**Miticide tolerance in field populations of twospotted spider mite, 2025**

M. A. Aghaee, C. T. Koubek, and E. E Henry

Adult twospotted spider mites (TSSM; *Tetranychus urticae*) were sampled from strawberry fields across all three strawberry production districts. For ease of analysis all fields were grouped by county: Monterey, San Luis Obispo, Santa Barbara, Santa Cruz, and Ventura County. The miticides Nealta® (a.i. cyflumetofen; IRAC 25), Enervate 4 SC® (a.i. bifenazate; IRAC 20D), Agri-mek SC ® (a.i. abamectin; IRAC 6) Fujimite 20 SC (a.i. fenpyroximate; IRAC 21A), and Kanemite 15 SC (a.i. acequinocyl; IRAC 20B) were evaluated. Compounds were sprayed at the maximum labeled rate. A susceptible colony was used as a comparison for each sample population.

Negative controls were not sprayed. For each location and chemical treatment, five adults were placed on a green bean leaf disc, with five replications per treatment and location combination. All leaf discs were then sprayed using a Potter's tower at each chemical's maximum field rate, at a volume equal to 150 gallons per acre, and mite mortality was recorded 48 hours post-application.

Raw mortality proportions were rank transformed using PROC RANK in SAS (SAS Institute, Cary, NC) to account for the non-normal distribution of the data, and the resulting ranks were analyzed using a generalized linear mixed model (PROC GLM) by each chemical to detect differences between counties. Mean separation was performed using Dunnet's test at $\alpha = 0.05$. Untransformed percent mortality means and standard errors are reported in the figure below for ease of interpretation.

Data suggests that location/county had a significant effect on the performance of all miticides. Ventura had instances of high tolerance to all miticides tested. All other counties had only moderate instances of high tolerance to miticides detected in 2025. Further testing is warranted to confirm if this is a long-term trend. Our data points to the importance of maintaining chemical rotations and integration of biological control to avoid reductions in efficacy of our chemical tools.

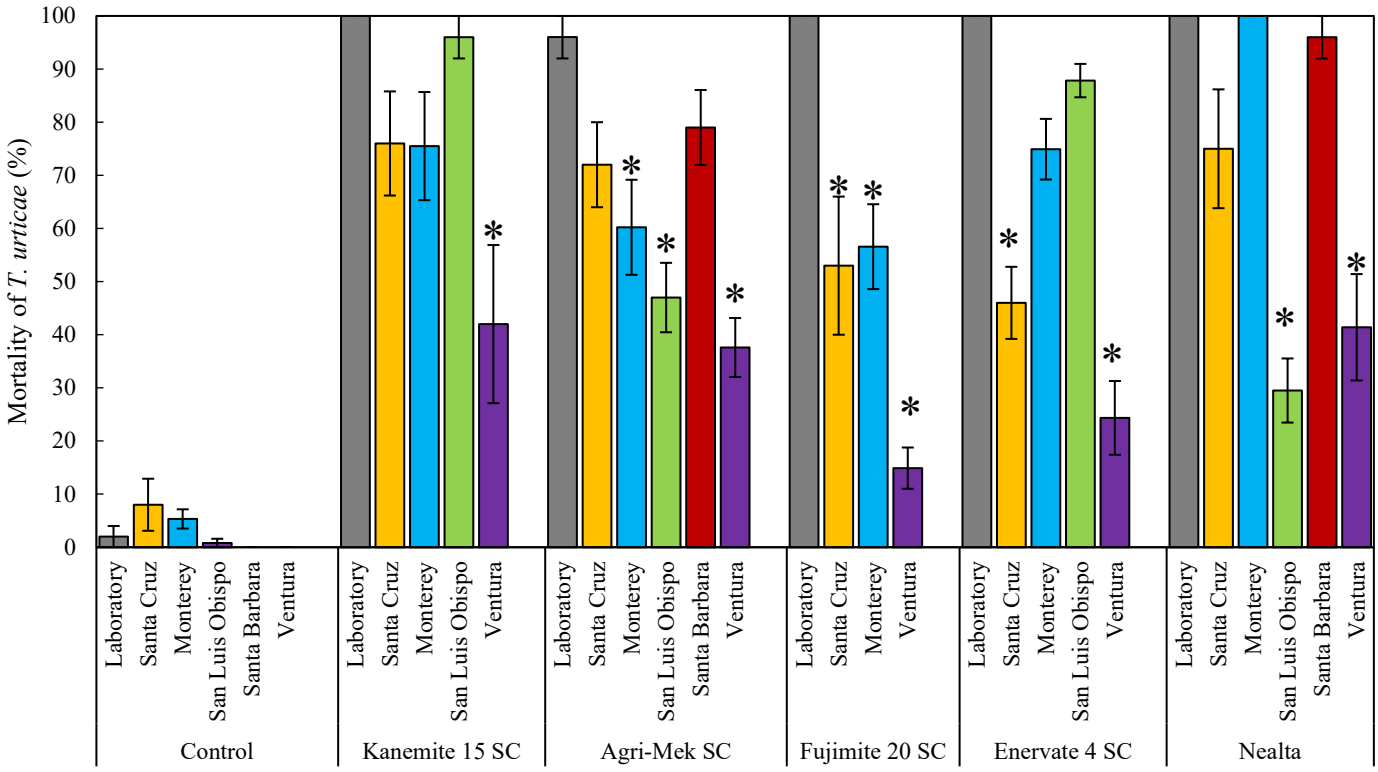



**Figure 1.** Comparison of acaricide mortality by county. Mean mortality (± SE) of adult twospotted spider mites (TSSM) 48 hours after application of maximum field rate of Kanemite 15 SC (31 fl oz/A), Agri-mek SC (3.5 fl oz/A), Fujimite 20 SC (7.45 fl oz/A), Enervate 4 SC (16 fl oz/A), and Nealta (13.7 fl oz/A). Bars with an asterisk are significantly different to the Laboratory mortality ($\alpha = 0.05$).