

Two-Spotted Spider Mite Efficacy Trial and Resistance Monitoring

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September 13th 2024



Source: Biobee



CAL POLY
Strawberry Center

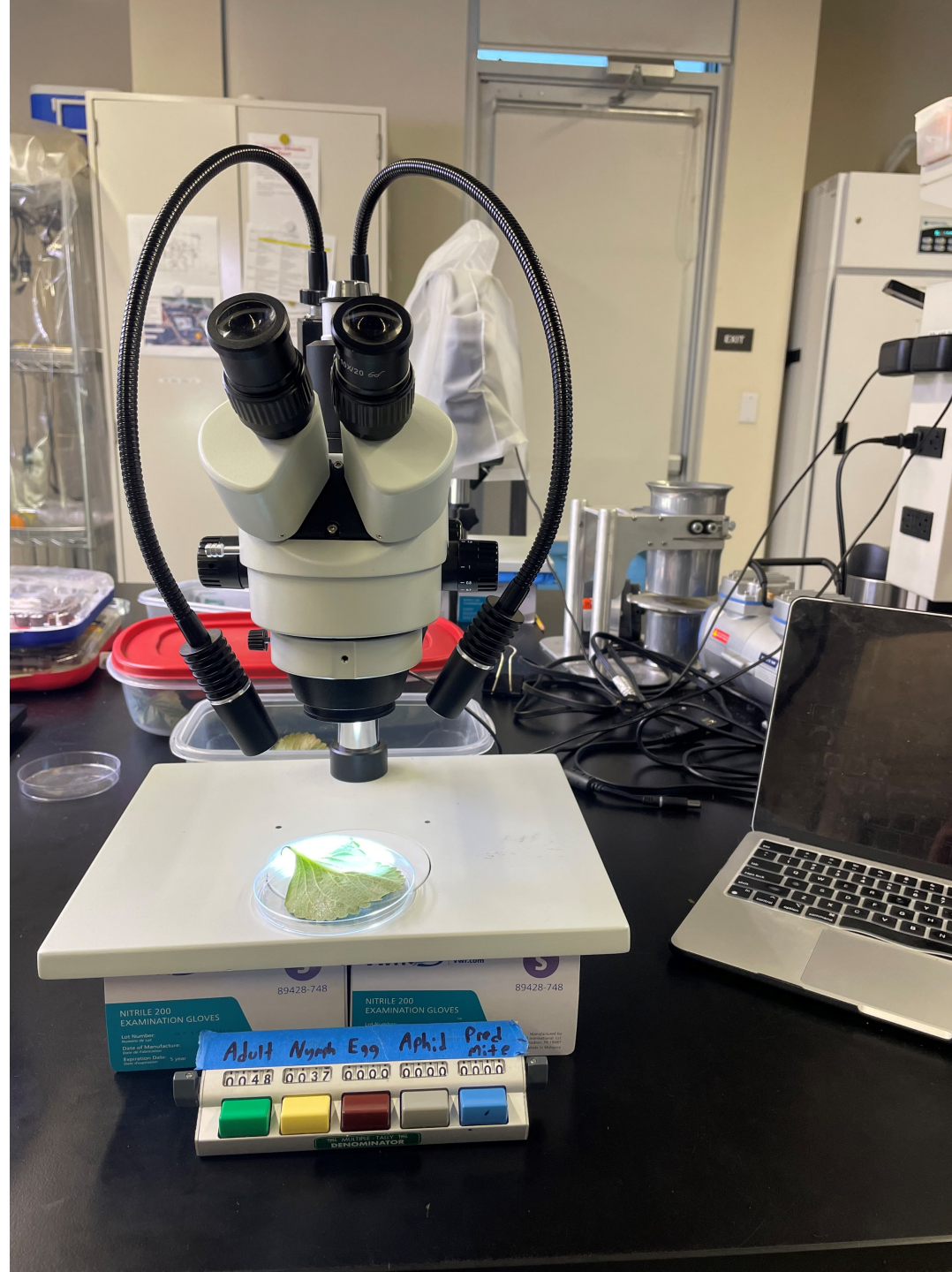


Efficacy Trial Layout

- Field 25 at Cal Poly
- Randomized Complete Block Design
- Two sprays, one week apart (March 26th and April 2nd)
- Five mid-tier leaflets per plot



Mites were counted with a dissecting microscope





CO₂ Backpack sprayer
with 8 hollow cone nozzles
calibrated to deliver 150
gal/acre at 60 psi



Products

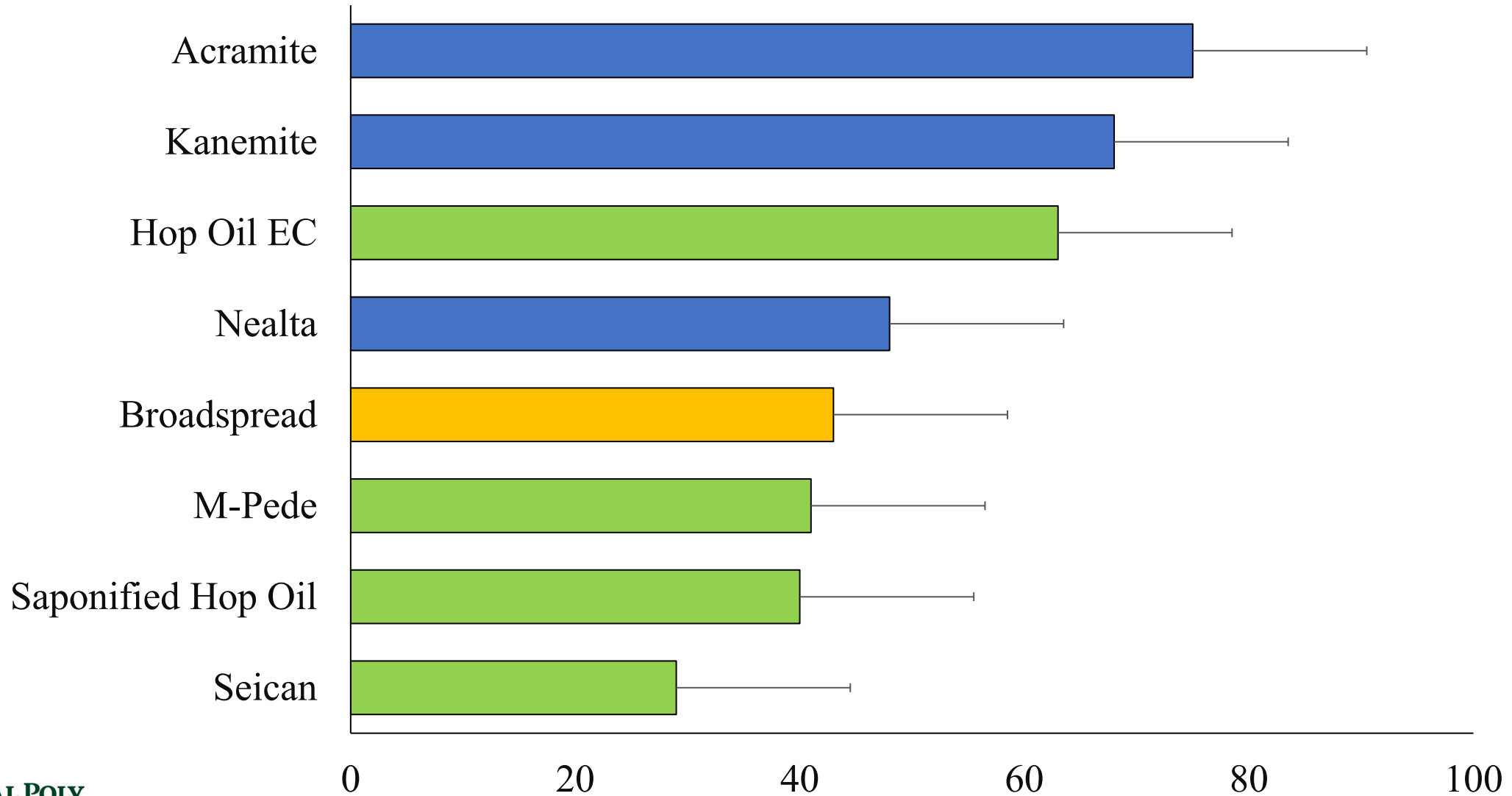
| Chemical | Rate/acre |
|------------------------|------------|
| Broadspred* | 19.5 fl oz |
| M-Pede (O) | 96 fl oz |
| Seican (O) | 48 fl oz |
| Saponified Hop Oil (O) | 3.25 % v/v |
| Hop Oil EC (O) | 2.5 % v/v |
| Acramite* | 1 lb |
| Kanemite | 31 fl oz |
| Nealta | 13.7 fl oz |

