Develop an Early Season Monitoring System for Leaffooted Bug on Almond

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PROJECT SUMMARY

Objectives:

- Determine indicators that provide an early-season mechanism for estimating leaffooted bug (LFB) population density.
- Using field observations, determine if overwintering populations of LFB are adversely affected by cold winter temperatures.
- Using laboratory experiments, determine minimum temperature threshold for adult LFB.

Background and Discussion:

In the San Joaquin Valley, leaffooted bug has three complete generations and a partial fourth generation per year. In Sept. to Oct., adults begin moving out of almond and pistachio orchards to sheltered sites to form aggregations of five to 500 individuals. The existence of a male pheromone associated with mating and aggregation has been supported; however, we do not have a full understanding of the behavioral chemical or visual cues involved.

In March the adults begin to disperse into almond just as nuts reach the "pea-sized" stage. The UC Statewide IPM Pest Management Guidelines recommend monitoring for LFB by visually inspecting for gummosis on nuts during March and April. In March, the most efficient sampling method is the appearance of damage i.e., dropped nuts. The drawback to this method is the results from the difficulty in distinguishing damaged nuts for natural nut drop.

In April the most efficient method is via the appearance of gummosis on developing nuts but detection is too late to avoid significant damage. The appearance of gummosis may also be used later into the season, however, beyond April; it's often too late for making a management decision.

The use of weather data may provide a tool for predicting the severity of LFB population densities. Daane et al. (unpublished data) analyzed average weekly minimum temperatures for 2005-06, 2006-07, and 2009-10. During 2006/07 minimum temperatures dropped below freezing in December and again in January; subsequently LFB pressure was low during that season. Conversely, LFB pressure tended to be more severe when minimum temperatures did not drop below freezing during the 2005/06 and 2009/10 seasons.

Observations were not initiated soon enough to begin collecting survival data of LFB in overwintering aggregations. Although, the winter of 2013–2014 was mild, a two week period in mid-December occurred when low temperatures consistently reached well below 32 °F. Anecdotal evidence suggests that LFB pressure throughout the 2013-2014 season was low. In fall of 2014, we will begin monitoring overwintering LFB aggregations.

Recently we have substantially increased our laboratory LFB colony by collecting aggregating adult and nymphs on pomegranate. In October, we began a series of low-temperature growth chamber experiments using adult LFB.

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Project Cooperators and Personnel: Kent Daane, UCCE Specialist, Entomology, UC Parlier and UC - Berkeley; Andrew Molinar, Staff Research Assistant, UC Parlier

For More Details, Visit

- Poster location 12, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2015) at Almonds.com/ResearchDatabase
- 2013-2014 Annual Reports CD (13-RESEARCH1A-Tollerup); or on the web (after January 2015) at Almonds.com/ResearchDatabase
- Related project: 14-ENTO8-Joyce