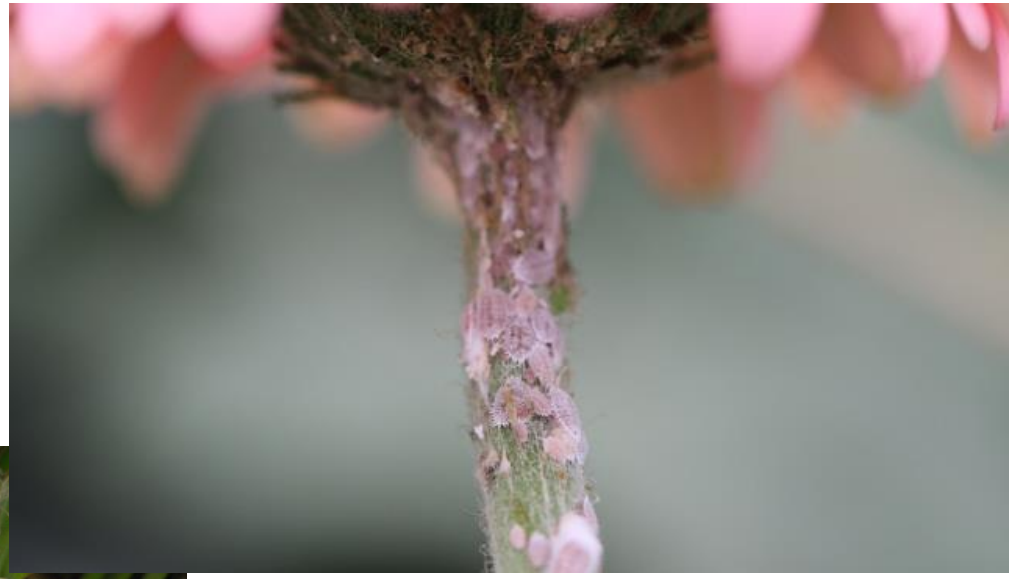
Mealybug: A pest on the rise?

Sarah Jandricic, OMAFRA
Greenhouse Floriculture IPM Specialist

Why a talk on Mealybug?



Why a talk on Mealybug?

What are Mealybugs?

- Related to scale insects
- Feed on plant phloem → wilted, chlorotic leaves
- Produce honeydew → sooty mould
- Look like cottony masses

Host Range

- Hosts:
  - Many tropical
  - Gerbera
  - Hibiscus
  - Begonia
  - Coleus
  - **Cylamen**
  - **Kalanchoe**
  - Ipomoea
  - **Geranium**
  - **Poinsettia**
  - Roses
  - Tulip

Species

- Most common in Ontario are **citrus mealybug** and **long-tailed mealybug**
- Citrus MB lays egg masses; LTMB gives live birth

Citrus mealybug

Longtailed mealybug

Sources of Infestation

- Very common in states such as Florida
  - greenhouses **AND** outdoors
- Commonly enter Ontario on plant material
  - Foliage plants from southern US
  - Cuttings from offshore

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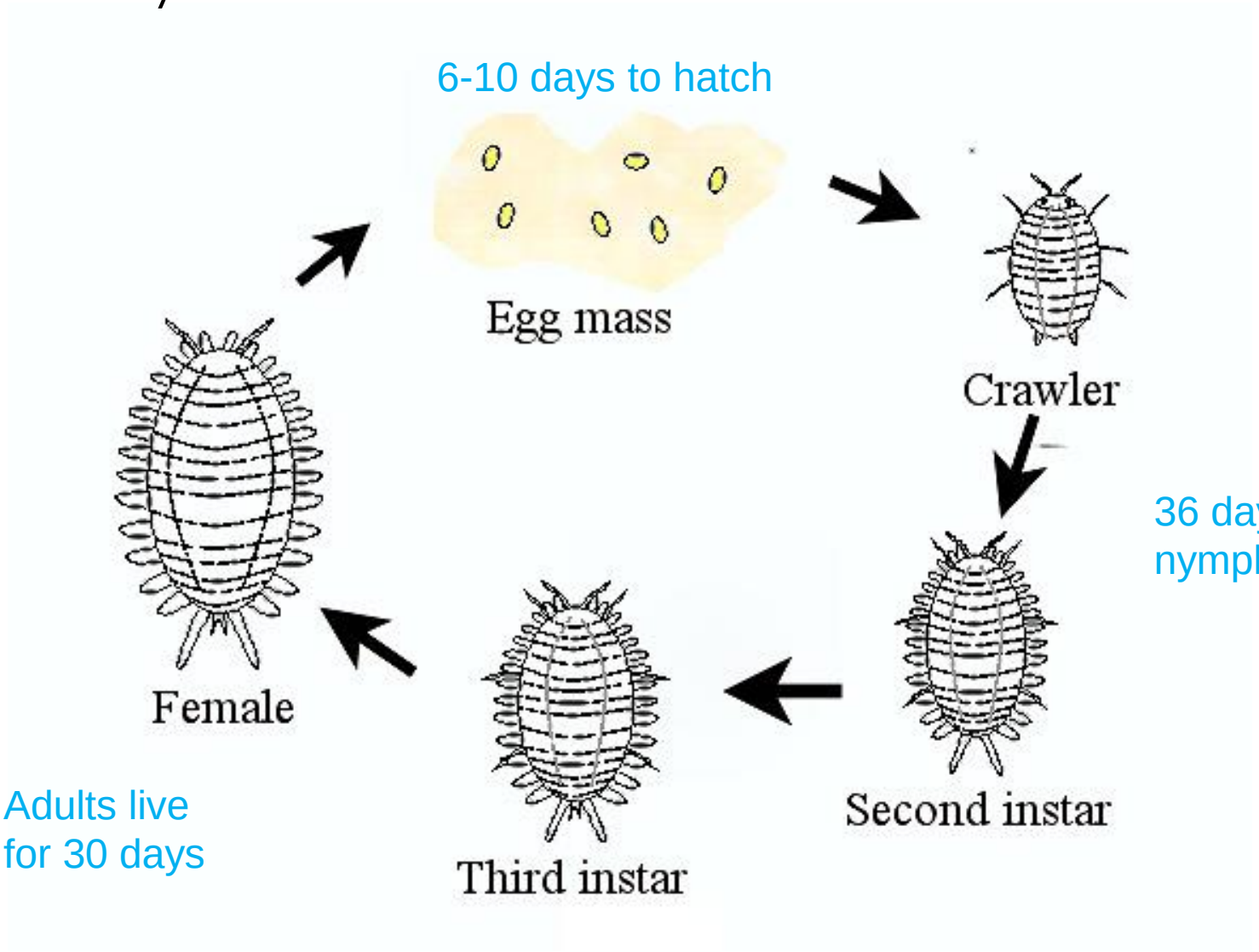
Why are we suddenly seeing it on other crops?

