



Cotton Field Check

Management Updates from UC Cooperative Extension
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Overview

1. Lygus populations have not developed in the western hills of the SJV.
2. In any year, most Lygus problems are a result of neighboring crops rather than mass migration from external sources.
3. Growers and PCAs need to be aware of the degree of risk which surrounds them, especially seed alfalfa, large alfalfa hay fields harvested as single blocks, hay fields that might have insufficient irrigation, and safflower.
4. Other crops can also serve as sources including onion, garlic, tomato and almonds. Most critical is if the timing of harvest occurs during critical fruiting periods.
5. Where possible, management of Lygus before the population moves is desirable over attempting to manage the population in the cotton field.
6. Safflower can be treated based on timing of population development, but synchrony in developmental stages between safflower and cotton is important to consider. May 19-30, 2008 is the period when this event is predicted to occur, depending on location.
7. Lygus in alfalfa hay can be managed by leaving habitat strips for the bugs to remain. Managing alfalfa hay can be one of the best defenses in preventing Lygus movement
8. Sample cotton frequently and monitor fruit retention. Preserve natural enemies early. Review sampling and treatment guidelines @ www.ipm.ucdavis.edu

Lygus Management in '08 Preparing for Problems

This season will be another challenging one for cotton growers in the San Joaquin Valley. Water supplies, fertilizer and fuel costs all challenge even the most adept. I believe there will be many locations in which Lygus bugs will be a problem, depending on the field's location. For those who are still growing in a cotton dominated cropping landscape, the problems will be substantially less. For those fields surrounded by other crops, Lygus population pressure will be greater. This issue of *Field Check* will discuss the threat of Lygus to cotton production from both internal and external sources, management approaches for some of the bordering crops bordering cotton fields and reminders about managing Lygus in cotton

Will the foothills play a role in Lygus pressure?

The coastal foothills on the west side of the San Joaquin can play a major role in infesting cotton fields located near the hills. For this to occur, climatic conditions must be lined up to include frequent, abundant rainfall spread over November through May allowing for key Lygus host plants to develop and thrive into late spring.

In 2008, rainfall occurred mostly in January and February, did not occur particularly uniform over the critical west side hills and ceased after February (Figure 1). Host plants did not occur in high densities and were mostly dried and dead by early May. Thus only one generation of Lygus could have developed before they were forced to move. Such patterns do not add greatly to the existing Lygus populations already inside the Valley.

Where will Lygus be a problem?

If there will not be a large migration from external sources, the problem will arise from resident Valley populations. These are the overwinter adults from 2007 that have found shelter and emerged sometime in December to feed, mature and breed. They generally begin laying eggs in January and it is this adult population that we currently see in alfalfa and safflower. It is the offspring from this generation that will move into surrounding crops in June.

The problem is not that there are substantially more Lygus in the area, it is that there is significantly less cotton and more earlier planted and harvested crops. This allows for the first generation to have more locations to settle and reproduce, creating larger populations in a given area. If your cotton field is the only cotton in the section, insects will move to it as other crops become unavailable.

Why is the cropping mix in an area so important?

Our studies have demonstrated that a landscape dominated by cotton has fewer Lygus problems than a landscape of mixed cropping, especially one with a lack of alfalfa hay. This has to do with the sources and sinks that Lygus utilize during summer. Cotton is not a preferred host and is planted somewhat later than other crops such as safflower, tomatoes, overwintered sugar beets, and alfalfa seed and

hay. This means that Lygus invades cotton primarily because it is the “only show in town”. If other crops were available alongside cotton, for example alfalfa hay, this might “absorb” some or most of the Lygus immigrants. The best situation is to have a good ratio between cotton and alfalfa in an area so Lygus would be more likely to encounter alfalfa before cotton. The worst scenario is having a cotton field in close proximity to safflower, alfalfa seed, sugar beets or other crops that are harvested during the critical fruit set period from first square through peak bloom (Table 1).

Can some of these source crops be managed?

Managing a mobile pest like Lygus is tricky since it is not a pest in most field crops and orchards. Area wide management, like for beet leafhopper or Glassy-wing Sharpshooter, is impractical from a community organization perspective. However, it is possible for growers and PCAs to work together and manage Lygus within contained areas. The Lake Bottom community in Kings County has been engaged in this approach for years, even going to the extent of strategically planning the landscape to mitigate Lygus movement and development. The farming community near Stratford has banded together to seek common approaches in their area.

Much of this organization is focused on the management of Lygus in safflower. Safflower acres have increased substantially in three years and now can be found widely and in high density in some areas. There is no easy remedy as many safflower growers are not cotton growers and their safflower may not be threatened by the Lygus population. However, safflower fields nearby cotton could be treated to reduce the population and prevent movement. Coordinating within a localized community to manage Lygus in safflower could provide more benefits than individual fields being managed.