*Acramite was buffered to have a pH of about 5.5

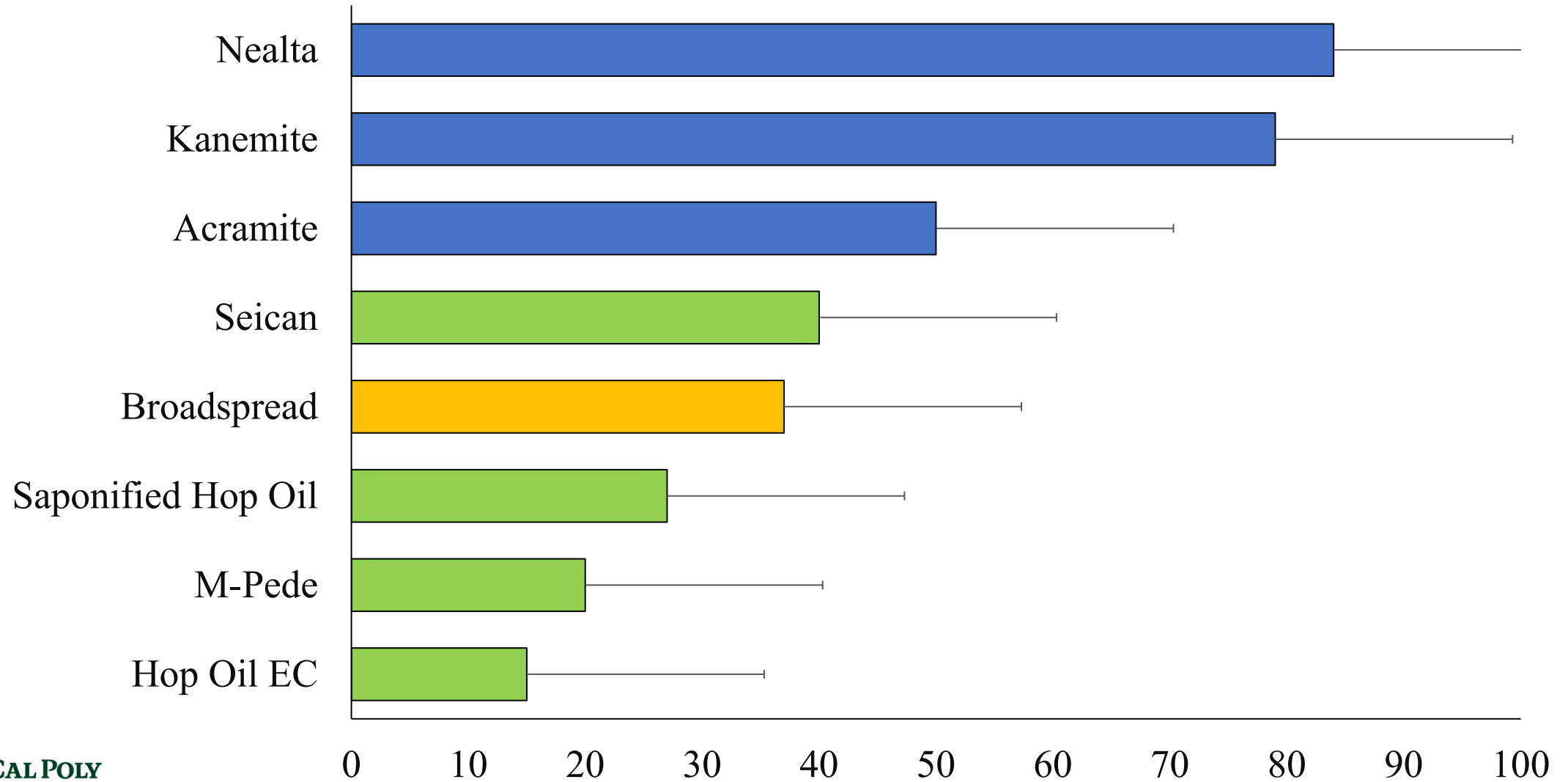
*Broadspred was a tank mix with Mixwell at 12 fl oz/100 gallons and Acadian at 64 fl oz/A sprayed at 200 GPA.