- Reduction in pesticides in prop?

Biology

- Life cycle = **> 1 month**



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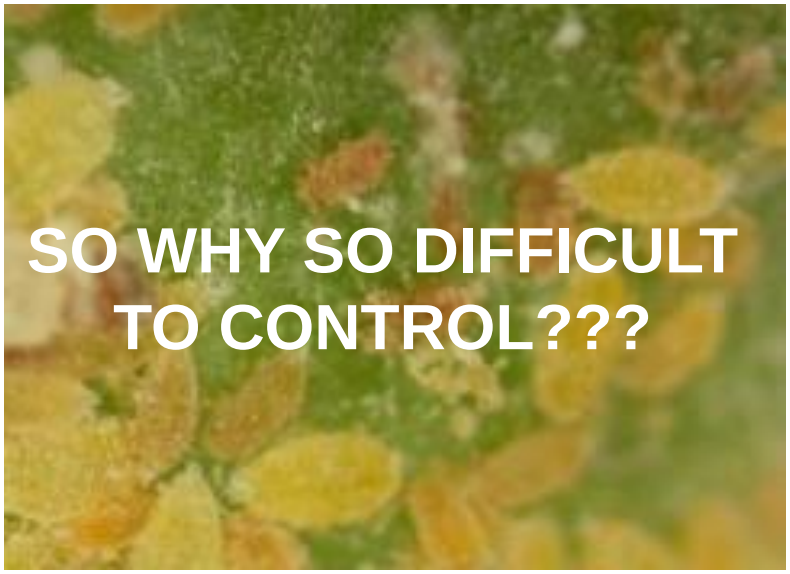

1. Reproduction

- Reproduction can occur **WITHOUT** mating (like aphids…)
- Lay up to **350-600 eggs**/female

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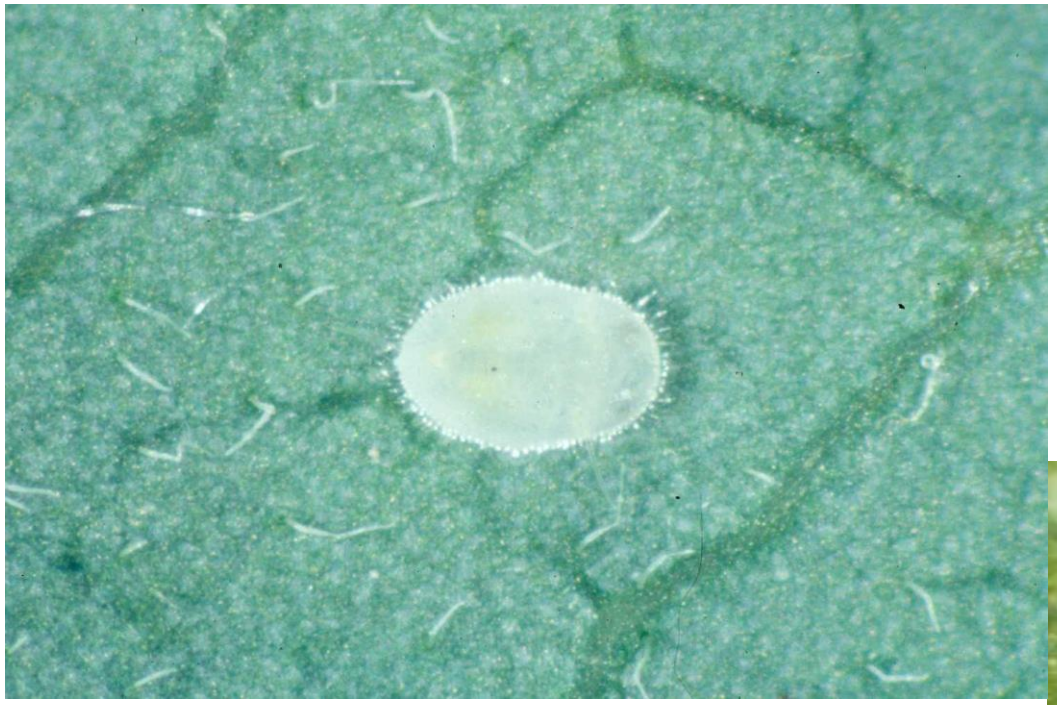
2. Difficult to detect at low pops

