New Safflower Insecticides

Nick Clark, UCCE Farm Advisor, CCA

SJC and Delta Field Crops Meeting

On January 24, 2025 @ Cabral Agricultural Center, Stockton, CA

The Team and Our Support

- **UCCE**: Ian Grettenberger, **Treanna Pierce**, Ben Halleck, Walter Martinez, Pahoua Yang, Adela Juarez, Ruben Sanchez – design & technical assistance
- **IR-4 Project** – finance and experimental design support
- **Pesticide manufacturers** – in-kind, indirect finance, and experimental design and expert use advice
- Most importantly, **cooperating growers** – in-kind and expert use advice

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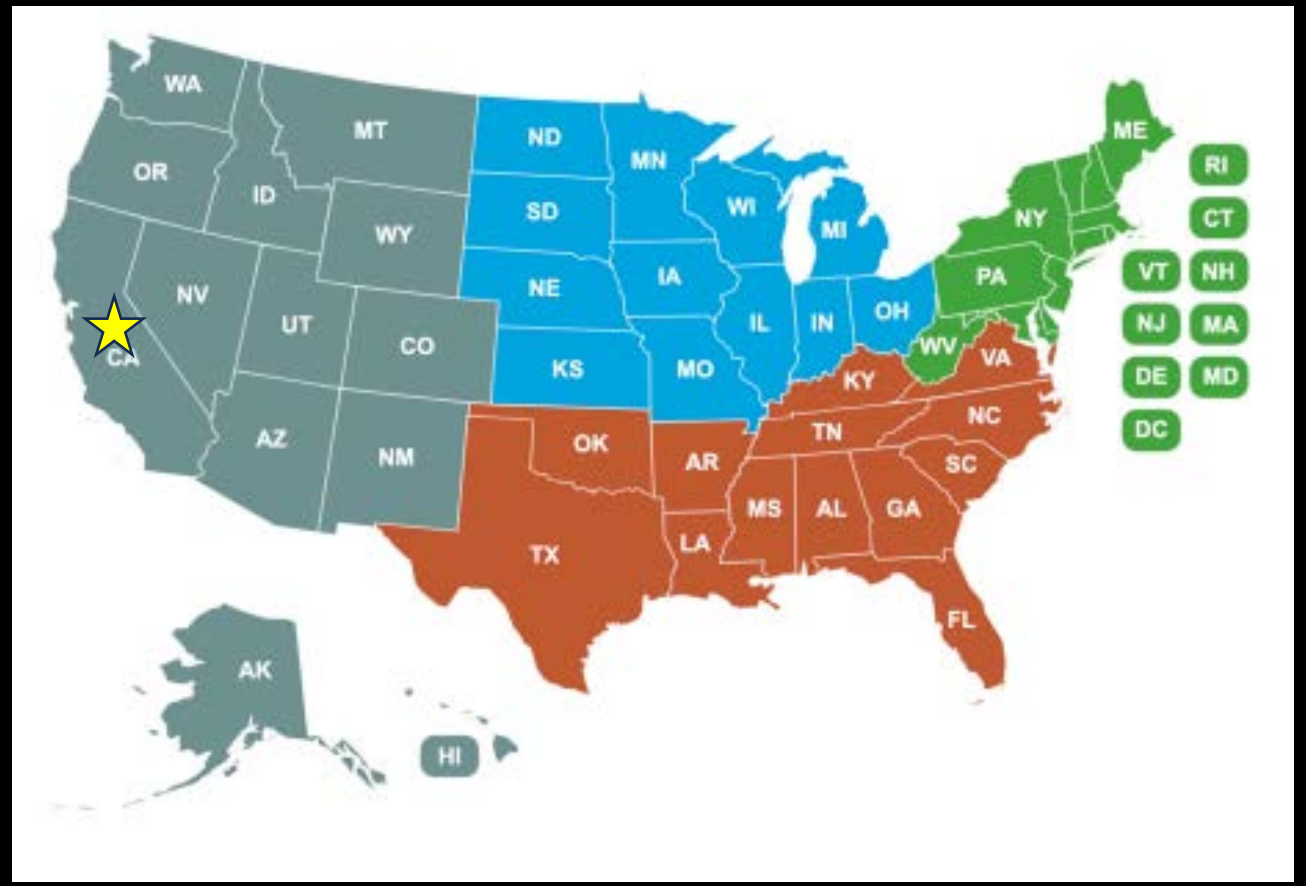
The IR-4 Project

- Established 1963
  - USDA & Extension Universities
- Need for product registration data on minor crops
  - Residue
  - Efficacy
  - Crop Safety
- 75,000+ registrations of pesticides since 1963



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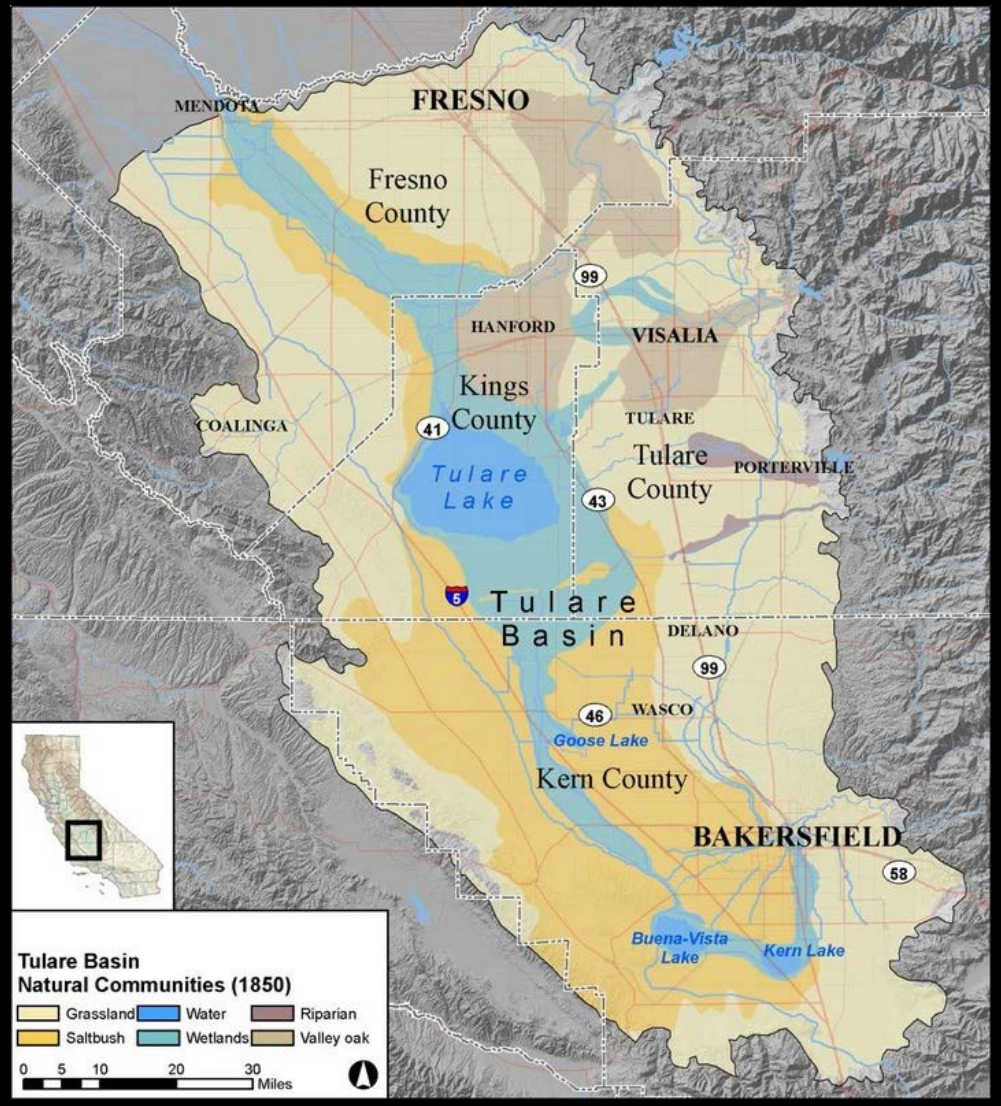
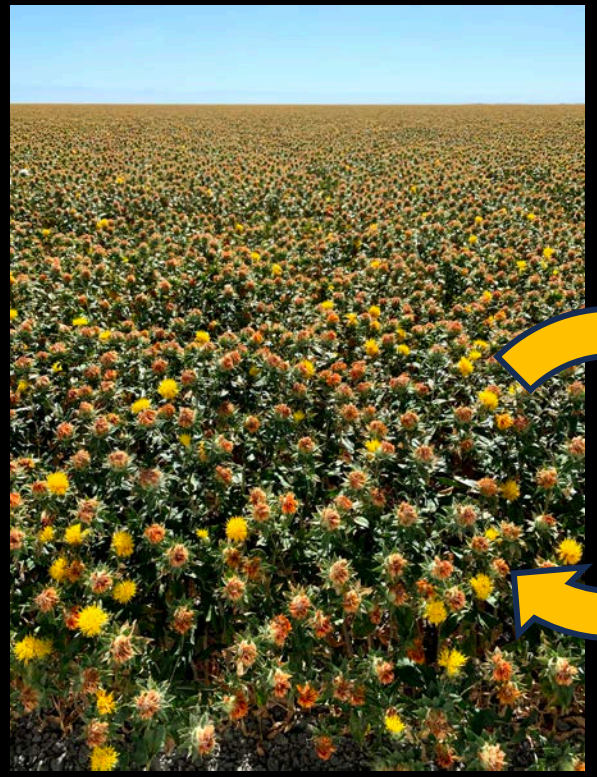
Safflower Production in S. SJV of CA