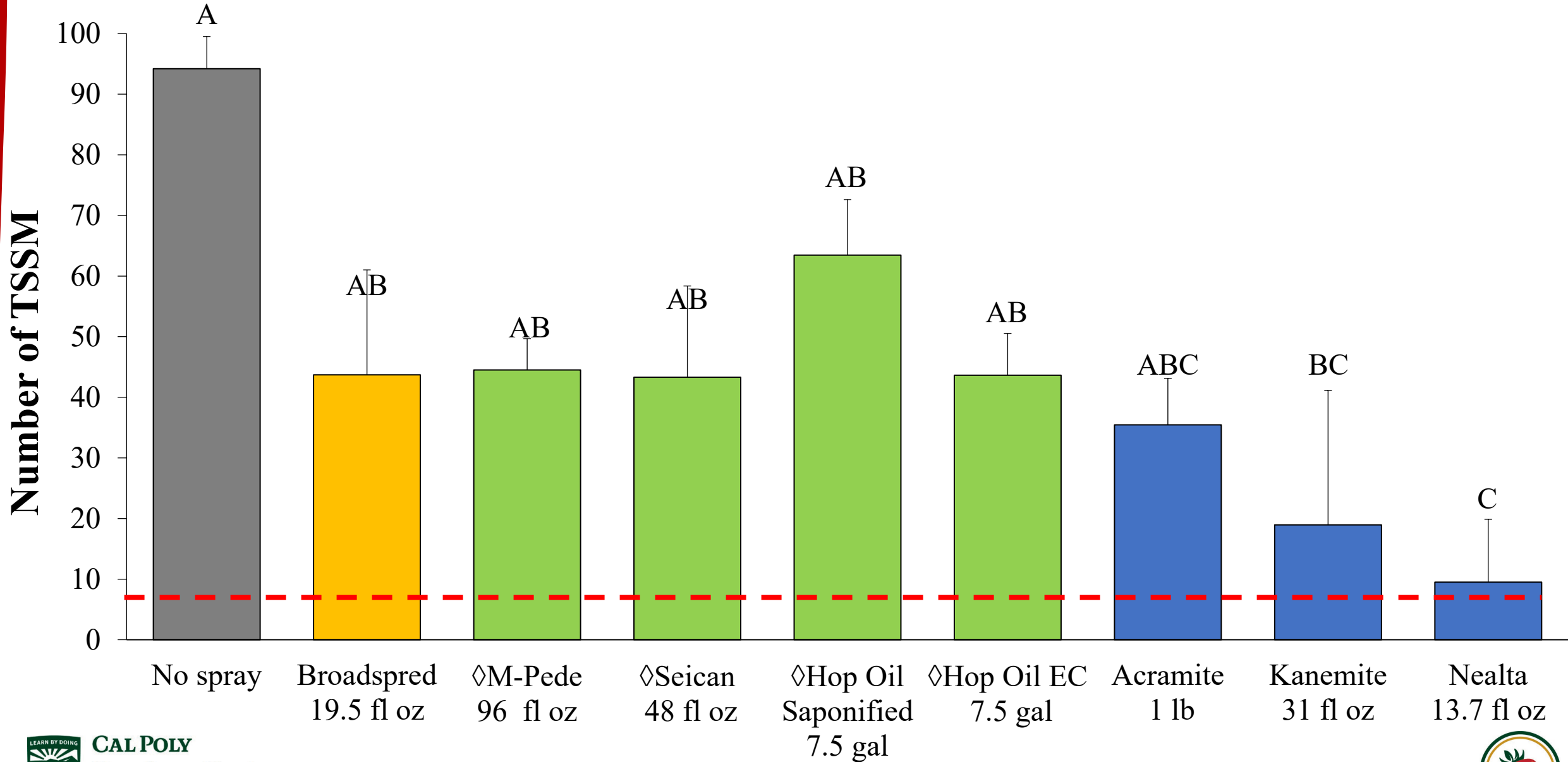
% reduction of *Tetranychus urticae* motiles 3 days after first application



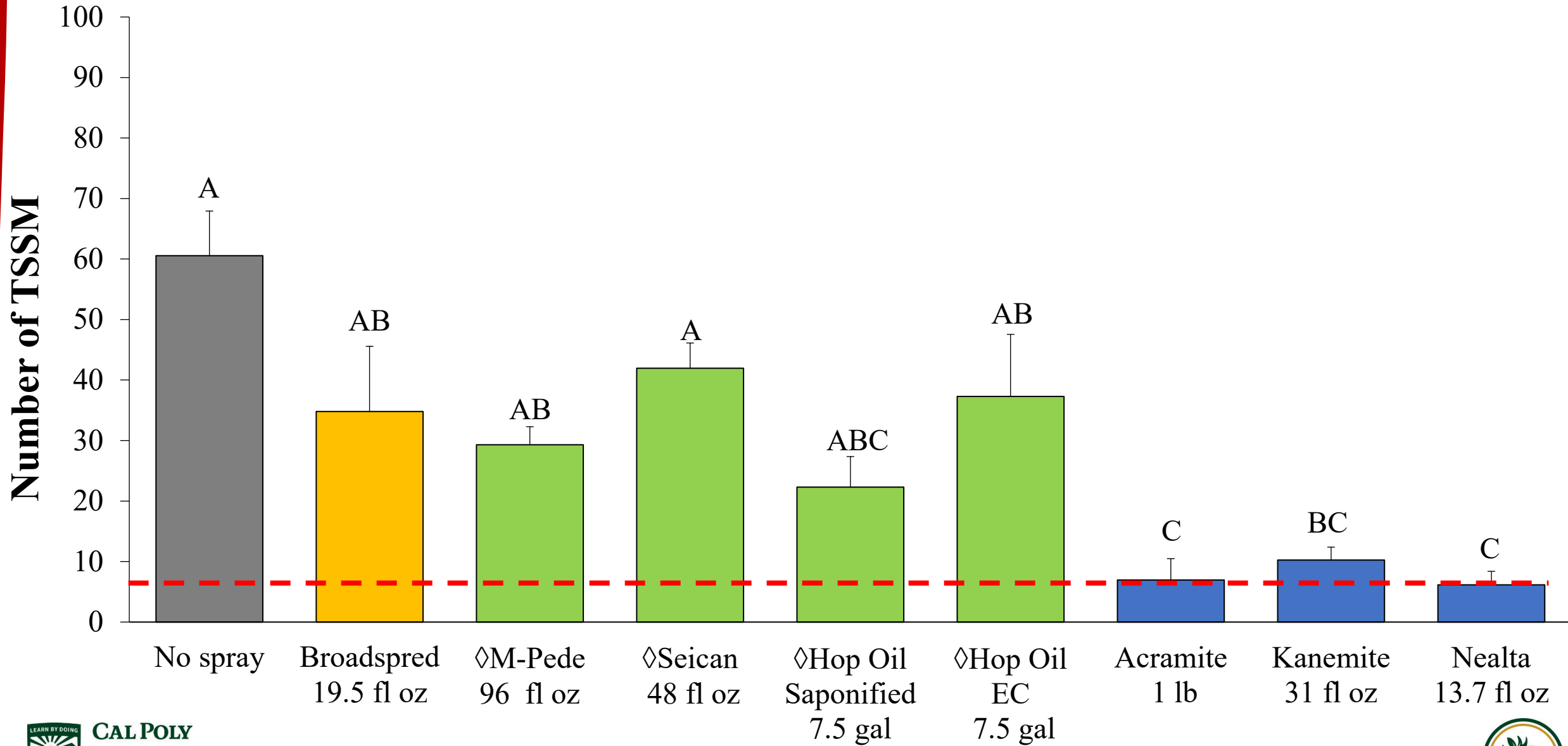
% reduction of *T. urticae* motiles 7 days after first application