- Won't see on sticky cards - must THOROUGHLY inspect plant material
  - Look for honeydew
  - On undersides of leaves, nook of plant stem, petioles

- Pheromone traps for males, BUT…
  - By the time you would notice this means you likely have a significant population

2. Difficult to detect at low pops

Also easy to misidentify until all life stages are present !



3. Easy to Spread

Mealybug egg sacs on the side of a pot. Photo from hiddenvalleyhibiscus.com

- On **PEOPLE**, **TOOLS & PLANT MATERIAL**
- Reside in **CRACKS AND CREVICES**
  - benches
  - troughs
  - pots

4. Lack of Effective Chemical Controls

Contact insecticides

- Feed on underside of leaves, leaf junctures
- Difficulty getting by waxy coating

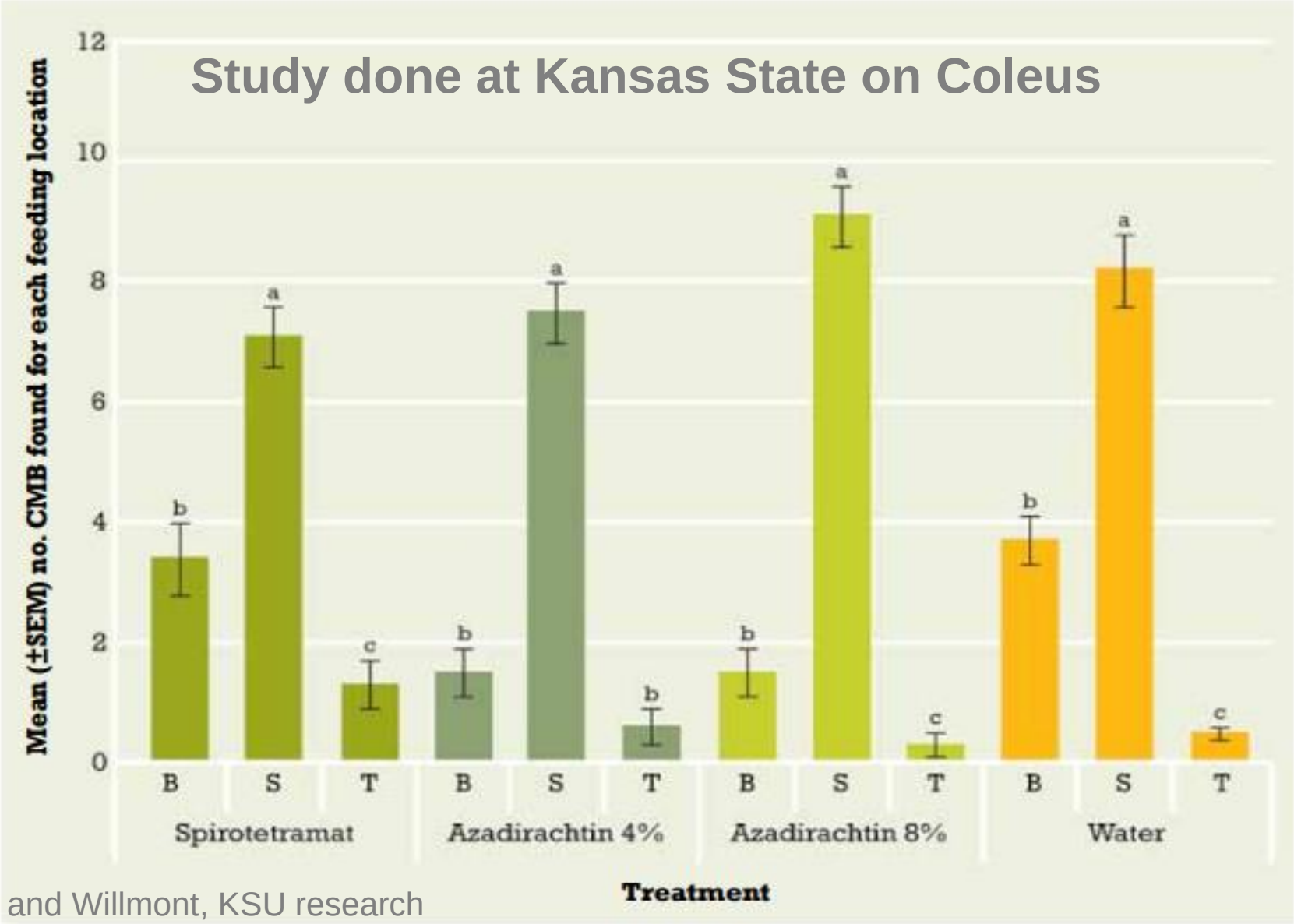
Photo from University of Florida

Photo from Syngenta.com

Systemic insecticides

- Primarily located in xylem, not phloem

4. Lack of Effective Chemical Controls



Cloyd and Willmont, KSU research

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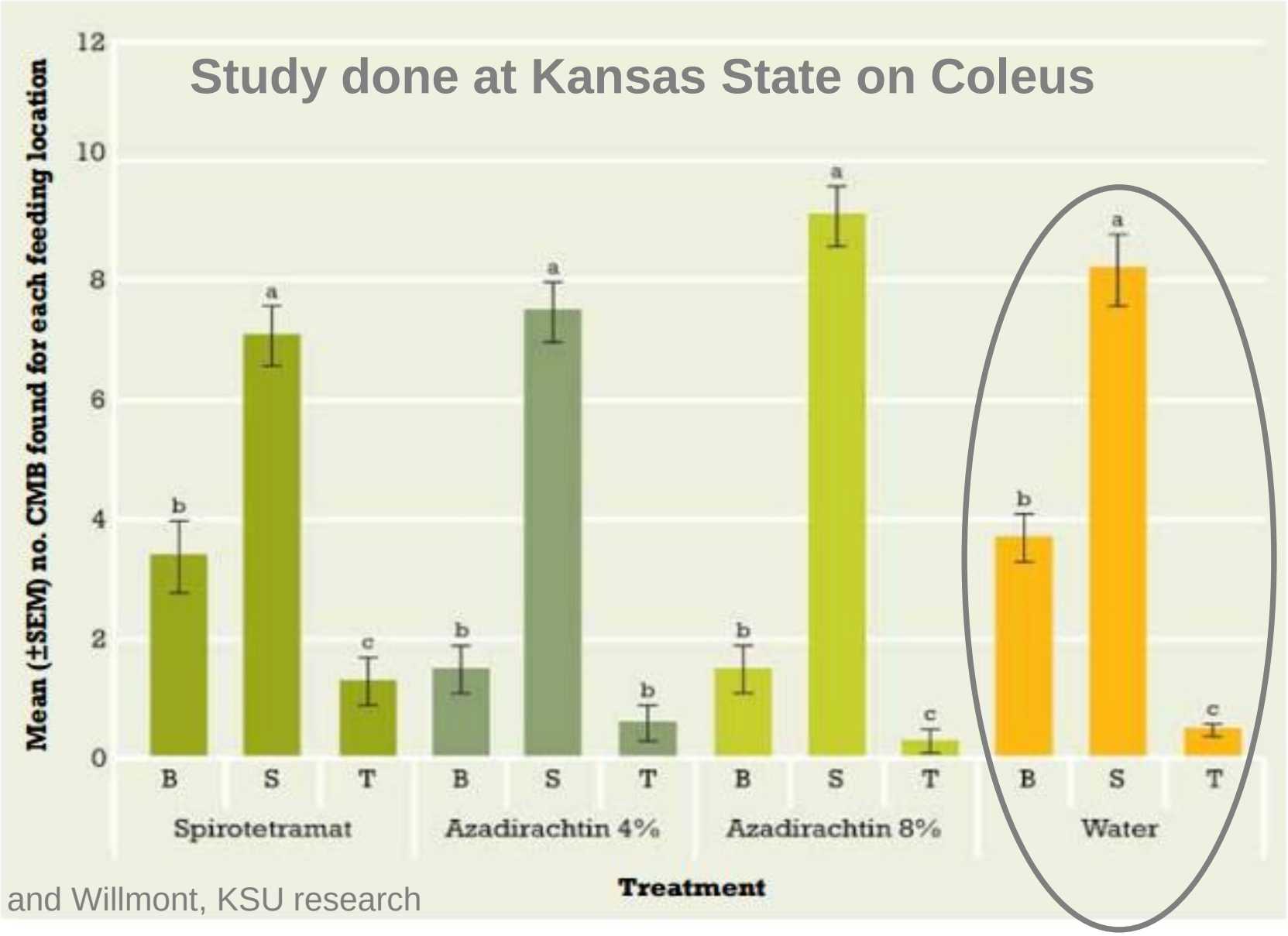