~ 30K acres/yr

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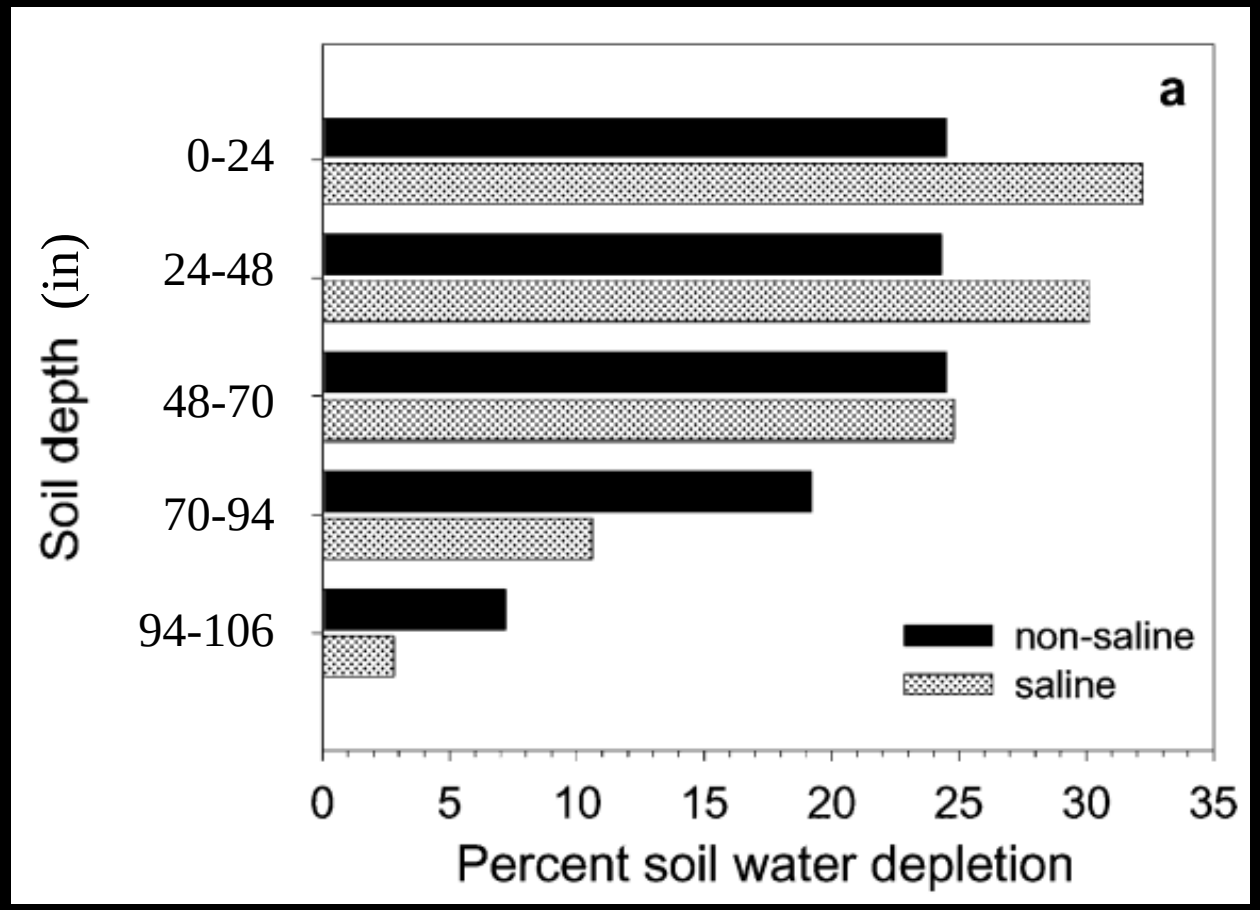
Importance of Safflower – Besides Oil



Bassil and Kaffka, 2001.
https://doi.org/10.1016/S0378-3774(01)00148-2

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Select Insecticide Options for Safflower

		Targets		
Active Ingredient	**IRAC Mode of Action**	**Lygus**	**Stinkbug**	**Leafhopper**
Dimethoate	1B (OP)	■		■
Naled	1B	■		
Pyrethrum	3A (Pyrethrin, Pyrethroid)	■	■	■
Zeta-cypermethrin	3A	■		
Novaluron	15 (Benzoylureas)	■	■	
Flonicamid	29 (Flonicamid)	■		
Cyclaniliprole	28 (Diamides)	■		
Azadirachtin	Unknown	■	■	■
Beauveria bassiana strain GHA	Unknown	■	■	■
Peppermint	Unknown	■	■	■
Clove oil	Unknown	■	■	
Neem oil	Unknown	■		■
Piperonyl butoxide	Unknown		■	■
Six more organic products…	Unknown			■

Select Insecticide Options for Safflower

Active Ingredient	Max lbs a.i./acre/year	Max applications/season*
Dimethoate	0.50	1 *
Naled	2.10	2
Zeta-cypermethrin	0.15	3 *
Novaluron	0.31	4
Flonicamid	0.263	3
Cyclaniliprole	0.20	3

*Some labels have max # applications. Others assuming max a.i./application

Insecticide Experiments

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Four MoAs New to Safflower

Active Ingredient

- Cyclaniliprole – IRAC 28 (Diamide)
- Acetamiprid – IRAC 4A (Neonicotinoid)
- Afidopyropen – IRAC 9D
- Isocycloseram – IRAC 30

Insect Targets

- Lygus
- Beet leafhopper
- Green stinkbug

What Beneficials Were Counted

- Bigeye Bug
- Assassin Bug
- Damsel Bug
- Lacewing
- Lady Bug
- Pirate Bug
- *Coleoptera* & *Notoxus spp.*
- Spiders

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Grower Standard Treatments

- Zeta-cypermethrin + Naled
- Flonicamid + Dimethoate
- Dimethoate + Naled
- Naled

Grower standard treatments varied depending on availability and commercial application rotations.

All treatments were mixed with an NIS and an oil, sometimes a fertilizer an anti-foaming agent.