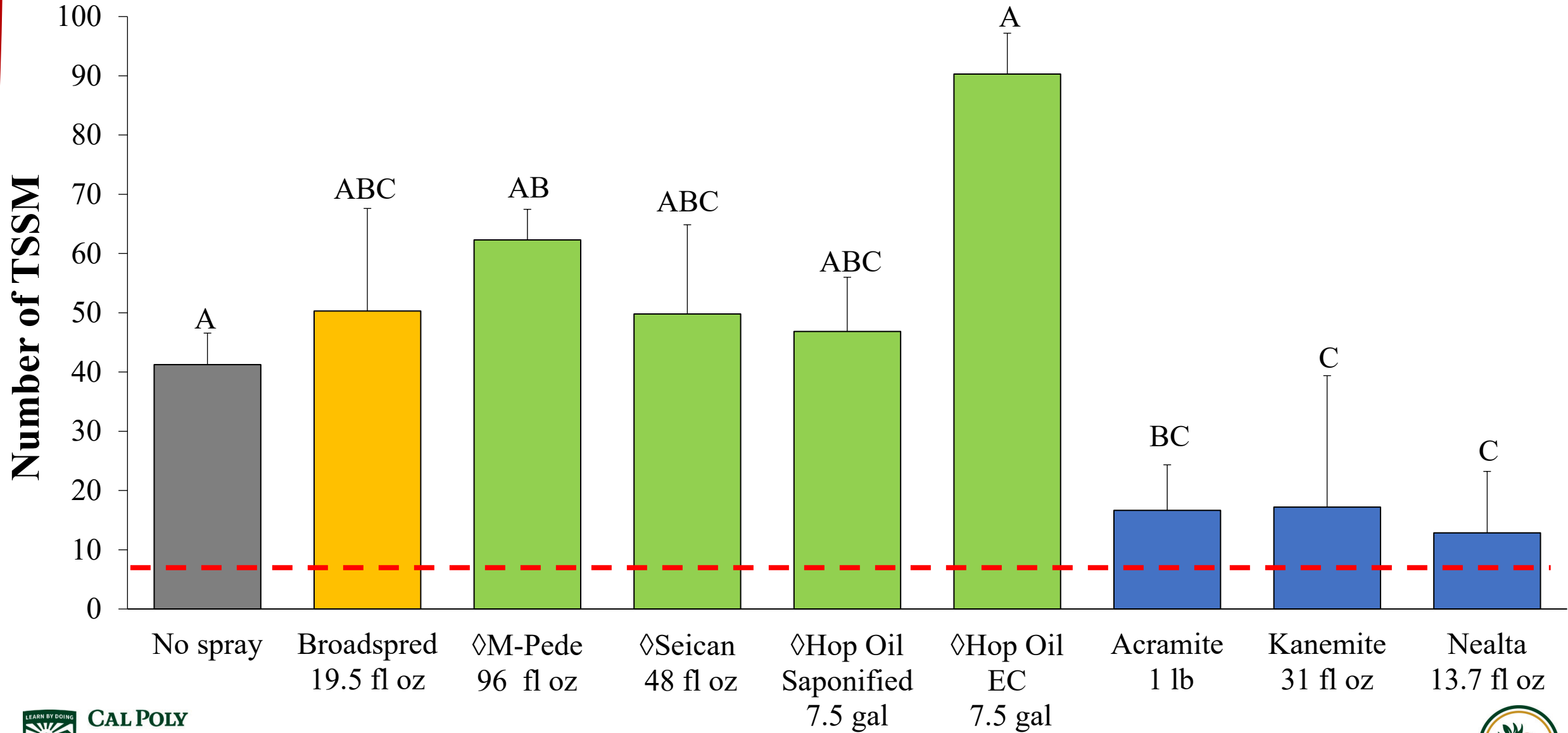
T. urticae nymphs 7 days after first application



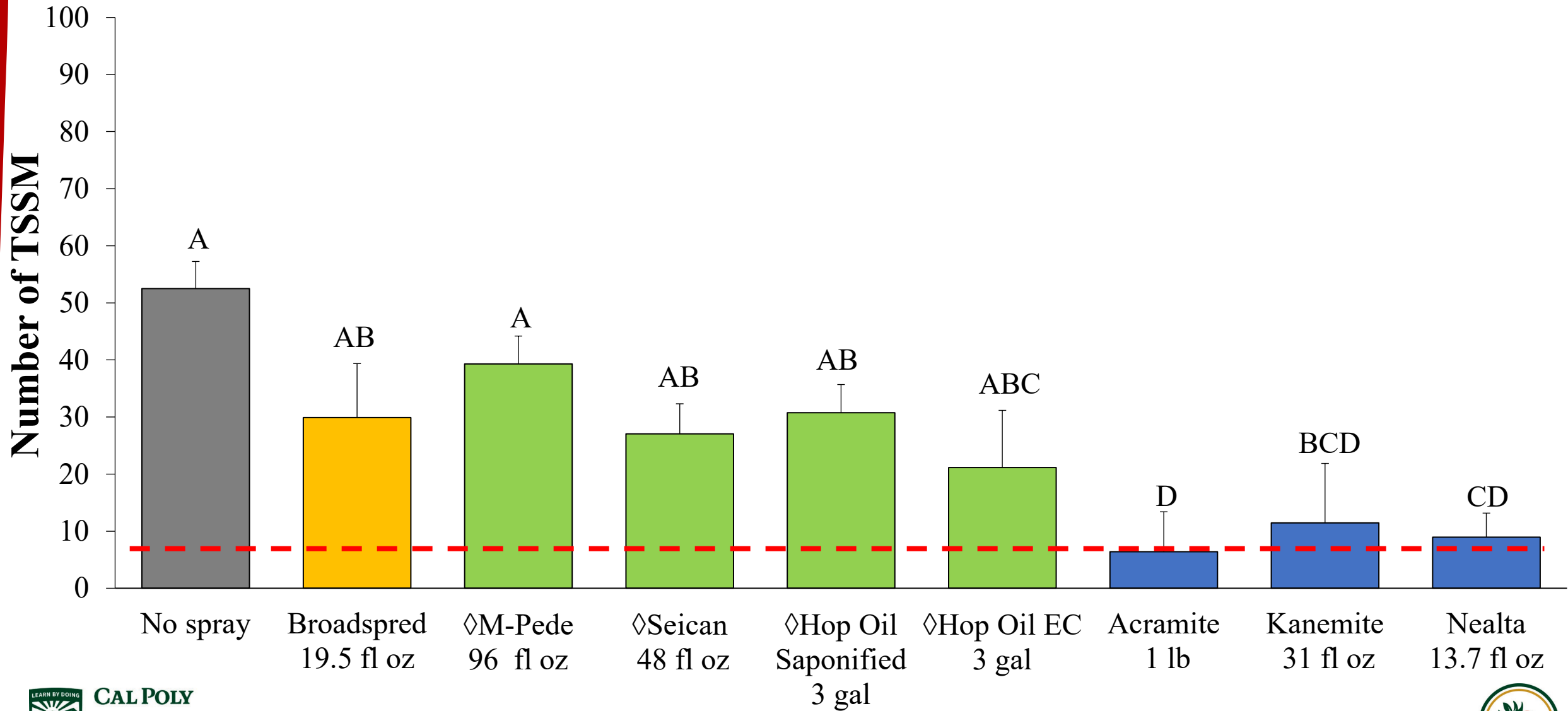
T. urticae adults 7 days after first application