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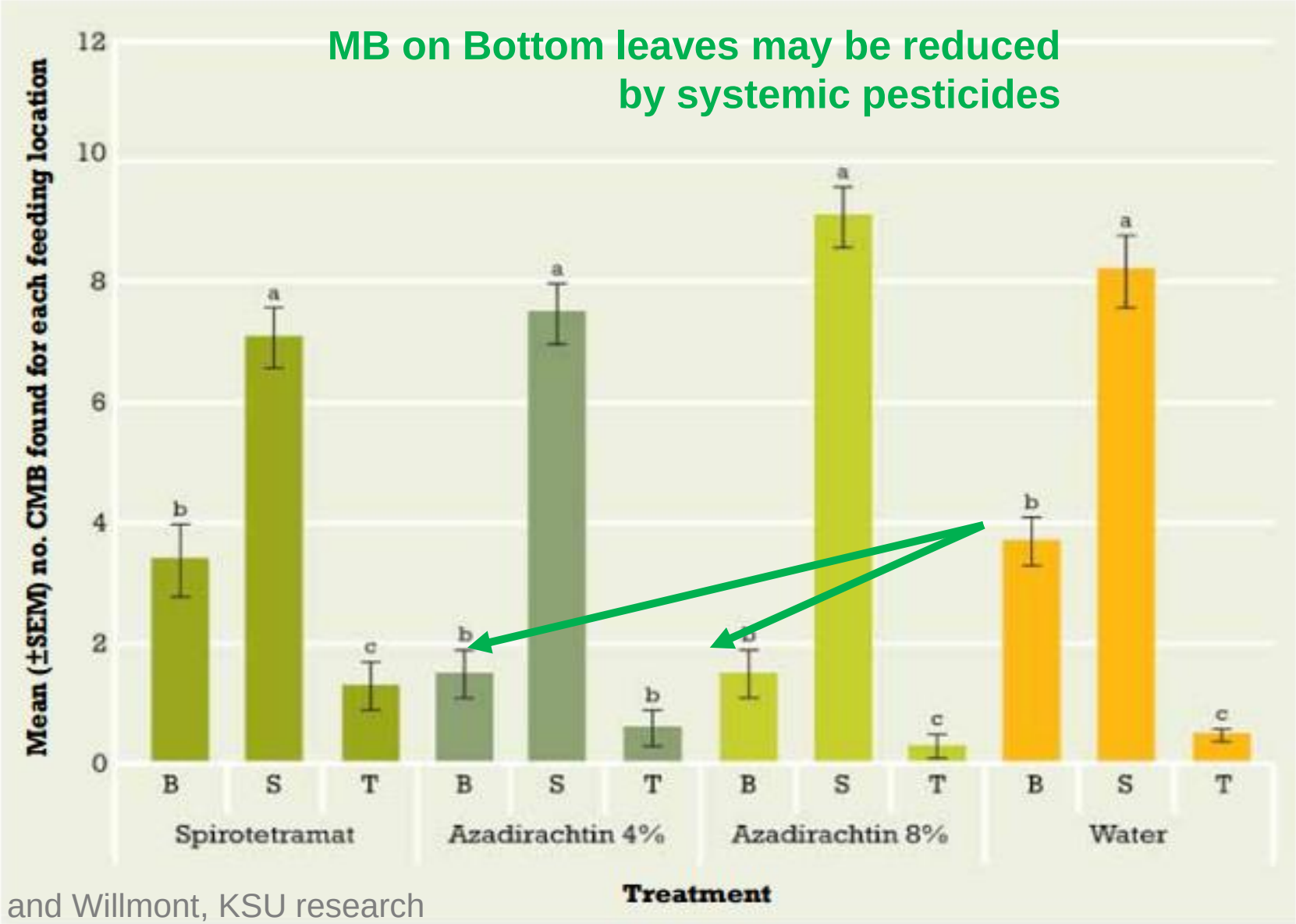

