



Environmental suitability of the San Joaquin Valley for growth of Asian Citrus Psyllid in relation to trap servicing interval

Holly Deniston-Sheets¹

Neil McRoberts²

Monique Rivera³

Rick Dunn¹

Greg Simmons⁴

¹Citrus Research Board

²Quantitative Biology & Epidemiology Lab, Plant Pathology Dept., UC Davis

³Dept. of Entomology, UC Riverside

⁴APHIS, USDA

Summary

The ACP-detection grove trapping program in the San Joaquin Valley is currently operated on a bi-weekly servicing schedule, although the CDFA Action Plan dictates a monthly servicing schedule. DATOC was requested to provide input on whether the program should shift to a monthly servicing schedule or amend the Action Plan to indicate that bi-weekly trap servicing should be continued. We were asked to examine two sources of data: Asian citrus psyllid (ACP) trapping numbers in the Valley over time and climatic suitability. In light of the reviewed data, we suggest trap monitoring be continued twice per month in the San Joaquin Valley (SJV) and not be extended to a once per month servicing interval.

VALLEY CLIMATE

We gathered maximum and minimum daily temperature data from NOAA and the California Irrigation Management System for 20 SJV weather stations and compared them with Southern California, where ACP are now considered endemic. SJV weather stations were grouped according to the climate of each location (Fig. 1).

In terms of the number of days per year most suitable for ACP development, the Eastern SJV (where the majority of SJV citrus is grown) is similar to Imperial County (Fig. 2). However, there are fewer days in the SJV than in Imperial which reach temperatures hot enough to induce ACP mortality.

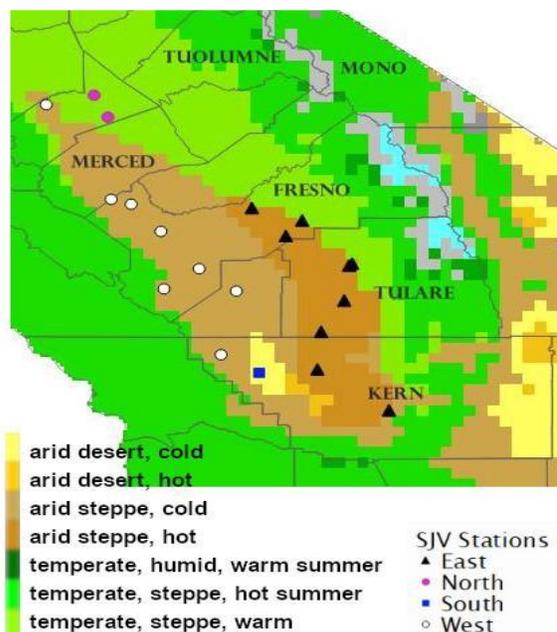


Figure 1. Locations of weather stations used in this analysis and their Koppen-Geiger climate classifications. Climate data from the Climate Change & Infectious Diseases Group at the University of Veterinary Medicine, Vienna. <http://koeppen-geiger.vu-wien.ac.at/>

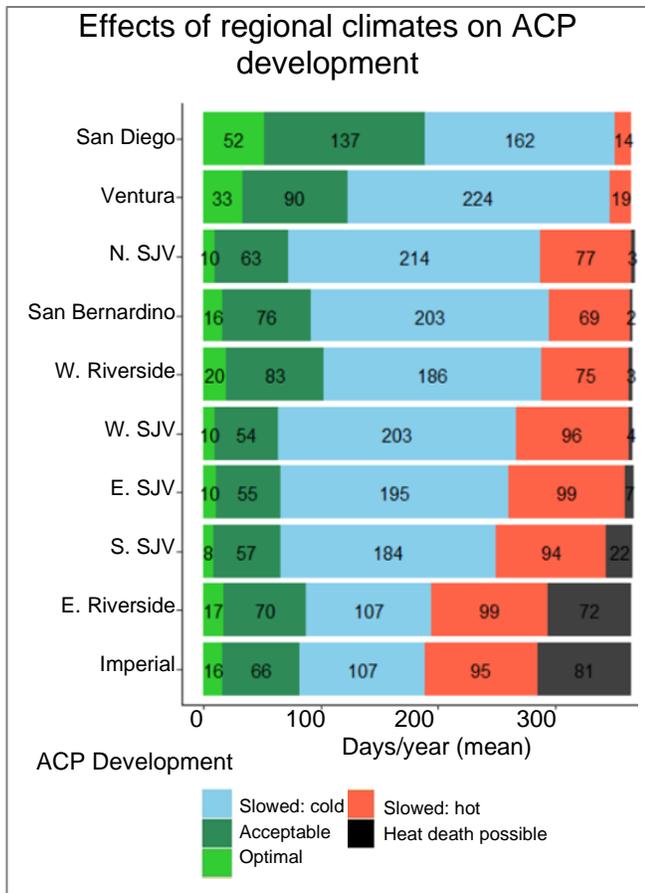


Figure 2. The number of days per year (average from 2015 – 2019) in each ACP development category for California regions.