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2019 Cyclaniliprole Results

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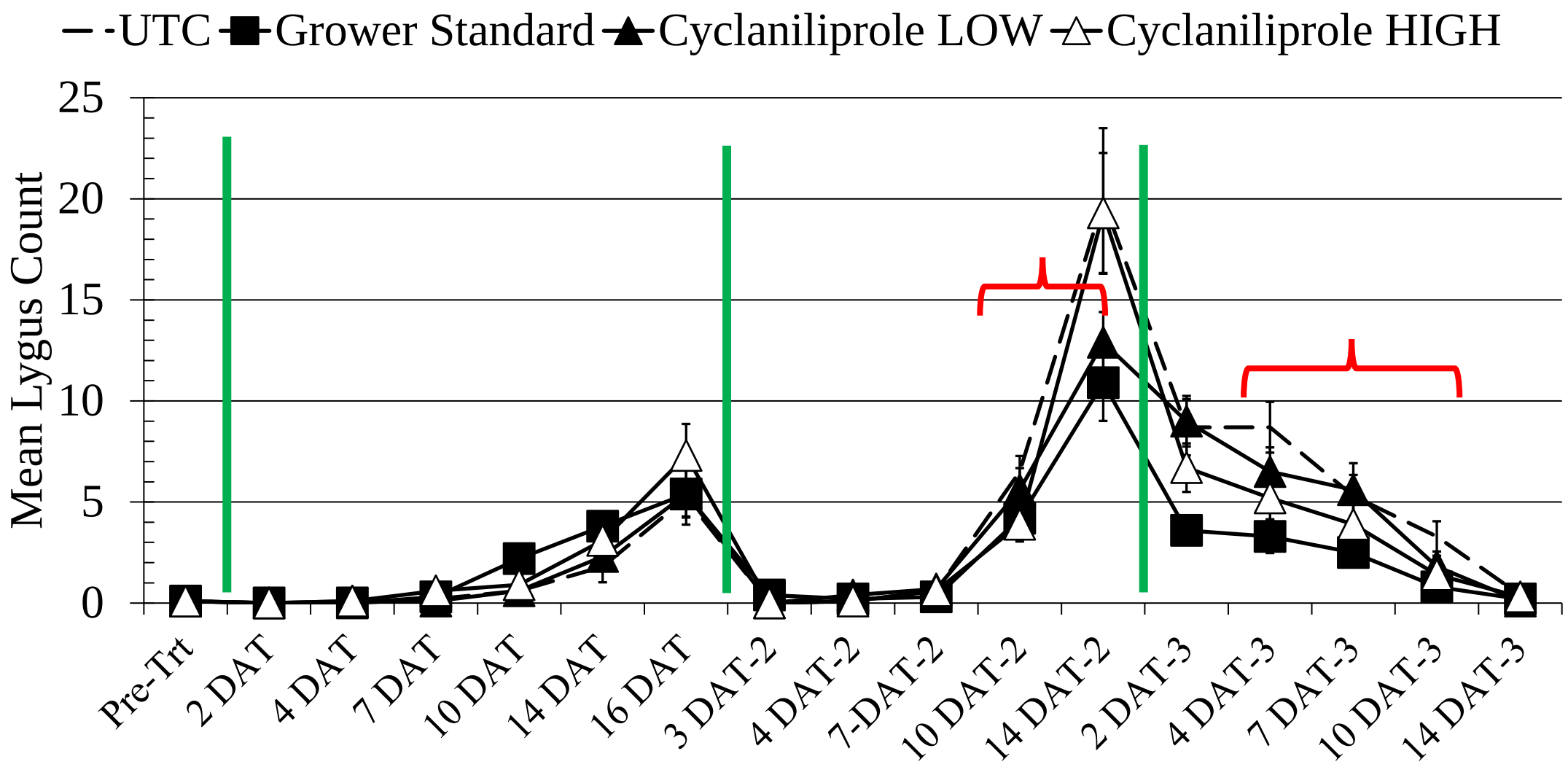
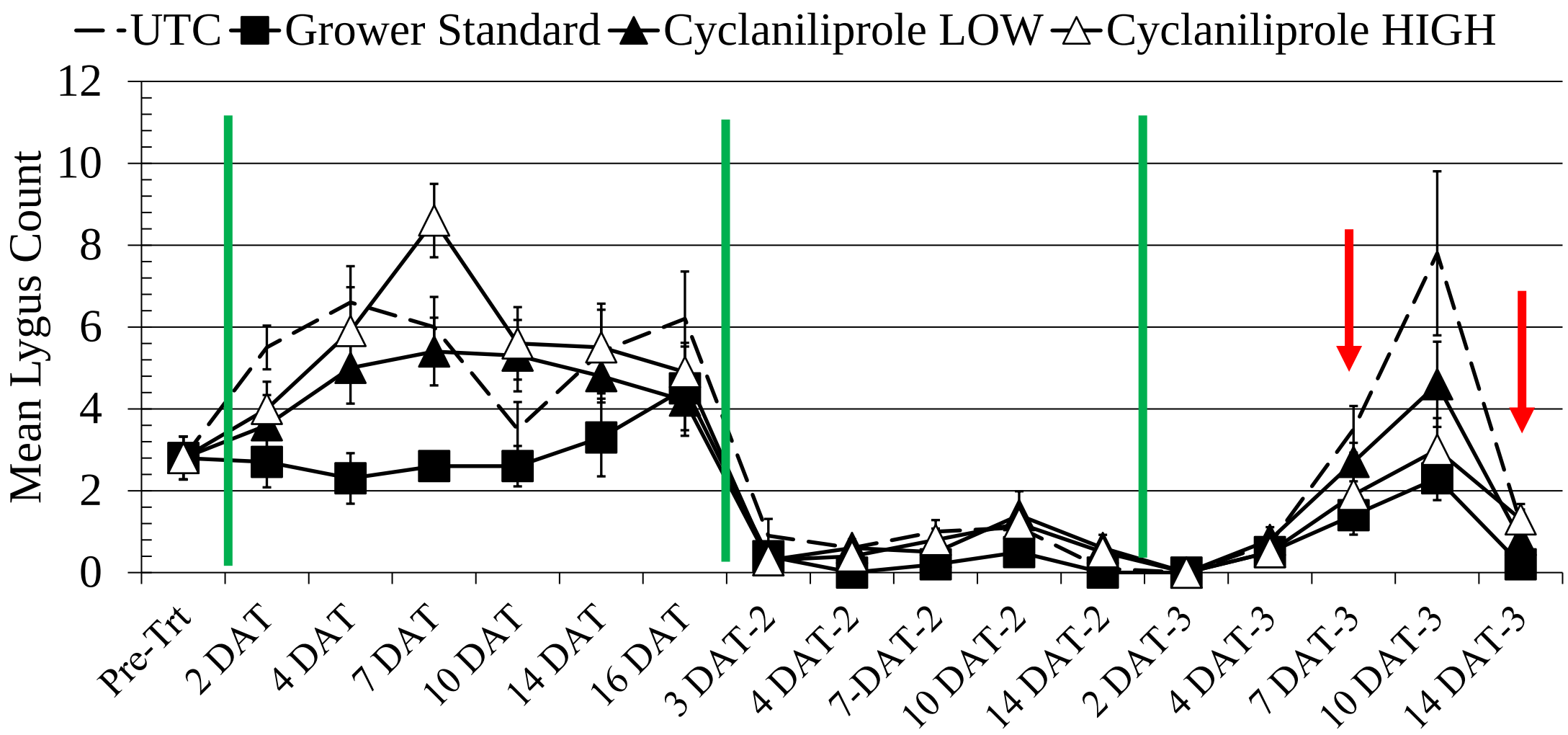
Lygus Nymphs