T. urticae nymphs 7 days after second application

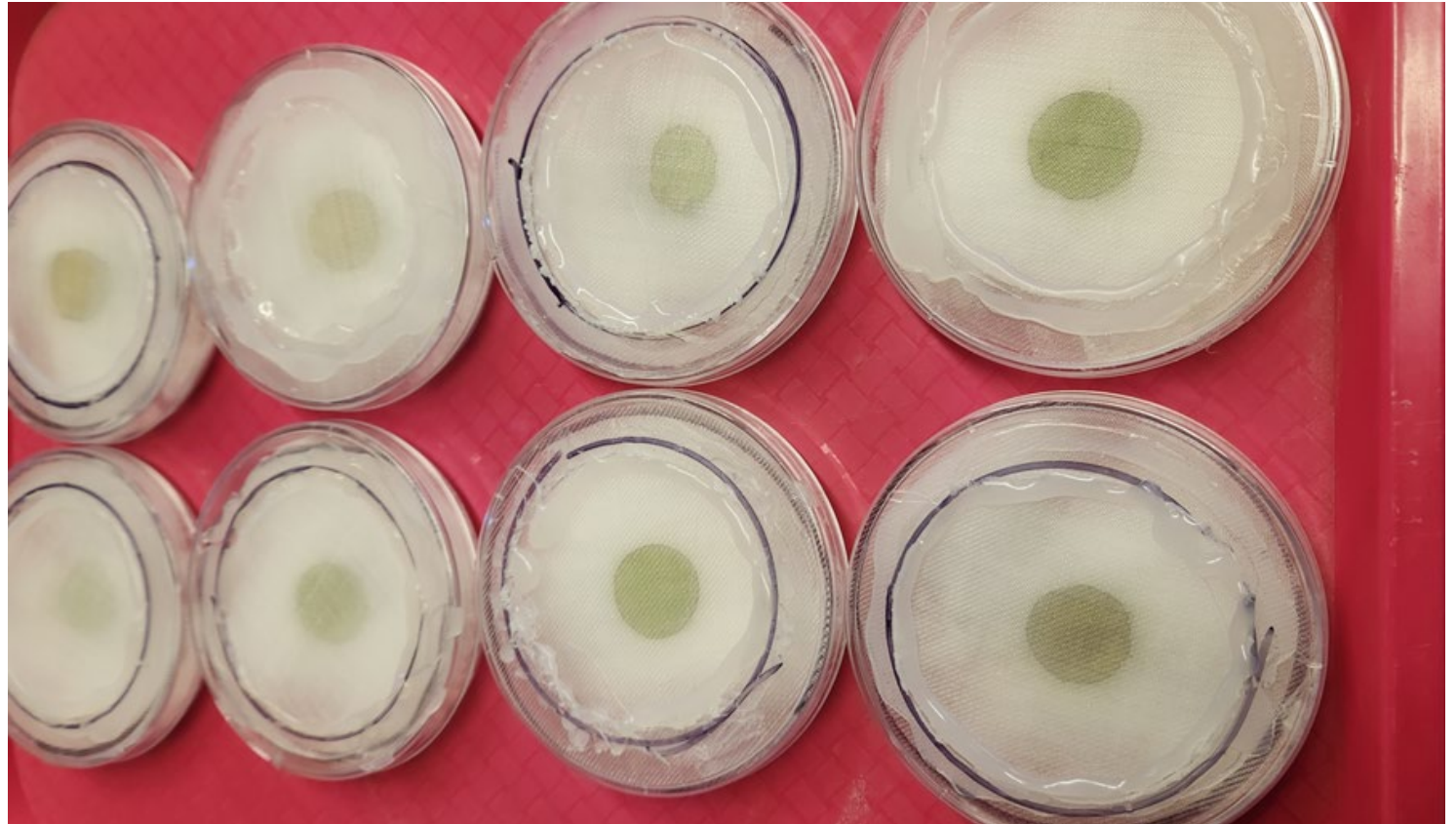


T. urticae adults 7 days after second application



Resistance Monitoring Method

- 5 mites per leaf disc
- Susceptible vs Field Population
- Treat leaf disc at field rate for a chemical
- Checked mortality 24 and 48 hours after treatment



Chemicals Tested

| Product | Active Ingredient | Mode of Action | IRAC |
|----------|-------------------|---|------|
| Nealta | cyflumetofen | Mitochondrial electron transport inhibitor (Complex 2) | 25 |
| Kanemite | acequinocyl | Mitochondrial electron transport inhibitor (Complex 3) | 20B |
| Oberon | spiromesifen | Inhibit acetyl coenzyme A carboxylase, part of the first step in lipid biosynthesis | 23 |