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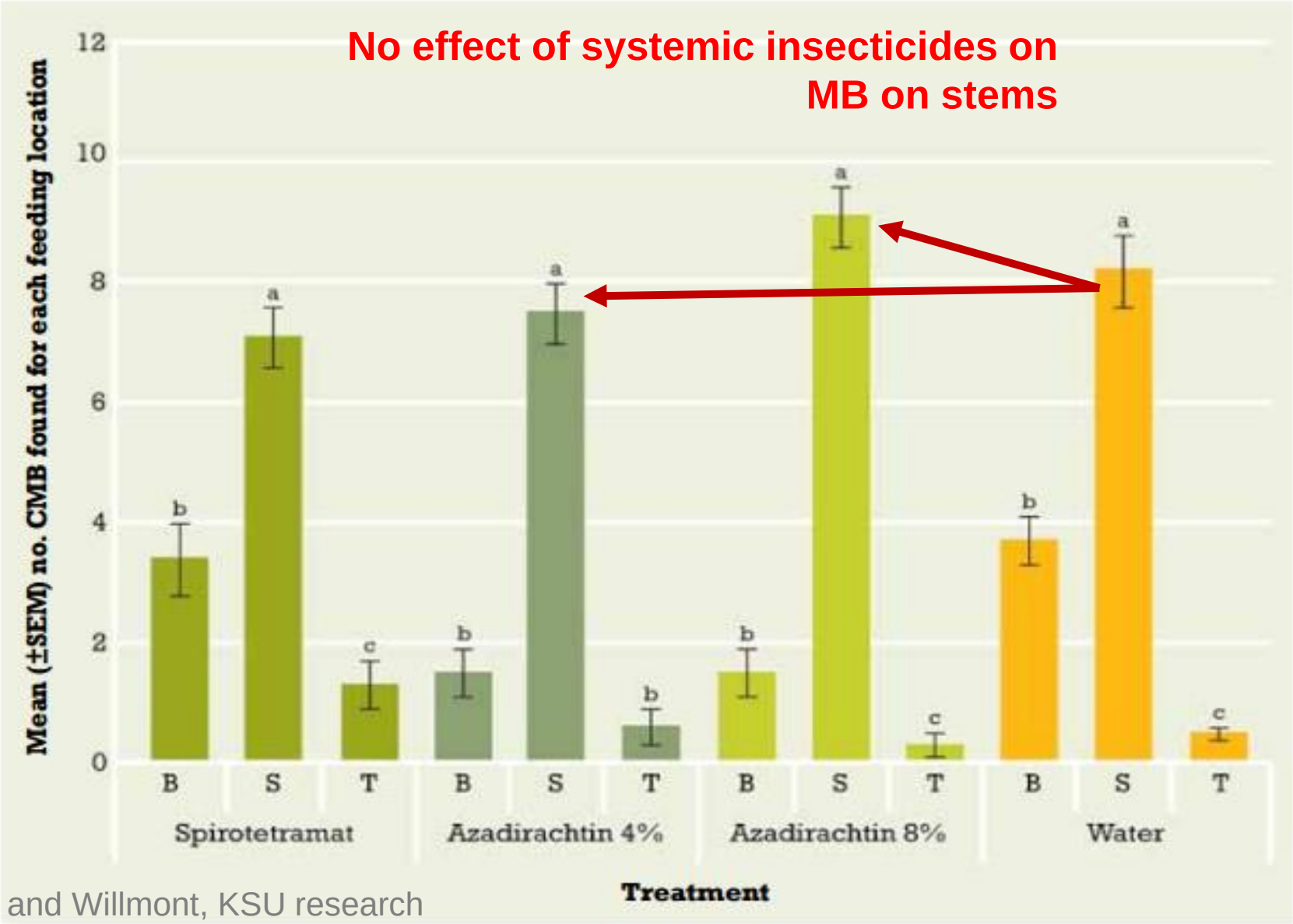

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4. Lack of Effective Chemical Controls

Registered Products:

- **Dursban, Malation, Orthene:** all contact insecticides
- **Landscape Oil**: best product, but can cause phyto
- **Safer's Soap:** can suppress populations with repeated applications; residues?
- **Intercept (Systemic)** some efficacy, but seldom used now; interfere with biocontrol programs

4. Lack of Effective Chemical Controls

Other Products:

- **Met 52:**
  - kept population stable, but no reduction
- **Spot cleaning with rubbing alcohol**
  – effective, but …

Cultural Controls

- **DUMP INFESTED PLANT MATERIAL**

Cultural Controls

- **Plan your day around MB** – visit infested areas last
- **Don't transport infected plant** material through GH
- **Wear disposable clothes** in MB-infested sections
- Thorough **after crop clean up** is essential
- **Do NOT re-use** contaminated containers

Biological Control of Mealybugs

Cryptolaemus (aka Mealybug Destroyer)