The SJV on average (i.e., not split into North, South, East, and West) accumulates enough degree days over a year for 4 potential generations of ACP (Fig. 3). This is similar to San Bernardino, Riverside, and Imperial. However, the lack of extremely hot days in the SJV compared with Imperial may indicate that the SJV is at a higher risk of ACP establishment than the southern desert, and trapping data support this possibility.

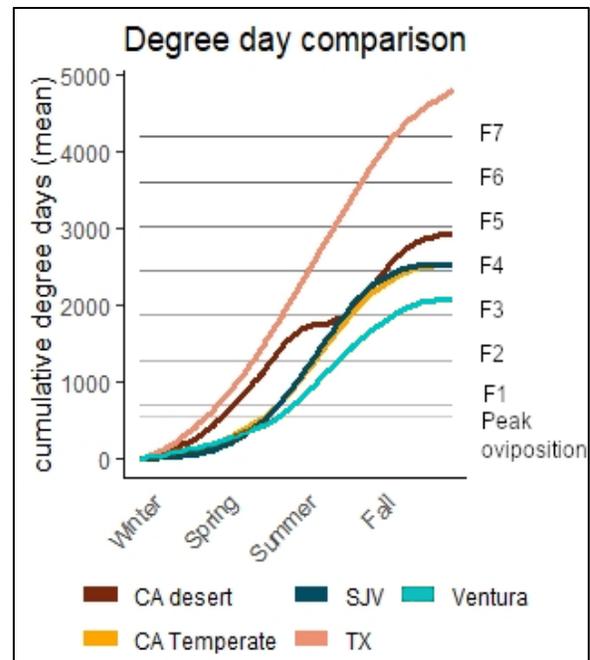
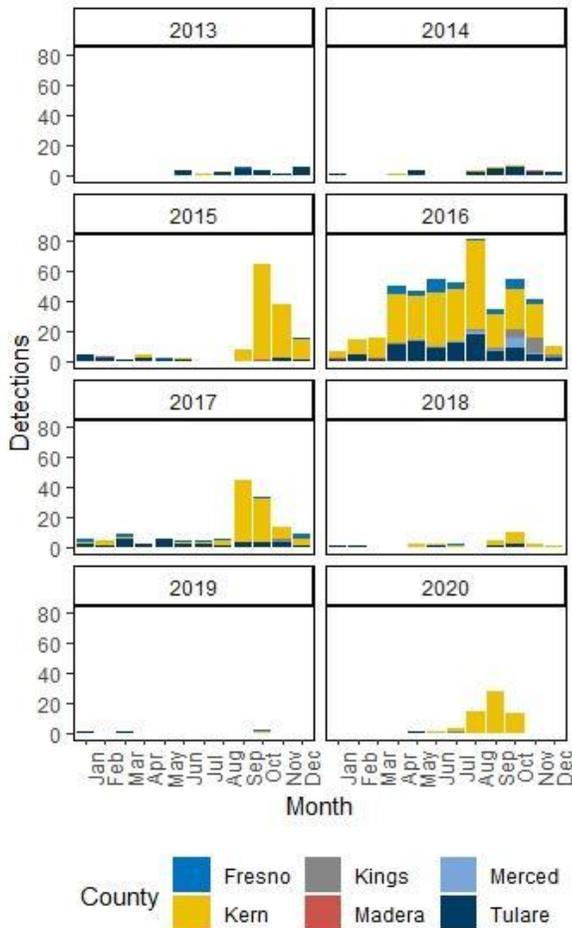


Figure 3. Degree days accumulated on average between 2015 and 2019 in different CA regions. CA desert = Imperial and Eastern Riverside counties; CA Temperate = Orange, Western Riverside, San Bernardino, and San Diego. SJV = Stanislaus, Fresno, Tulare, Kings, and Kern. TX = Cameron, Hidalgo, and Willacy.

TRAPPING HISTORY

ACP have been detected in the SJV year-round (Fig. 4), and nymphs have been detected from May through November. In 2016, the worst year for ACP detections, multiple ACP detections occurred consistently each month.



from egg to adult, provided flush is available. In light of this, combined with the SJV’s risk of ACP establishment, we suggest the Action Plan be amended to dictate traps in the San Joaquin Valley be serviced twice per month.

Figure 4. The number of ACP trap detections in the SJV from 2013 – 2020. Data courtesy CDFA.

CONCLUSIONS

In contrast with Southern California, where we are focused on ACP mitigation, the SJV is still in “eradication” mode. As a result, every ACP detection is ideally met with a prompt chain of communication between CDFA, grower liaisons, and local growers, which all precede insecticide sprays aimed at eliminating any nascent populations. Maintaining a tight timeframe from detection to treatment is a critical component of continued program success. If the program switched to a monthly servicing interval, insecticide treatment applications could be delayed to such an extent as to allow the maturation of an entire generation