Population Dynamics and Epidemiology of Navel Orangeworm Damage to Pistachios: Weekly Damage

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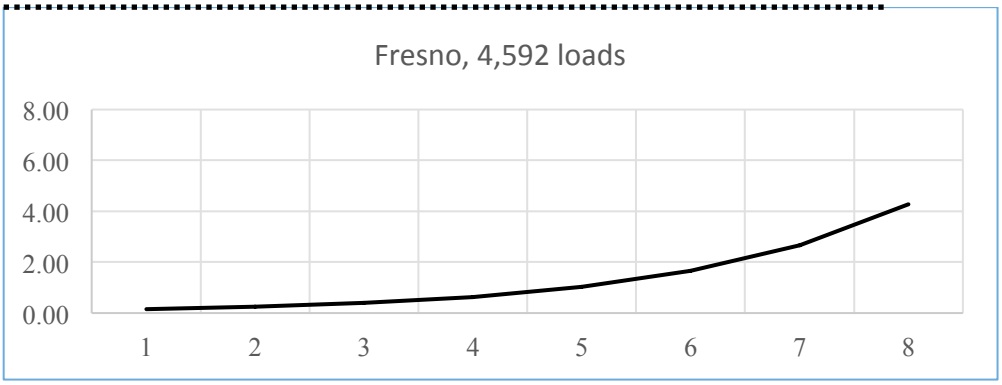
INTRODUCTION

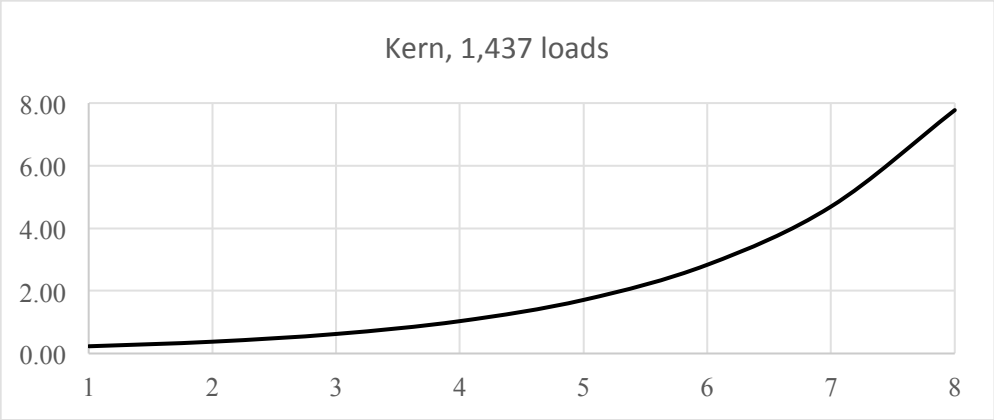
The purpose of my research is to improve control of navel orangeworm by a combination of improved spray timing, increased application efficacy, proper insecticide choice and rotation, and the integration of mating disruption, with existing control strategy. Additionally, I monitor the pattern of harvest damage, using grade sheets supplied by individual growers and processors, with the goal of improving navel orangeworm control.