Lygus Adults



2020 Acetamiprid Results

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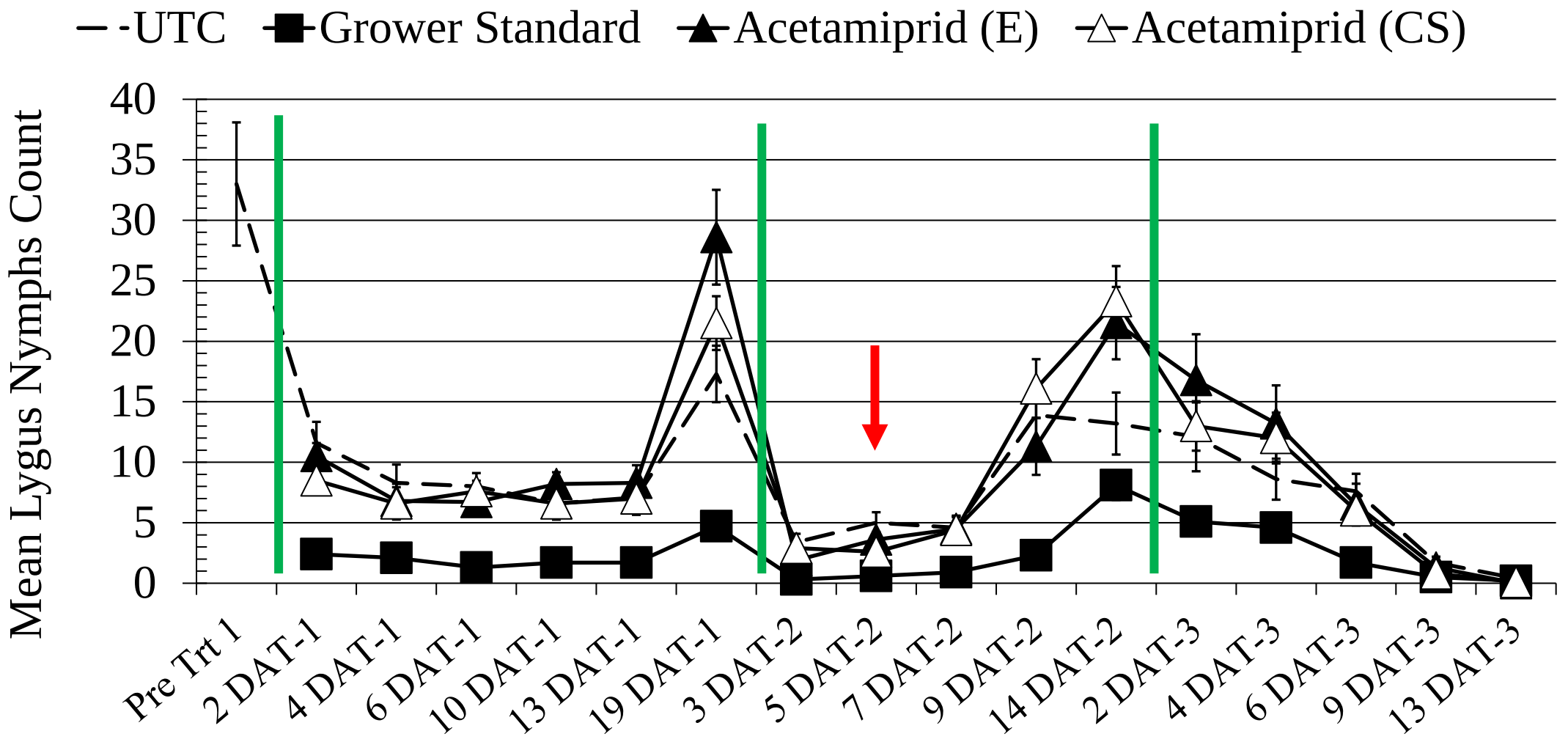
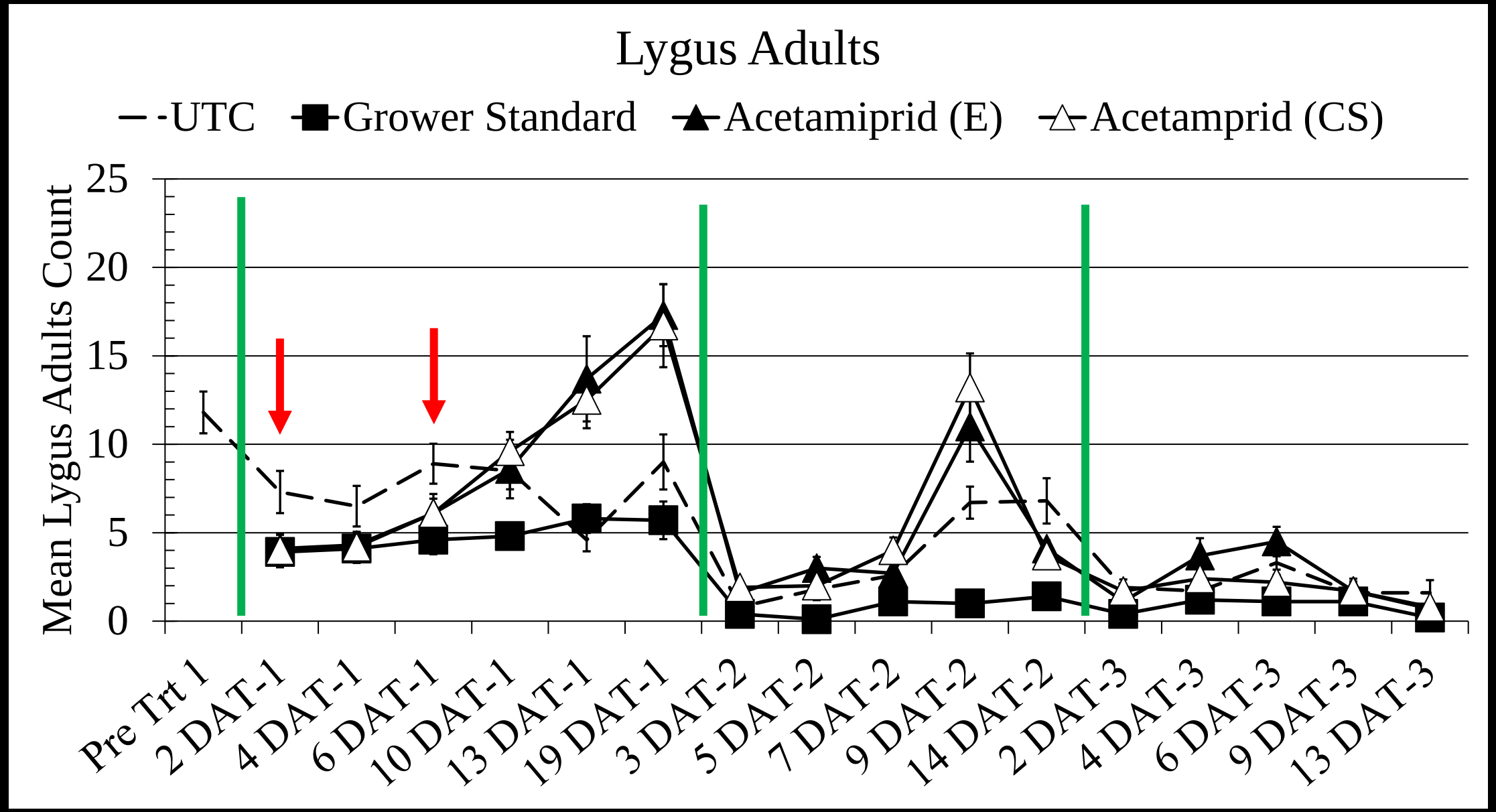
Lygus Nymphs





