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Issue 3

UC Citrus Entomology Program
Citrus IPM Newsletter

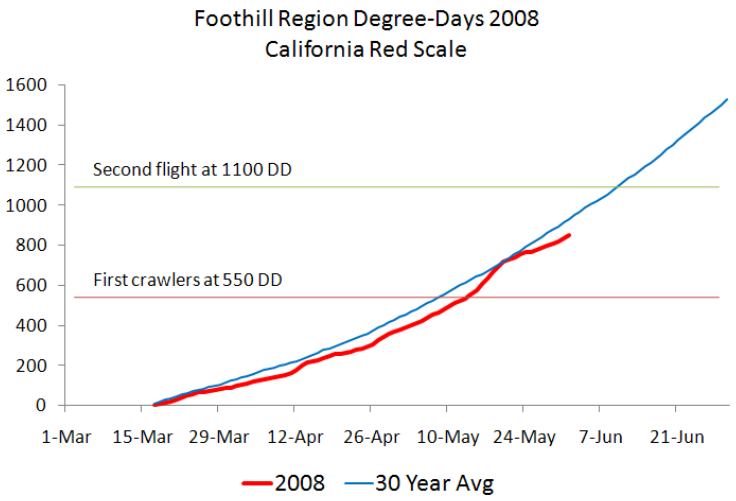
UC Kearney Agricultural Research Center
http://citrusent.uckac.edu

California Red Scale – Second Flight

Early June temperatures that have been cooler than normal have been a boon for fieldworkers, but have also slowed California red scale development. The predicted **second flight of California red scale**, based on 1100 degree-days from the first flight, will occur some time in mid June for the San Joaquin Valley. PCAs using **pheromone traps** for monitoring red scale are advised to have fresh cards out now, in order to accurately track the second flight.

Second generation crawler emergence will occur 550 degree-days after the second flight begins. Once crawler activity is confirmed by double-sticky tapes, insecticide treatments for heavily infested blocks of citrus can begin. Nerve poisons like Lorsban, Supracide and Sevin and smothering agents like oil work best on the crawler stage as soon as they have emerged. Insect growth regulators like Applaud and Esteem work best when the white caps are molting into the next instar. **Recommended treatments for California Red Scale** can be found in the UCIPM Citrus Guidelines http://www.ipm.ucdavis.edu/PMG/r107301111.html, and degree day units at the Citrus Entomology website http://citrusent.uckac.edu/ddchart.htm

You may have heard about a new insecticide called **Movento®** that will be registered soon. It is a foliar systemic, so it requires less water volume (500 gpa) than the other foliar scale insecticides (750-1500 gpa). Our research shows that it works best in the second generation of crawler activity and that it is very safe for most natural enemies (Vedalia beetles and *Aphytis* wasps). We will let you know when it becomes registered. Be forewarned that it does not have **international MRLs** established and so it should not be used on orchards that have fruit for export.



Predicted California Red Scale Development

California Red Scale Lower Developmental Threshold: 53°F
Current DD accumulated from the biofix - Kern: 1080 DD, Tulare: 1045 DD, Fresno: 1020 DD

	1st male flight (observed)	1st gen. crawlers (observed)	2nd male flight (predicted)	2nd gen. crawlers	3rd male flight	3rd gen. crawlers	4th male flight	4th gen. crawlers	5th male flight
Estimated Degree Days	Biofix	550 DD	1100 DD	1650 DD	2200 DD	2750 DD	3300 DD	3850 DD	4400 DD
Kern	March 17	May 12	June 9						
Tulare	March 17	May 12	June 16						
Fresno	March 24	May 19	June 16						

Citrus Peelminer – Third Flight Approaching

Citrus peelminer moths have been flying since March 24 in Tulare County. That biofix and the lower developmental threshold of 55ºF is used to predict when later generations will appear. **The first flight of moths** attacks willows and walnuts. **The second flight of moths** deposit their eggs on walnuts and we observed larval mines in walnut stems in late May. **The third flight of moths** attacks large citrus fruit such as pummelo and grapefruit. The size of the fruit must be at least 50 mm in diameter (baseball size). We are expecting that infestation to begin the first or second week of July. Usually it is the fourth or fifth flight (1740 and 2420 from March 24) that attacks susceptible navel varieties (Fukumoto, TI, Atwood, Barnfield) when they reach 70 mm in diameter. See our website for updates: http://citrusent.uckac.edu/PeelminerDDcurrent.htm