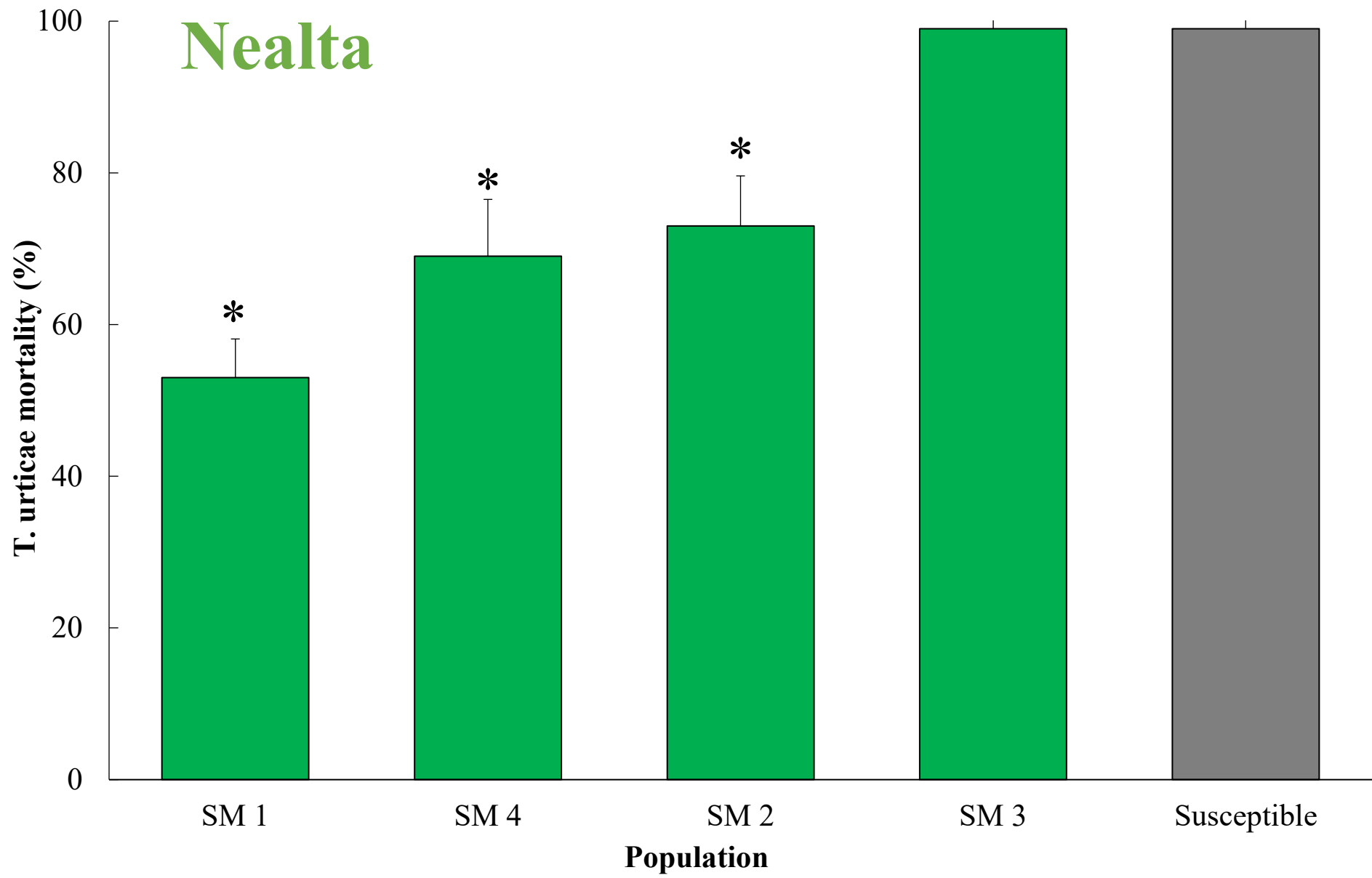


Figure 1. Two-spotted mites exposed to Nealta[®]. SM = Santa Maria. Bars represent mean \pm standard error. $p < 0.05$ compared to the susceptible population (Dunnett's test).



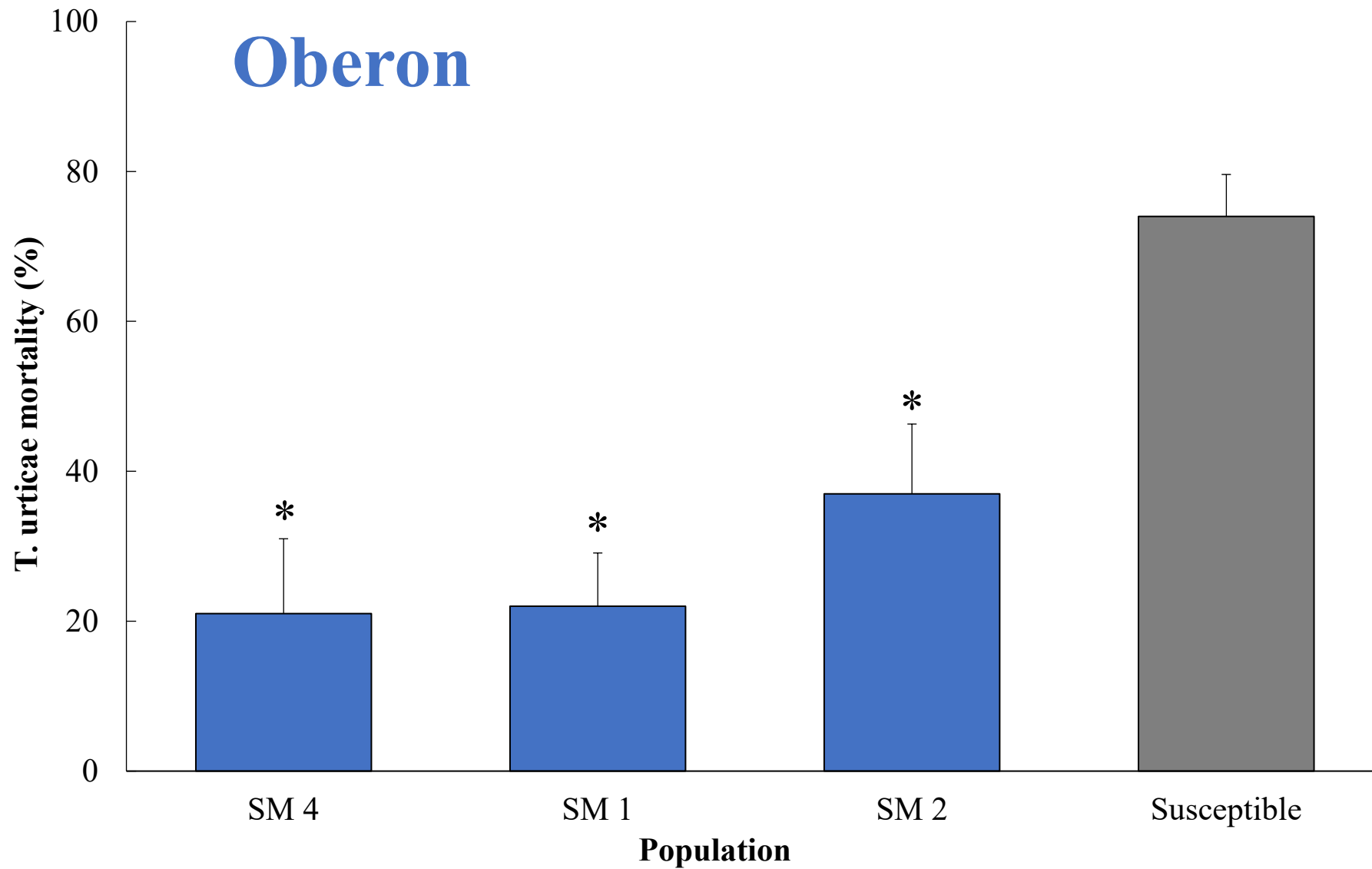


Figure 2. Two-spotted mites exposed to Oberon[®]. SM = Santa Maria. Bars represent mean \pm standard error. $p < 0.05$ compared to the susceptible population (Dunnett's test).