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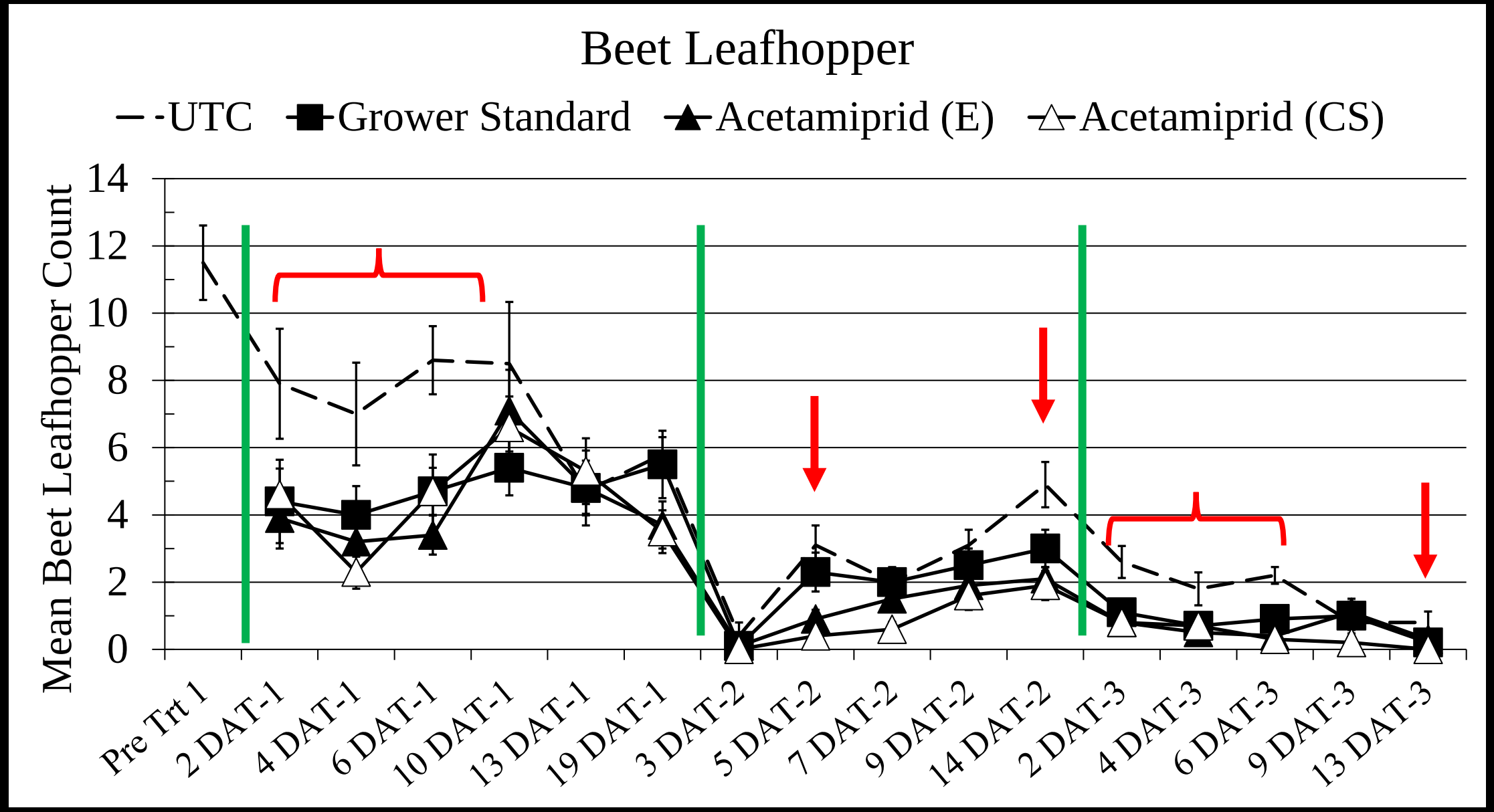
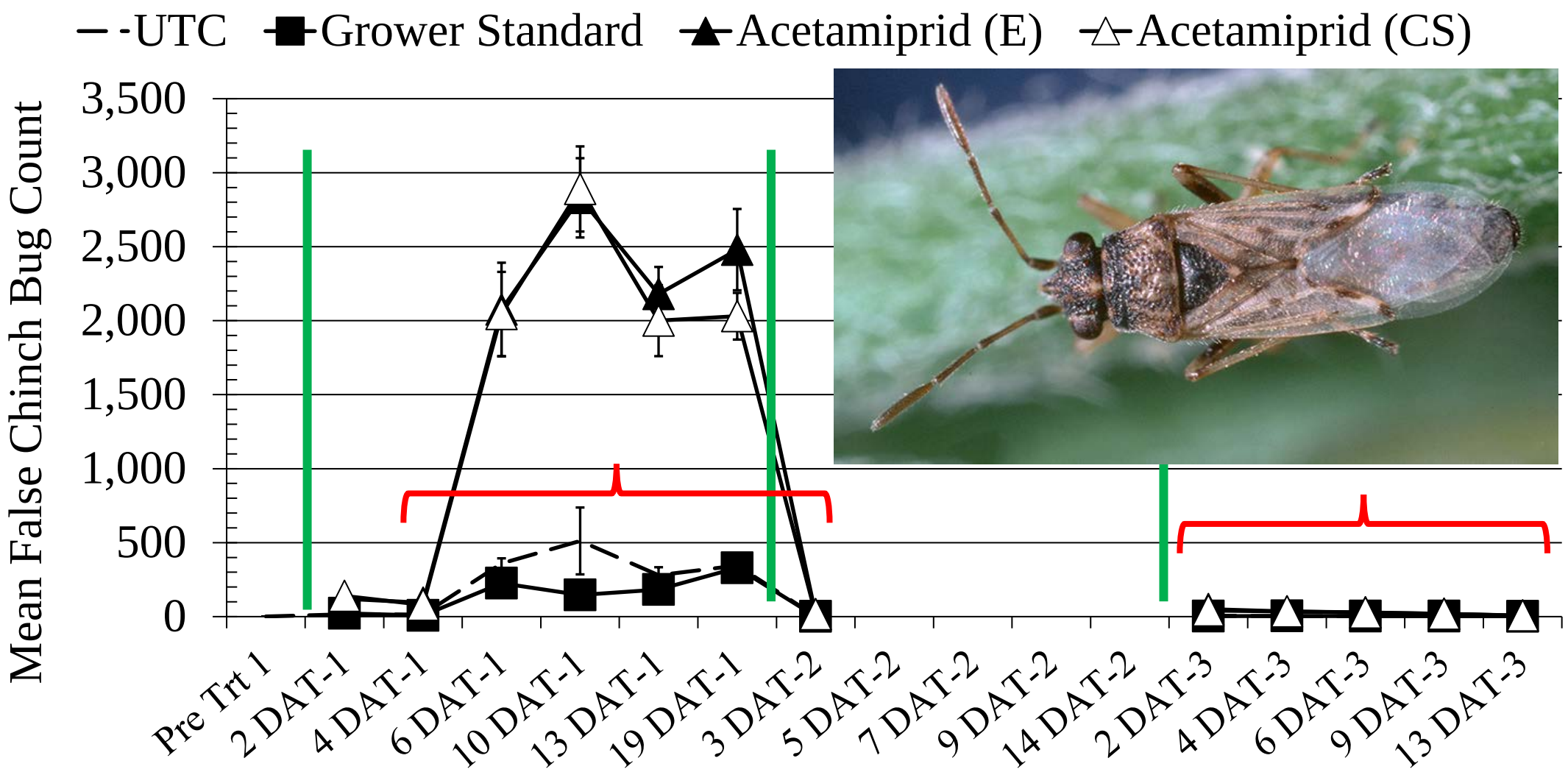


