

Seasonal IPM Update

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Updated: August 7, 2023

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Pest Monitoring

- ▶ Use traps to monitor insect pests
- ▶ Keep trapping records
- ▶ Use biofix, *UCIPM guidelines*
- ▶ Use degree day models for making treatment decisions



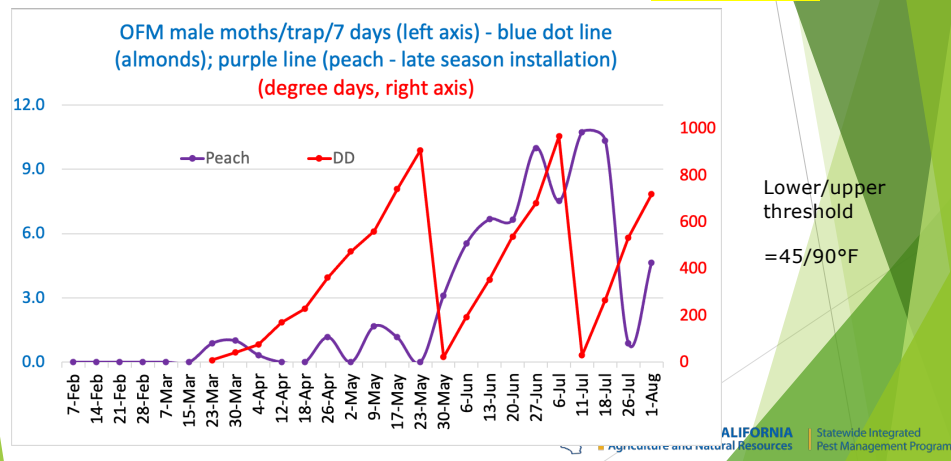
Run Degree Days-UCIPM

For all of our degree-days calculation, we used CIMIS Station #206, Denair, Stanislaus County

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2023 Insect monitoring

Oriental Fruit Moth (OFM): 1st Biofix 23 March; 2nd biofix: 30 May; 3rd biofix: 11 July



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2023 Insect monitoring

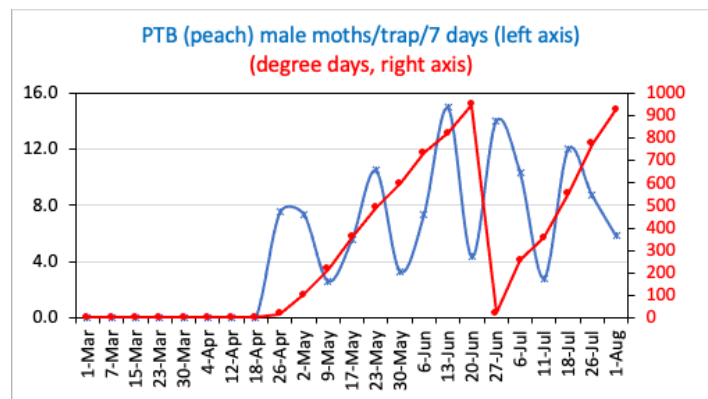
- ▶ Oriental Fruit Moth (OFM):
- ▶ 1st gen. biofix: 23 March
 - ▶ 1st gen. spray timing (500 - 600DD): 13-17 May
- ▶ 2nd gen. Biofix: 30 May (DD as of 6/20: 537)
 - ▶ 2nd gen. spray timing (400-500 DD): 15-19 June
- ▶ 3rd gen. Biofix: 11 July (DD as of 8/1): 718
 - ▶ 3rd gen. spray timing (400-500 DD): 22-25 July

Generation Length (degree-days)			Spray Timing (degree-days)	
1st	2nd	3rd	Early generation	Later generations
920-1010	920-1010	920-1010	500-600	400-500

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2023 Insect monitoring

- Peach Twig Borer (PTB): 1st Biofix: 22 April, 2nd biofix: 27 June



Increased capture rate on 27th June, plus total first-generation degree days hit around 1030 - avg. generation time. Those two factors used to set 27th June as the 2nd biofix for peach twig borer

Lower/upper threshold = 50/88°F

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2023 Insect monitoring

- Peach Twig Borer (PTB):
- 1st biofix: 22 April
 - 1st gen. spray timing (400 - 500DD): 19-24 May
 - DD accumulation (as of 6/26): 1038
 - 2nd biofix: 27 June
 - 2nd gen. spray timing (300 - 400DD): 8-13 July
 - 2nd gen. DD accumulation (as of 8/1): 927

