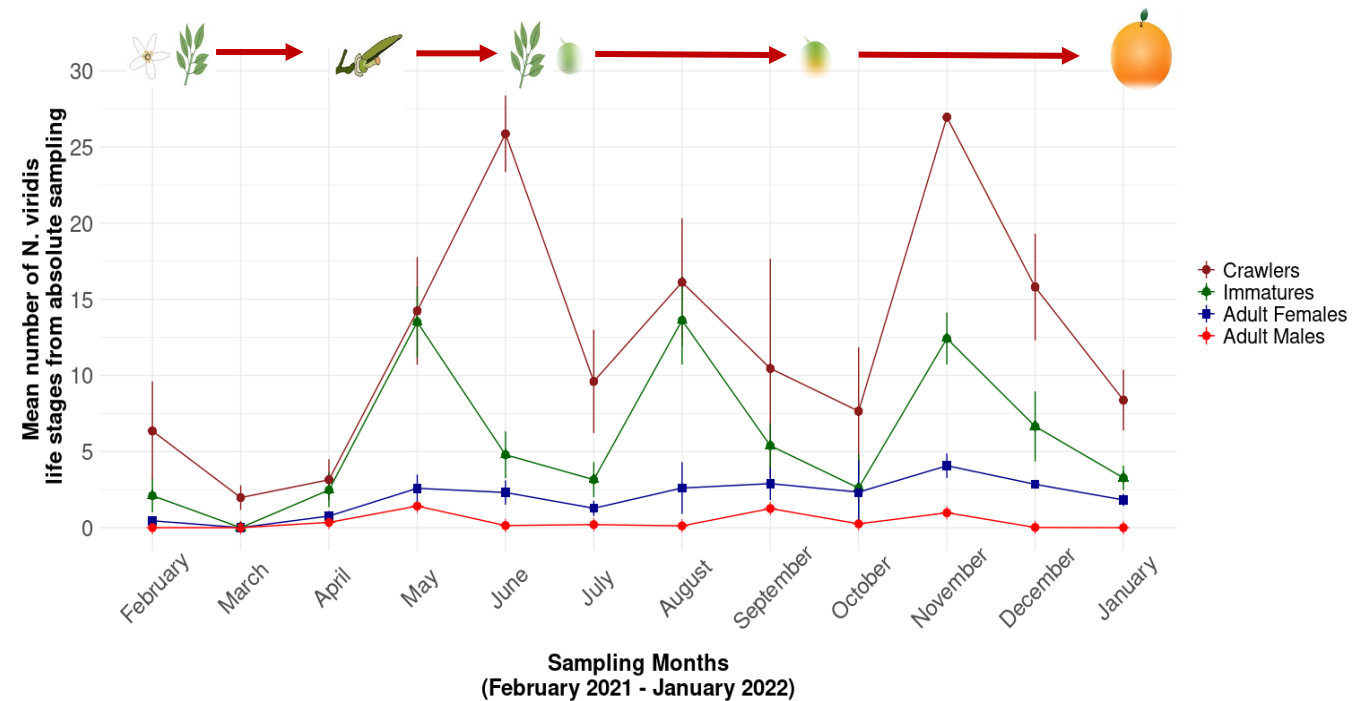


- Field aged, leaves removed and tested in lab- cumulative data from 7 days of feeding in lab
- Verimark applied in week 2
- Build up of Aldicarb starts within 2 weeks for 65% mortality
- By week 6 increases in mortality for all materials
- Loss of action by week 8 (not shown)

Source: Eric Middleton, 2022 field trials

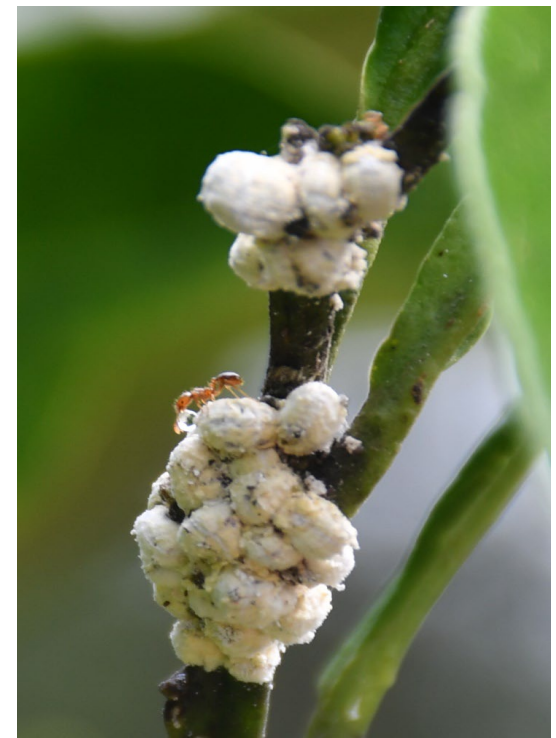
# Putting together population biology and chemistries

- Systemic pre fruit set to reduce reproductive females
- Knock down in May/June- preference for material that is effective for ACP also
- Mix in materials with residual activity to reduce adults
- IGR not included in these trials but would be a good product for this pest based on data from other trials



# Non-chemical management

- Predators will be discussed in afternoon
- Ants can reduce efficacy of predators
- Ant management can help reduce spread and survival of mealybugs
  - Incorporate baits into your management plans (more later)



# Non-chemical management to reduce movement

- Sanitation of tools, equipment, and personnel where possible can reduce spread
  - Thorough coverage with 70% or higher isopropyl alcohol kills juveniles (not adult females)
  - Boiling water or steam for 10 minutes at 120° F kills all life stages





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# Questions?