False Chinch Bug



2023 Afidopyropen Results

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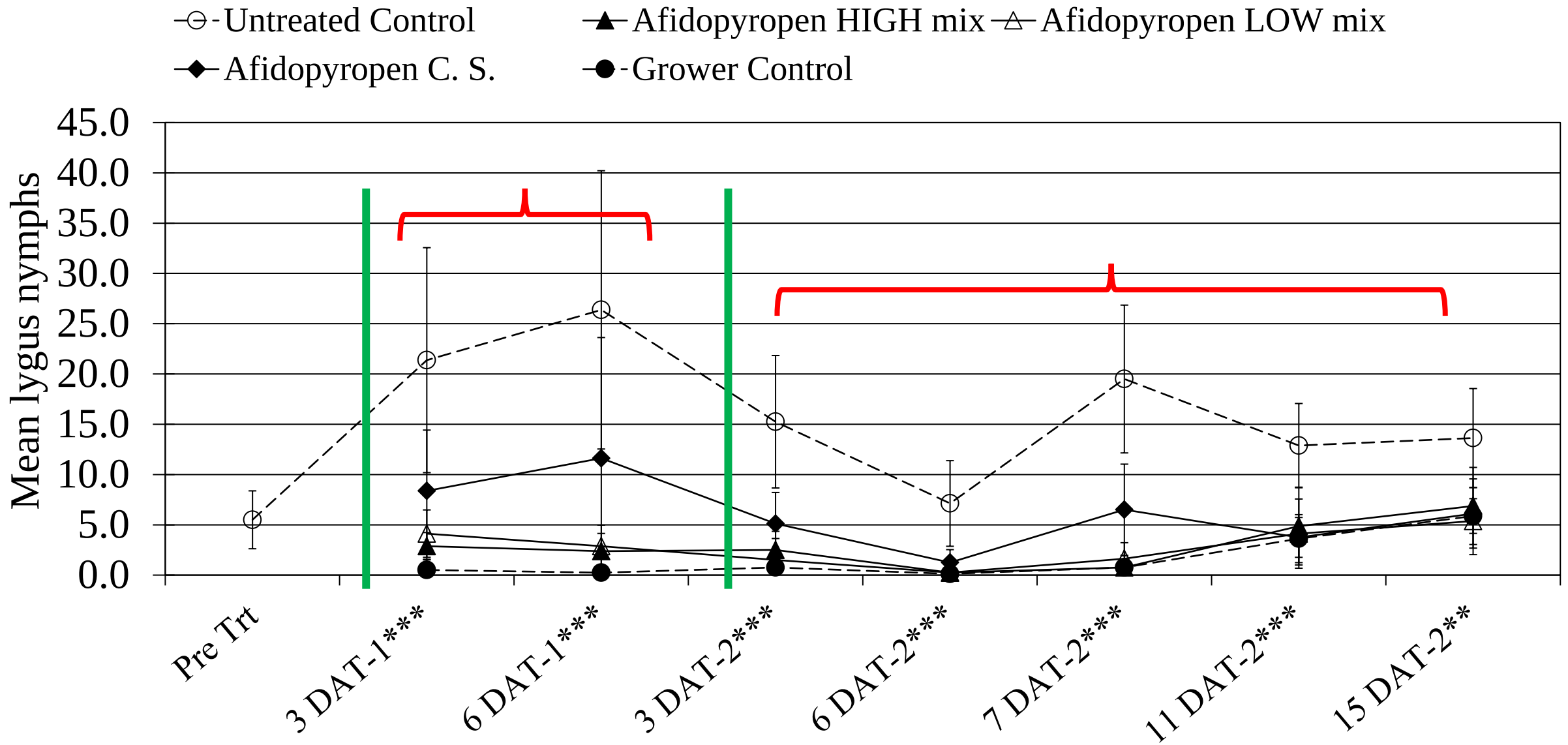