Kanemite

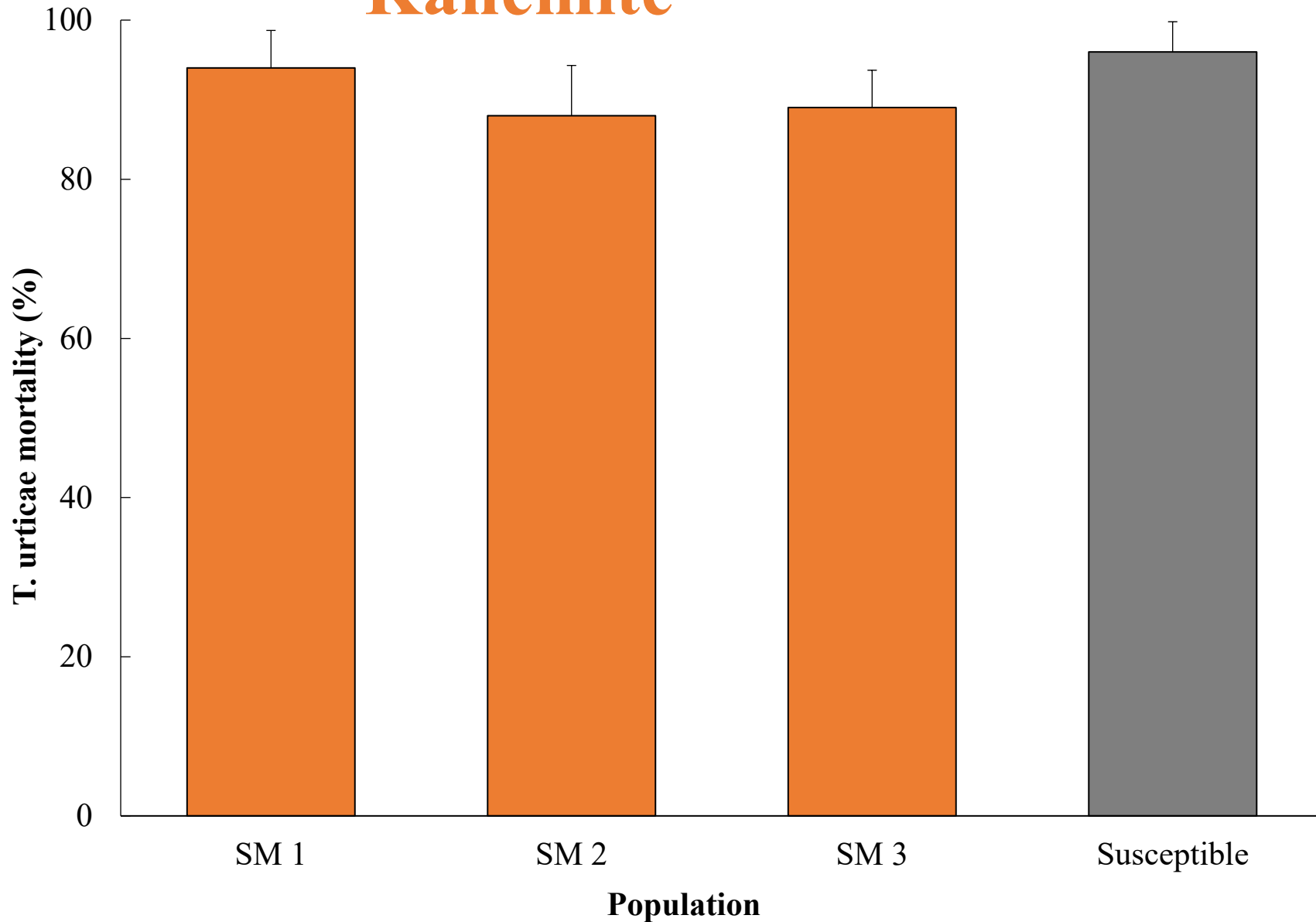
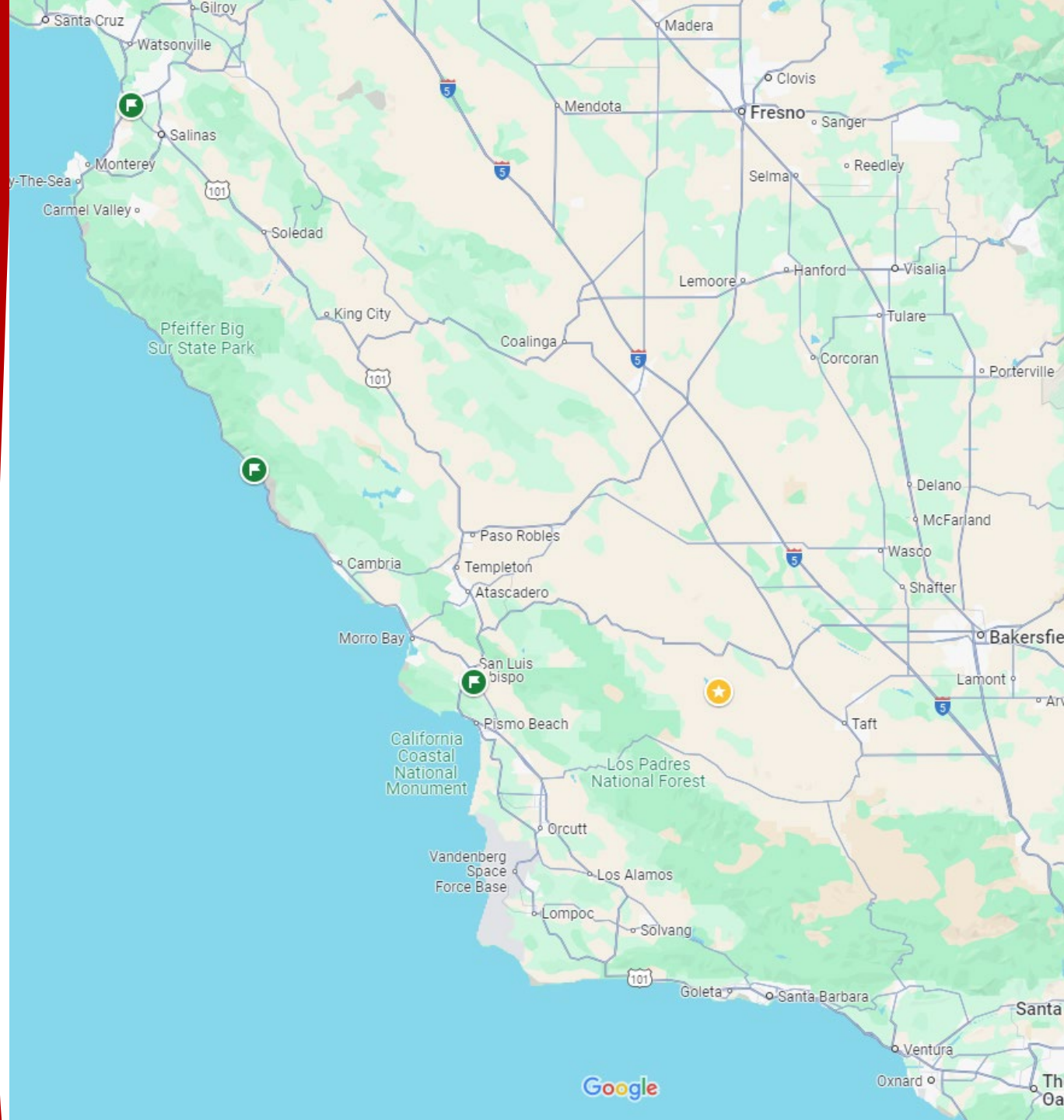


Figure 3. Two-spotted mites exposed to Kanemite®. SM = Santa Maria. Bars represent mean \pm standard error.