Why is safflower such a problem and what guidelines are available for action?

In the 1960’s, UCR entomologists developed a model to time insecticide applications to suppress Lygus populations and limit movement. These are timed according to degree day summations beginning April 1. It is assumed that the first generation has moved into safflower around this time and 660 ^{dd>52F°} later the population would be in late nymphal stage but not yet ready to fly. The estimated date that 660 ^{dd>52F°} would occur at various locations is provided here:

Location	Shafter	Kettleman	WSREC	Tranquility	Los Banos
Date	May 25	May 19	May 27	May 24	May 30

This estimate is based on real time temperatures through May 15, 2008 and long term averages beyond that.

Timing is one issue but control is another. There are few insecticides registered on safflower in California that will give excellent control, especially in the dense canopy structure of this thistle. According to the CDPR pesticide registration data base for safflower (all or unspecified, crop site id=28076), dibrom (naled), supracide (methidathion) and dimethoate have active registrations. These are not highly effective compounds against Lygus but will suppress and reduce the population. According to PCAs, multiple applications may be required. We will be conducting an efficacy trial on safflower to evaluate current efficacy of these products.

How can alfalfa hay be managed to help manage Lygus

We have demonstrated that when strips of alfalfa are preserved during the May, June and July cuttings, significantly fewer Lygus will seek neighboring cotton. Preserving strips of uncut alfalfa will provide essential habitat for Lygus and minimize their need to seek shelter and shade. In landscapes where alfalfa is available, leaving habitat strips can have a major influence on managing Lygus. Many people are leaving a small strip (2-3 ft) where their sprinklers lay. Others will leave strips on checks and berms. I have seen field bordered with uncut alfalfa. The amount and

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configuration is not as critical as having some present. The more the better, but a little goes a long way.

Managing Lygus in cotton

When considering Lygus treatment in cotton, remember to incorporate square retention with Lygus numbers. The presence of nymphs is essential in triggering a treatment since adults are so mobile in moving in and out of a field. The reader interested in reviewing the Lygus management guidelines, including plant and bug based thresholds, is directed to www.ipm.ucdavis.edu, click on *Agriculture & Floriculture*, then click on *Cotton*, and finally click *Lygus Bug*.

When considering treatment, the key approach in cotton IPM is preserving as many natural enemies for as long as long as possible. The use of Carbine® early will provide control while maintaining natural enemy populations. Using less targeted products such pyrethroids should be reserved for later in the season, if needed. Use of neonicotinoids, such as Assail®, can be useful for suppressing populations during periods when whitefly or aphid may be building.

Figure 1. Rainfall fall records for 2007-2008.

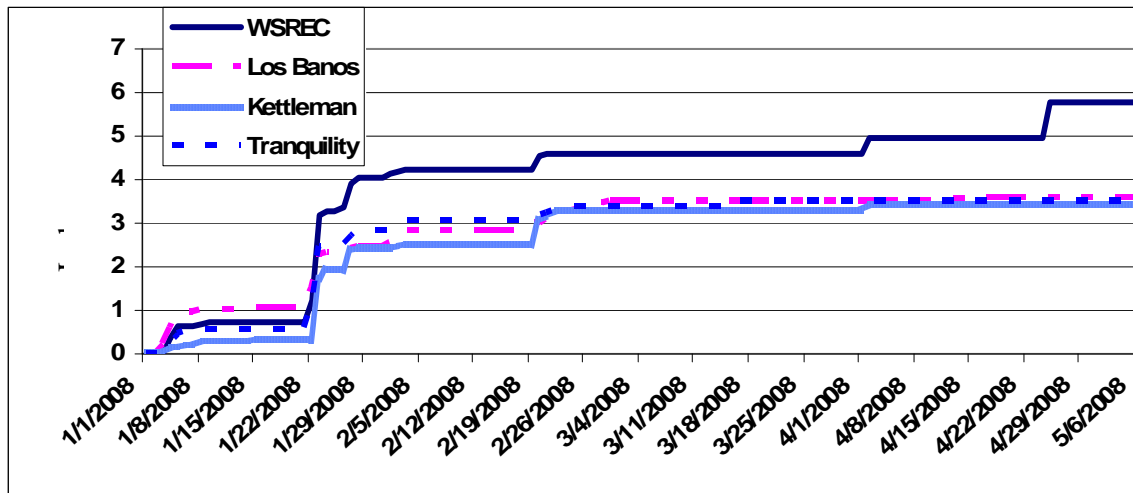


Table 1. Phenological events in cotton, projected for 2008, WS REC

Event	Acala	Pima
1st Square	June 9	June 12
1st Bloom	July 4	July 8
Peak Bloom	August 6	August 10
1st Open Boll	August 26	Sept 1
60% Open Boll	October 3	October 9

May 17, 2008