Citrus peelminer mines on a pummelo fruit

Once the infestation starts, it is best to treat once a month for two to three months with a mixture of Micromite for the eggs and a broad spectrum pyrethroid or OP for the adults and larvae. These treatments usually only reduce the percentage of mining by about 50%, because it is very difficult to achieve good coverage of the rapidly growing inside fruit that they like to deposit their eggs on. Since pesticides are only partially effective, we don't recommend treatment unless you orchard has a chronic problem with peelminer. Control recommendations can be found on the UC IPM guidelines: http://www.ipm.ucdavis.edu/PMG/r107303111.html

Dr. Luck's Entomology laboratory at UC Riverside is rearing a parasitic wasp called ***Cirrospilus*** . They are shipping the parasites to us and we are releasing this parasite where we find mining in oleanders, walnuts and citrus. We hope to establish this parasite in the San Joaquin Valley to help with biological control of peelminer and leafminer.

Predicted Citrus Peelminer Development

	1st male flight (observed)	2nd male flight (observed)	3rd male flight (predicted)	4th male flight	5th male flight	6th male flight	7th male flight	8th male flight
Estimated Degree Days	biofix	580 DD	1160 DD	1740 DD	2420 DD	3000 DD	3580 DD	4160 DD
Host Plant	Willow/ oleanders Stems	Walnut Stems	Pummelo grapefruit	Pummelo grapefruit susceptible oranges	Pummelo grapefruit susceptible oranges	Oranges	Oranges	Oranges
Tulare	March 24	June 2	July 7					

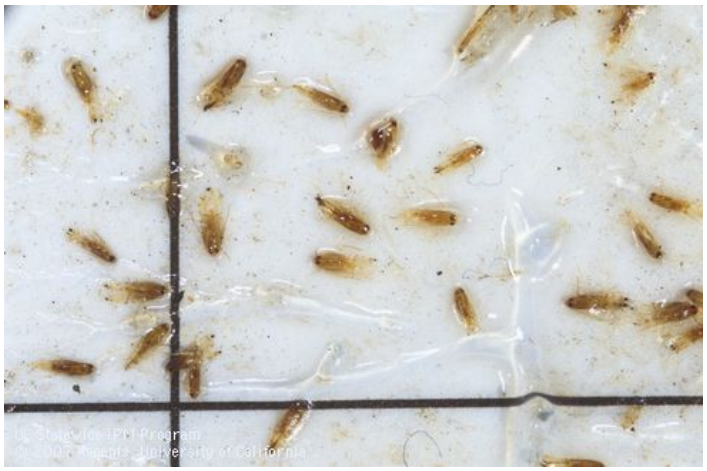
Citrus Leafminer in the San Joaquin Valley

Citrus leafminer arrived in the San Joaquin Valley in 2006. We monitor the moths using sticky cards baited with a very effective artificial sex pheromone that can be obtained commercially: http://citrusent.uckac.edu/CLM_pheromones.htm. The adult male moths are easy to recognize on the traps because of the distinctive spot on the tip of the wing. This spot can be seen with a hand lens. Our **trapping** indicates that this moth seems to fly nearly year round, yet because the larvae require new flush to mature, we generally see leaf damage only in the spring and fall. The spring flush damage is slight and the fall damage is heavier.

Citrus leafminer moth

Mature citrus trees in the San Joaquin Valley seem to be tolerating the foliar damage quite well. Some San Joaquin Valley **nurseries** have infestations but they are not heavy and appear to be manageable via insecticides. More severe problems have been noted in lemon orchards on the coast and nurseries in southern California. In those locations, temperatures are more uniform and flushing is more continuous so the problem is more severe.

Citrus leafminer control recommendations can be found in the UC IPM Citrus Pest Management guidelines: http://www.ipm.ucdavis.edu/PMG/r107303211.html



Leafminer moths on a sticky trap

Exotic Pest Update

Asian Citrus Psyllid has been found infesting citrus in Louisiana, expanding its North American range to: Florida, Louisiana, Texas, Hawaii and Mexico.

The Citrus IPM Newsletter is published by the University of California Citrus Entomology Laboratory at the Kearney Agricultural Research Center.

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