- Predaceous lady beetle

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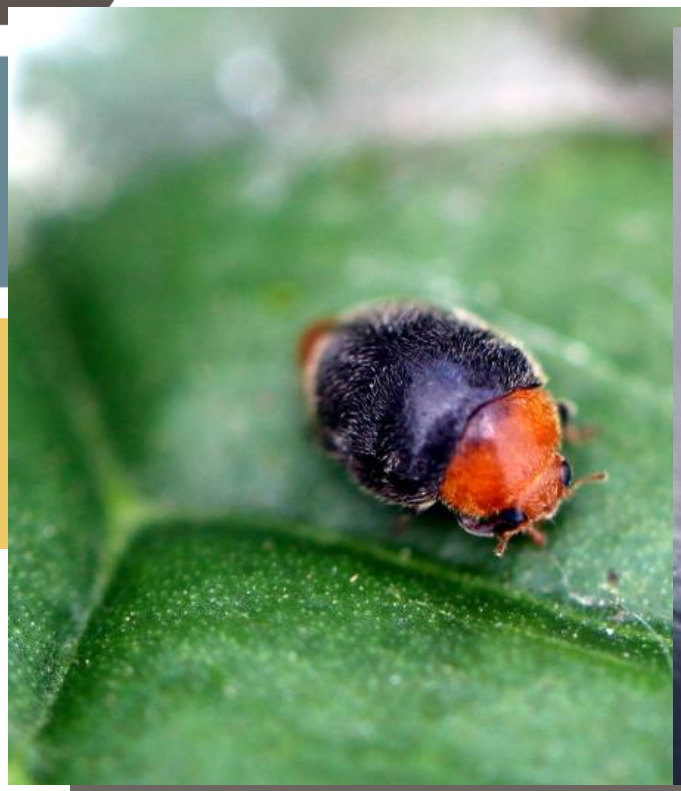
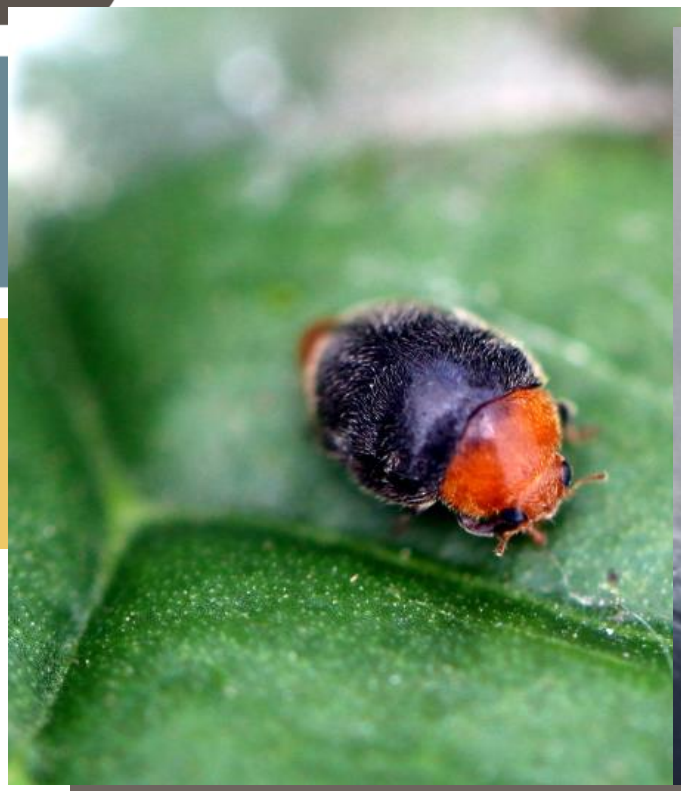


Biological Control of Mealybugs

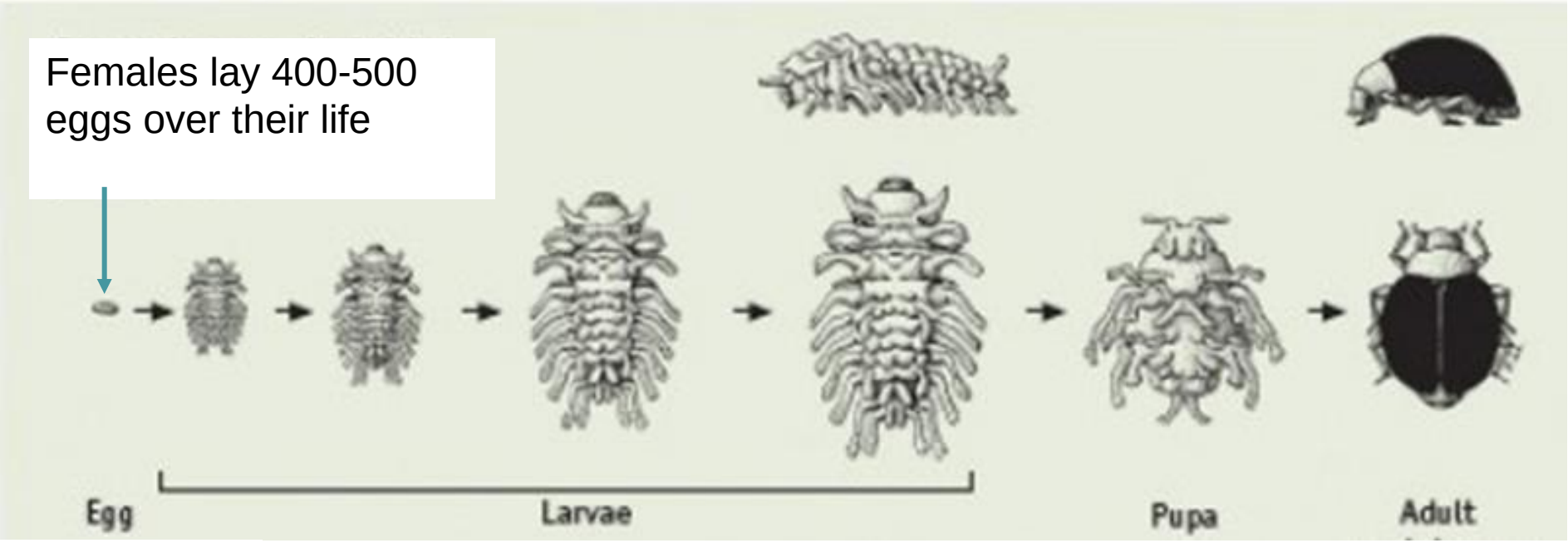
Cryptolaemus

- Predaceous as both **larvae** and **adults**
- eat eggs, young crawlers and honeydew
  - A single larvae can eat 250 small MB over its life
- Optimal temp. 22-25C, 70-80% RH