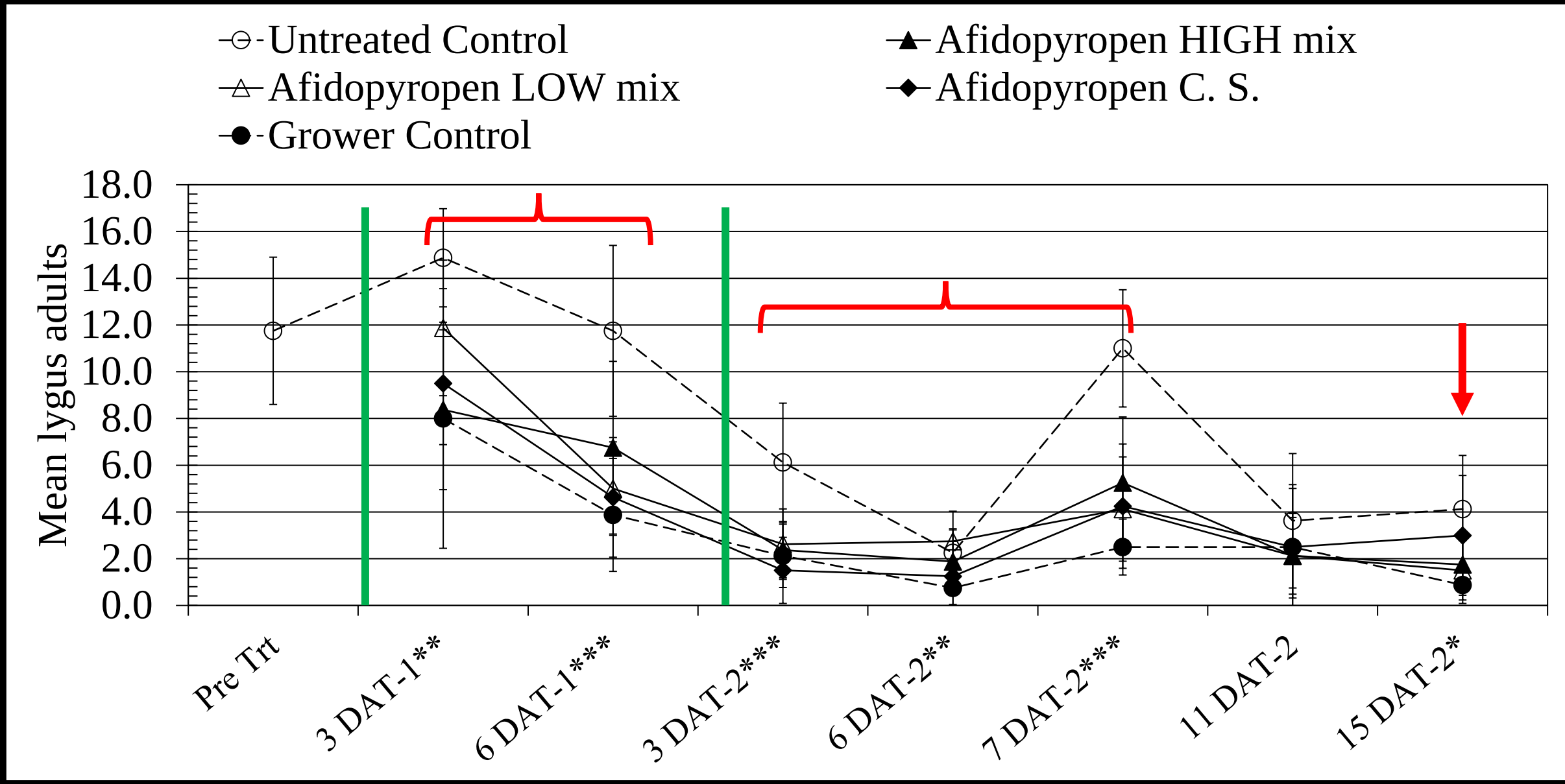

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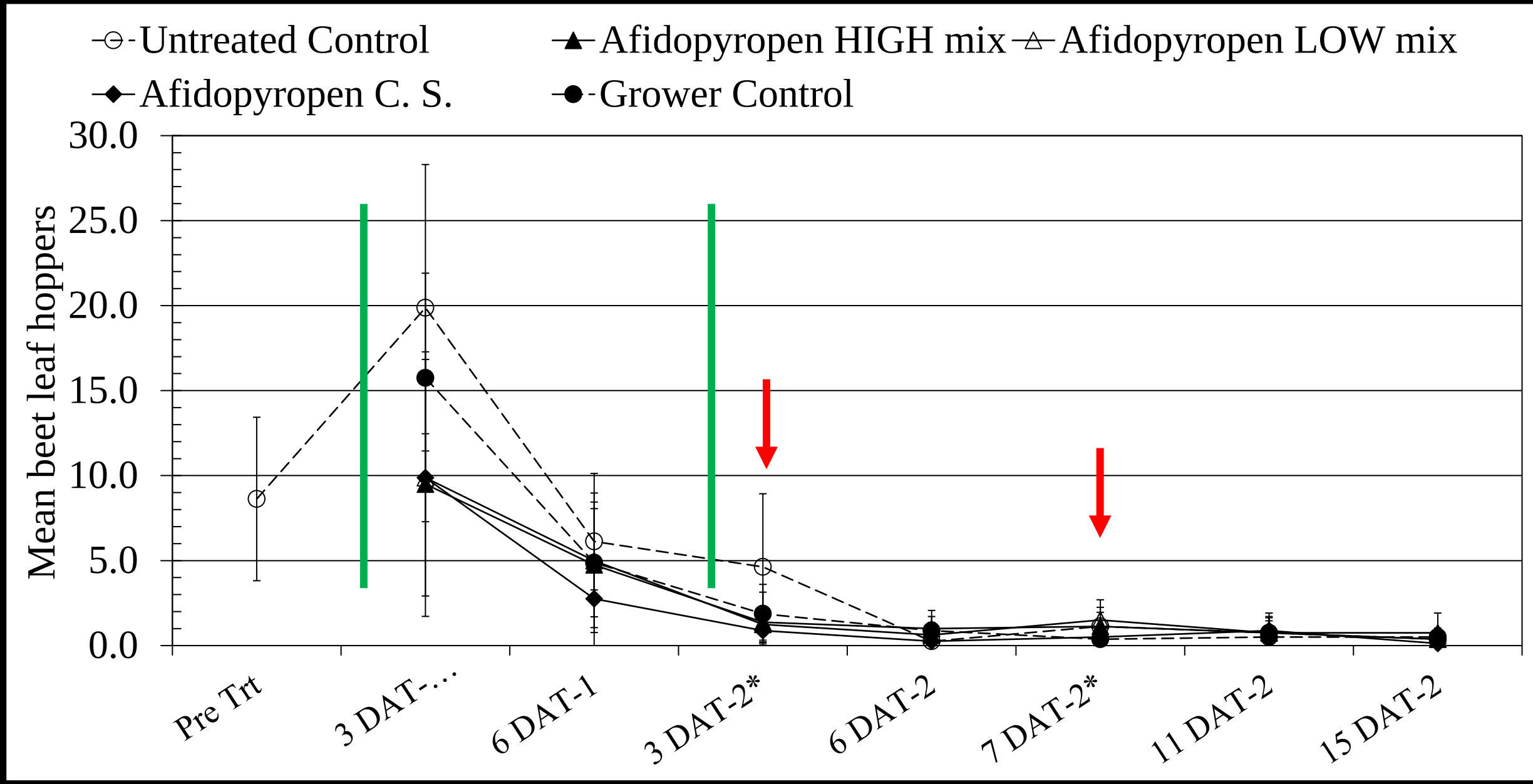

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2023 Isocycloseram Results

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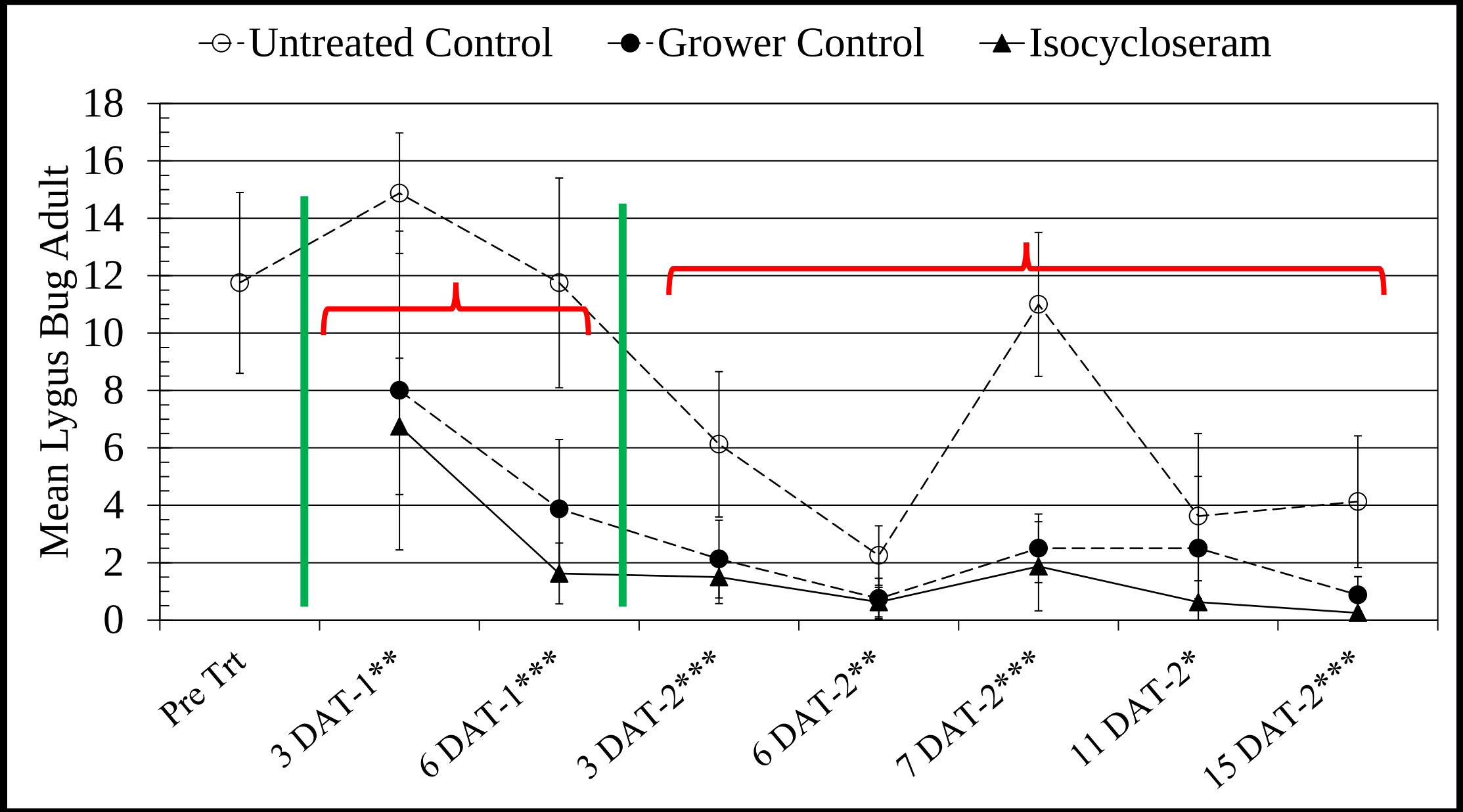