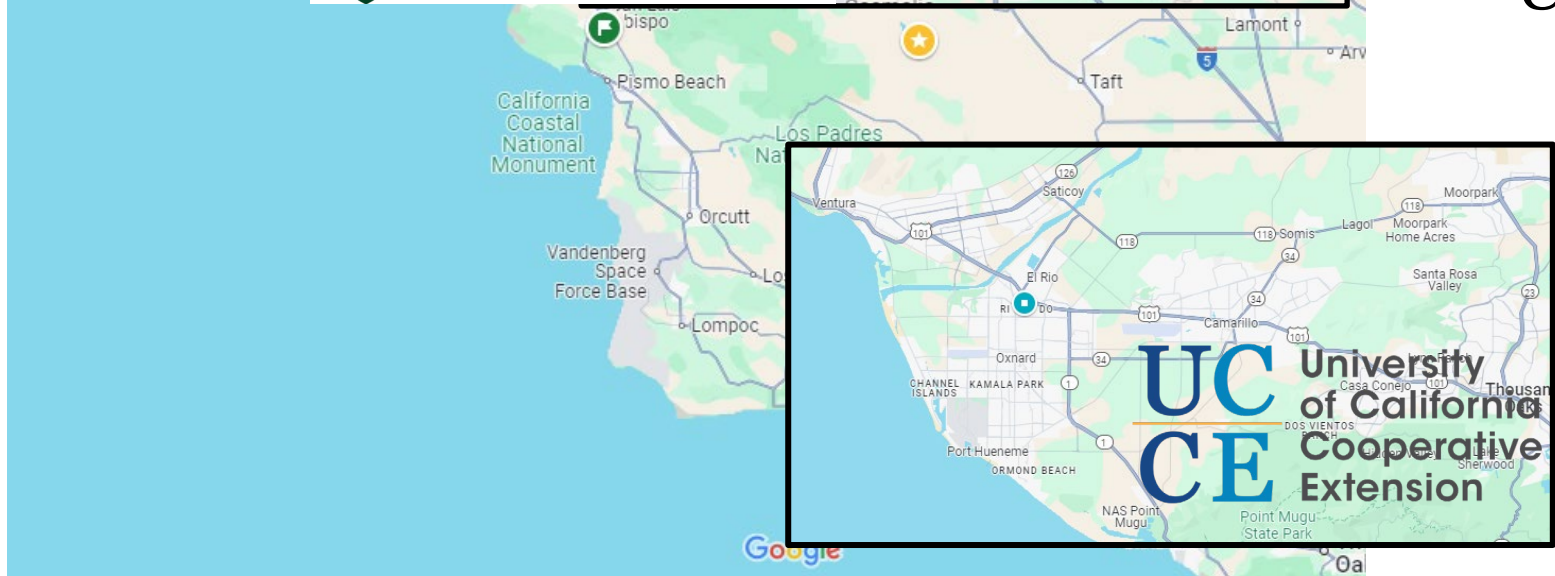
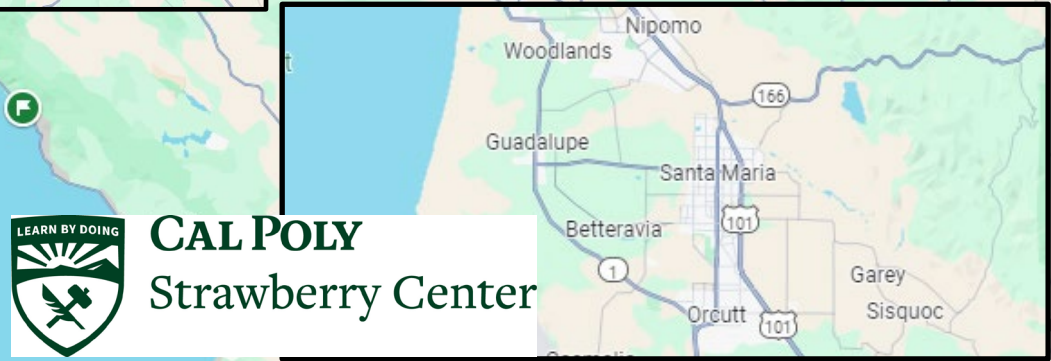
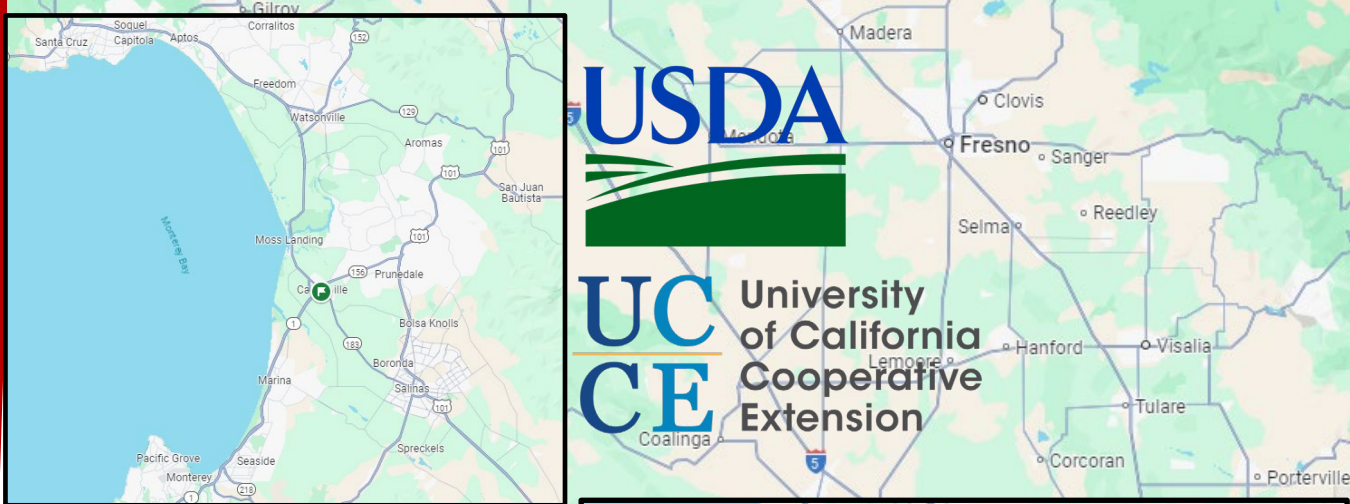
Moving Forward

- Areawide resistance monitoring
- Expanding testing footprint



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- Expanding testing footprint
- Collaboration with USDA and UCCE



Moving Forward

- Continual screening of new organic and conventional products
- Lab testing for chemical compatibility with persimilis