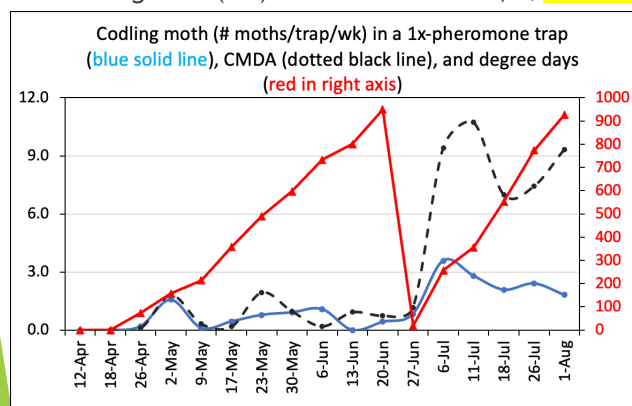
Generation Length (degree-days)			Spray Timing (degree-days)	
1st	2nd	3rd	Early Generation	Later Generations
1030	1030	1030	400-500	300-400

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2023 Insect monitoring

- Codling Moth (CM) in Walnuts : 1st biofix 22 April; 2nd biofix: 27 June



The 2nd biofix was set based on the total degree days accumulated in the previous generation (1038 DD as of 6/26), consistency in increased trap captures in most traps, and the increased capture rates for both CM 1x and CMDA Combo lures.

Codling moth:
Lower/upper
threshold = 50/88°F

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2023 Insect monitoring

- Codling Moth (CM):
- 1st biofix: 22 April
- 1st gen. spray timing:
 - 1A flight (300 DD): 12-14 May
 - 1B flight (600 - 700 DD): 29 May - 3 June
- DD accumulation (as of 6/26): 1038
- 2nd biofix: 27 June; 2nd gen. DD accumulation (as of 8/1): 926
- 2nd gen. spray timing - predicted (300 DD): 9 July

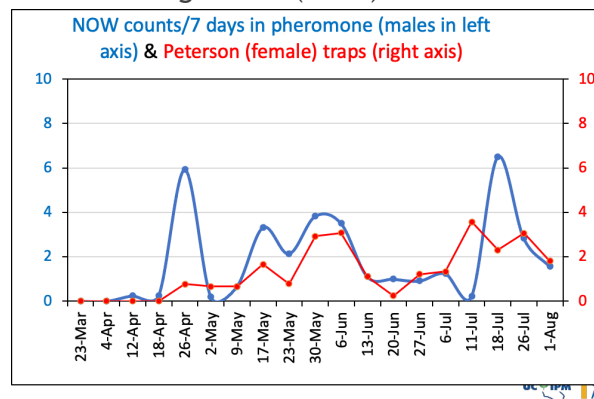
Generation Length (degree-days)			Spray Timing (degree-days)	
1st	2nd	3rd	Early generation	Later generations
1060	1100	1200	1A Peak: 300 1B Peak: 600-700	300

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2023 Insect monitoring

► Navel Orangeworm (NOW) in Walnuts



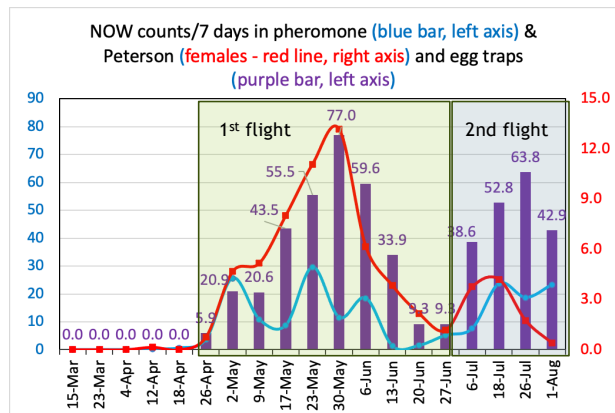
- Minimal risks from NOW in walnuts especially from the first 2 flights
- Tail end of the 3rd flight can be risk to early varieties
- Chandler is the least susceptible, and 4th flight might infest them, but low risk

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2023 Insect monitoring

► Navel Orangeworm (NOW) in almonds: Egg-laying Biofix 26 April



► Hull split nut (3/8th inch suture)



[Read my article about hullsplit strategy for this year](#)

Lower/upper
threshold
= 55/94°F




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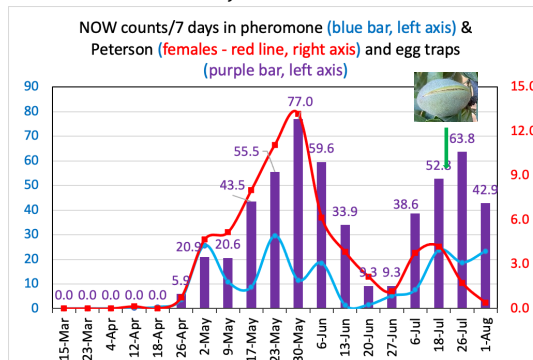
2023 Insect monitoring