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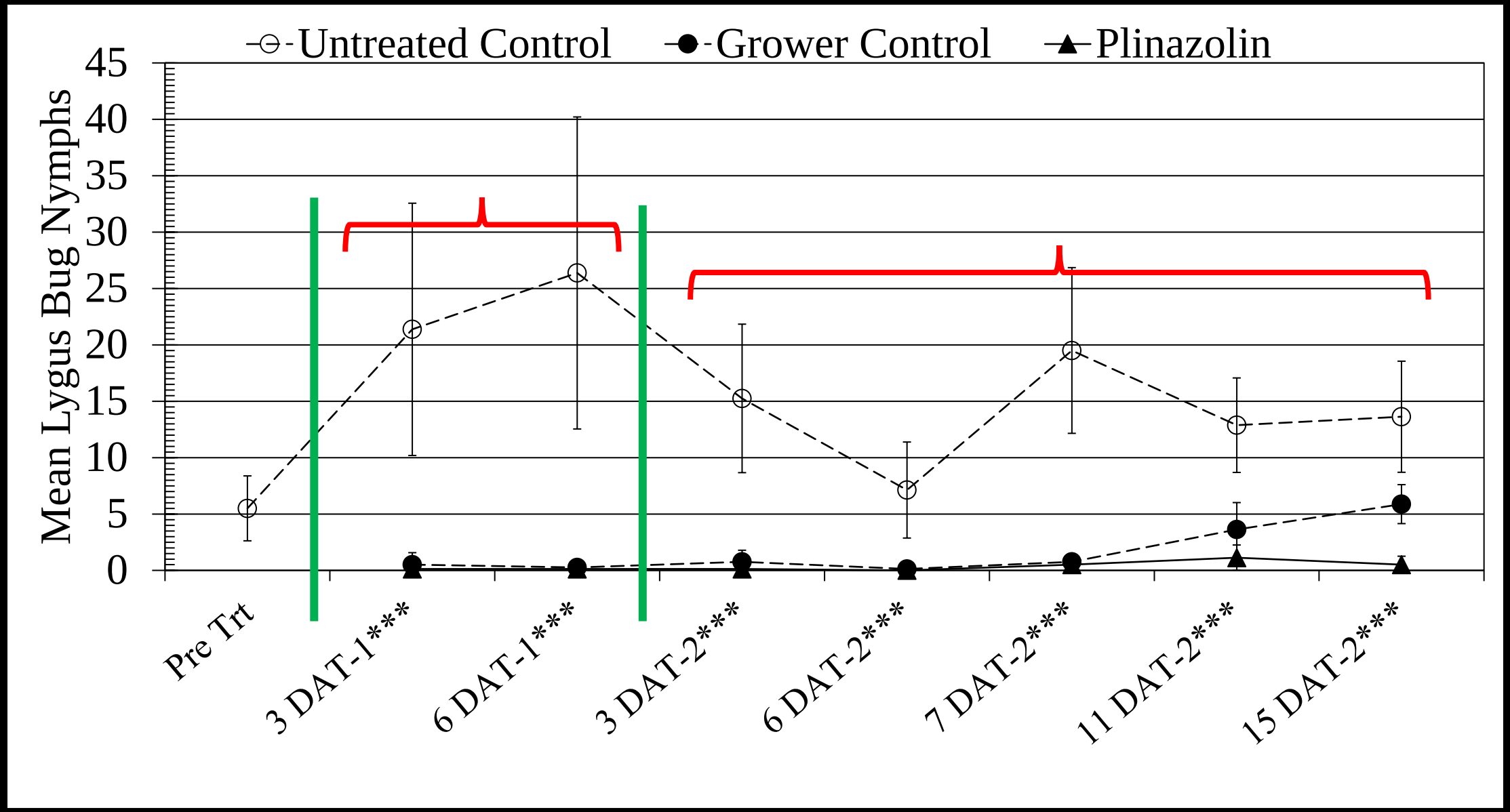

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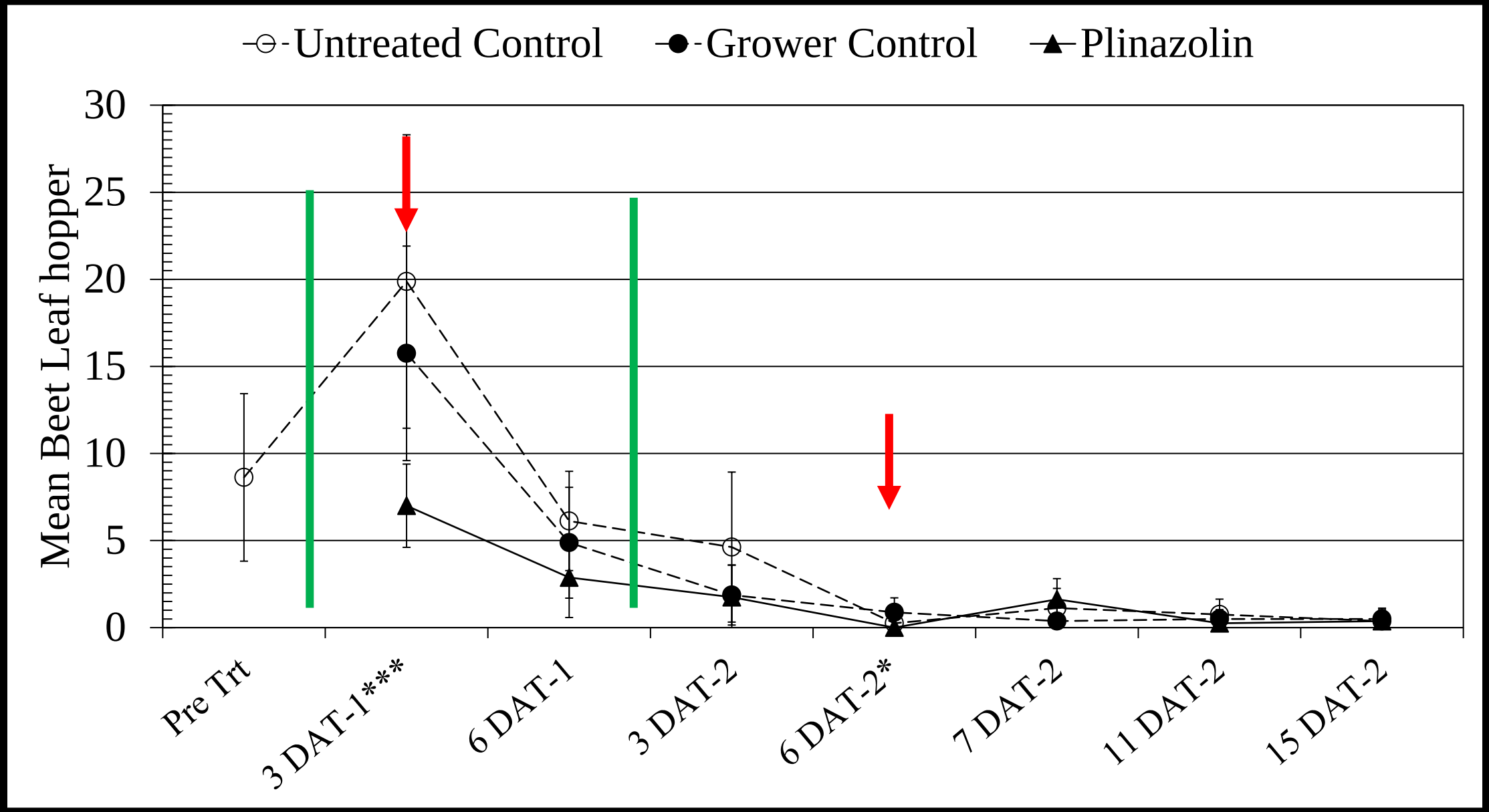

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Registered uses of these insecticides on some big SJC crops

Cyclaniliprole	Acetamiprid	Afidopyropen
Potato Sunflower Tomato	Almond Beans Blueberry Cherry Corn Grape Potato Tomato Walnut	Alfalfa Almond Beans Cherry Potato Sorghum Tomato Walnut

Where We are Now

- **No phytotoxicity**

- Cyclaniliprole “Use registered,” as Harvanta 50SL – “suppression of lygus adults”

- Acetamiprid under review, plans for EPA submission 02/2025

- Currently evaluating Afidopyropen (IRAC 9D) & Isocycloseram (IRAC 30, novel chemistry)
  - Last year under field evaluation, 2025

Thank you

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