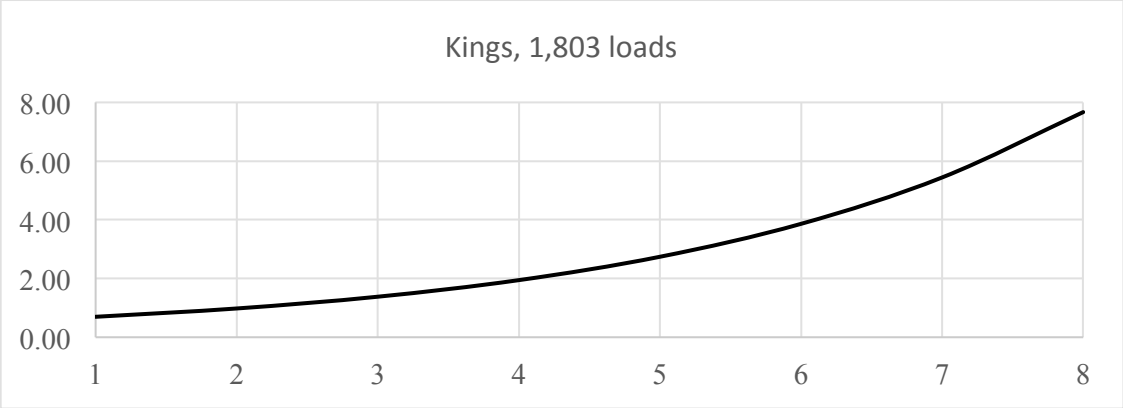
RESULTS

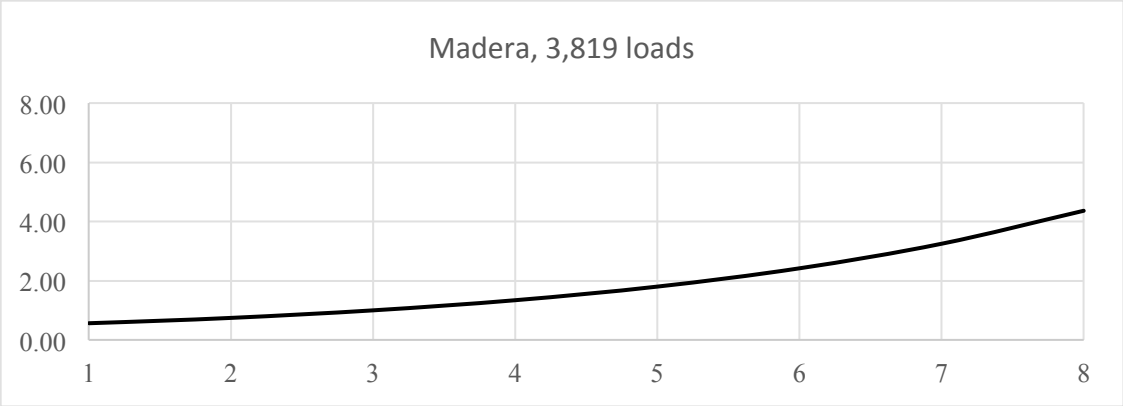
In 2016, I calculated the pattern of damage in the loads received by the processor in a spreadsheet format, using the variables days after August 21, percent split, percent dark stain, and percent shell defect. You can request a copy of the spreadsheet by contacting me at: joel.siegel@ars.usda.gov.

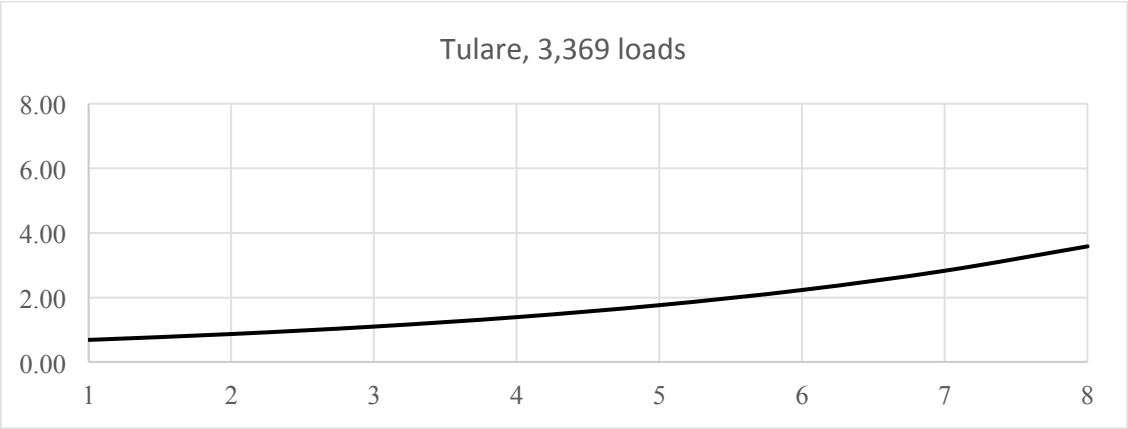
The following graphs report weekly damage for the San Joaquin Valley counties of Madera, Fresno, Tulare, Kings and Kern. The X-axis is week of harvest, beginning August 21. Y-axis is percent insect damage.




Kern, 1,437 loads
8.00
6.00
4.00
2.00
0.00
1
2
3
4
5
6
7
8


Kings, 1,803 loads
8.00
6.00
4.00
2.00
0.00
1
2
3
4
5
6
7
8


Madera, 3,819 loads
8.00
6.00
4.00
2.00
0.00
1
2
3
4
5
6
7
8


Tulare, 3,369 loads
8.00
6.00
4.00
2.00
0.00
1
2
3
4
5
6
7
8

CONCLUSIONS AND PRACTICAL APPLICATION

Damage increased exponentially, with a doubling time just under 2 weeks/14 days. Damage was highest in Kern and Kings counties. The 2017 harvest will be analyzed to confirm that the doubling time for damage is 2 weeks. These results underscore the importance of early harvest. It is essential to plan ahead so that your crop does not linger in the field, because damage is accelerating over time. These data underscore the need for new strategies to protect the late-harvested crop.