Life cycle, Mealybug Destroyer

Life cycle also > 1 month (at 28C)



6-10 days

12-17 days

7-10 days

Can live for 50 days

Life cycle diagram by Chris Lamkin

Biological Control of Mealybugs

Limitations of MBD:

- Not effective at low densities of MB
- May not be as effective against all mealybug species (needs to lay its eggs in egg masses)
- Seasonal: only effective from **April - Oct**

Photo courtesy of goodbugs.org.au

Industry Trial: Successful Suppression

2015

- **Released HIGH rates**:
  - 300 larvae/m^2/week for 3 weeks
  - + Adults in 2 houses
  - Started Week 14 (April 1) (2015)
  - 10 introductions total

Cryptolaemus larva feeding. Photo courtesy of Koppert Biological Systems

Industry Trial: Successful Suppression

2015

- **Control was slow at first**:
  - –5-15%, Weeks 14-17
  - –30% in Week 18

Industry Trial: Successful Suppression

2015

- Began WEEKLY releases
  - 0.17-.5 larvae/m^2 , AND
  - 0.17-.5 adults/m^2
- After 10 applications, achieved **85-90% suppression**


6
6


4
4

Industry Trial: Successful Suppression

2016

- **Weekly releases**:
  - Started Week 12
    - 0.17- .5 larvae/m^2 , AND
    - 0.17-.5 adults/m^2
  - 15 introductions total
- **Control**:
  - 95% pressure reduction across the greenhouse

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- **Weekly releases**:
  - Started Week 12
    - 0.17- .5 larvae/m^2 , AND
    - 0.17-.5 adults/m^2
  - 15 introductions total
- **Control**:
  - 95% pressure reduction across the greenhouse

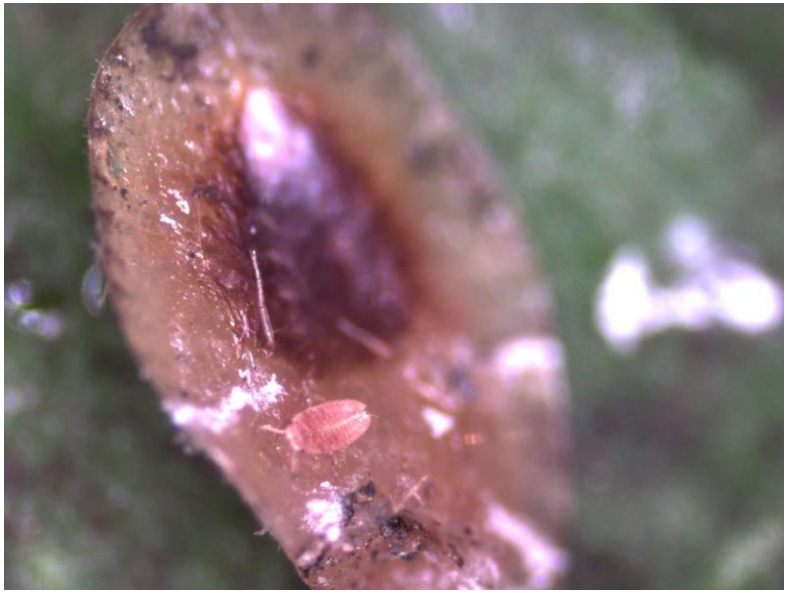
Biocontrol CAN work!
- Need to release adults and larvae
- Need patience

Where to go from here?

1. Track mealybug infestations in Ontario?
   - which crops, time of year
   - self reporting to OMAFRA?
2. Investigate dips to reduce mealybug on new plant material
3. Research project by Flowers Canada
   - Further investigating biocontrol options for mealybug
   - **Looking for 4 growers to participate**
   - Contact Jamie Aalbers at jamie@fco.ca
4. New pesticide registrations?

Scale Insects

- Wingless insects up to 3 mm long;. oval or hemispherical body
- Secrete a characteristic waxy or scale-like covering
- Females lay hundreds of eggs under their immobile scale; hatch into “crawlers”.
- Several species in Ontario, due to the increased amount of foliar stock being imported from tropical areas.
  - ferns, palms and ivy plants



Control of Scales

- Similar to mealybug : Difficult
  - Foliar applications of oil best
  - Drenches of imidacloprid so-so
  - **NO** commercial biocontrol agents, but can move in from outside