► Navel Orangeworm (NOW) in almonds: Spray Strategy

❖ Watch for hullsplit status of almonds

Hull Split Calculator							
Please Select a Station							
Full Bloom Date: 3/1/2023							
CIMIS Station: 206 Denair 							
View Data							
Cultivar	2023	2022	2021	2020	2019	2018	2017
NonPareil	07/21	07/13	07/15	07/14	07/15	07/16	07/12
Sonora	08/05	07/26	07/28	07/27	07/29	07/30	07/25
Price	08/08	07/31	08/02	07/31	08/02	08/03	07/30
Wood Colony	08/19	08/11	08/13	08/12	08/13	08/14	08/10
Winters	08/19	08/11	08/13	08/12	08/13	08/14	08/10
Aldrich	08/20	08/12	08/14	08/13	08/14	08/15	08/11
Padre	08/22	08/14	08/16	08/15	08/16	08/17	08/13
Butte	08/25	08/19	08/20	08/19	08/21	08/21	08/18
Ruby	08/30	08/22	08/24	08/23	08/24	08/25	08/21
Carmel	08/31	08/25	08/26	08/25	08/27	08/27	08/24
Monterey	09/01	08/24	08/26	08/24	08/26	08/27	08/23
Mission	09/03	08/26	08/28	08/27	08/28	08/29	08/25

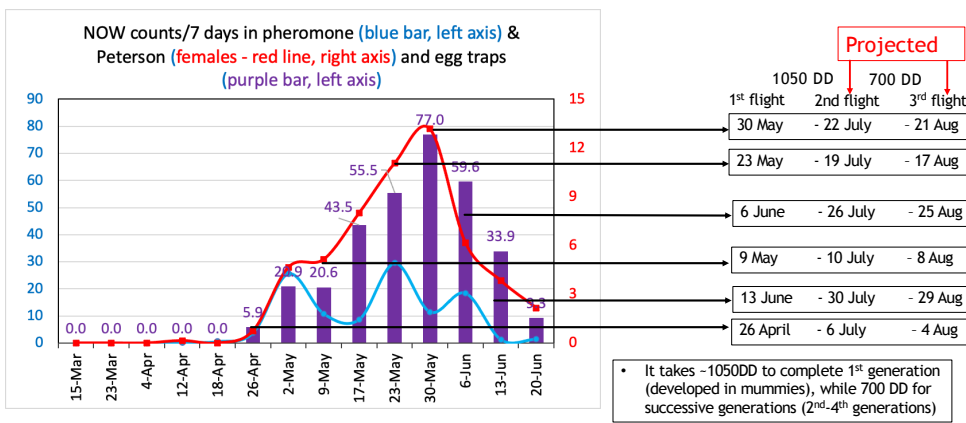
❖ Watch for NOW activity



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2023 Insect monitoring

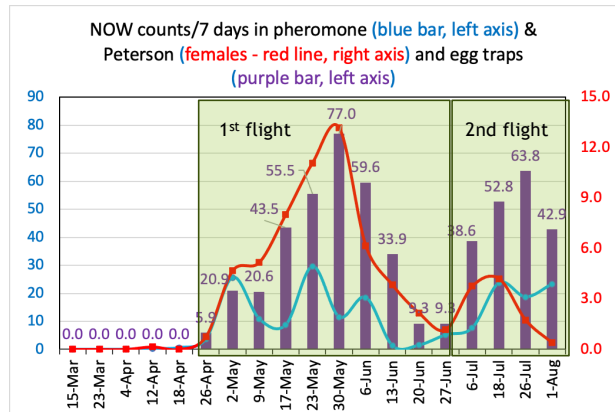
► Navel Orangeworm (NOW) in almonds: Spring egg laying Biofix 26 April



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2023 Insect monitoring

► Navel Orangeworm (NOW) in almonds: Egg-laying Biofix 26 April



- It takes ~1050 DD to complete 1st generation (developed in mummies), while 700 DD for successive generations (2nd-4th generations)

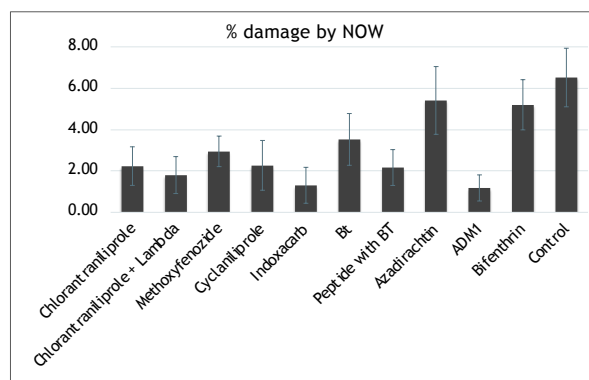
	1050 DD	700 DD
1st flight	Projected 2nd flight	Projected 3rd flight
26-Apr	6-Jul	5-Aug
9-May	10-Jul	8-Aug
23-May	19-Jul	17-Aug
30-May	22-Jul	21-Aug
6-Jun	26-Jul	25-Aug
13-Jun	30-Jul	29-Aug

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Insecticide Options for NOW -2022

Almond strands were used

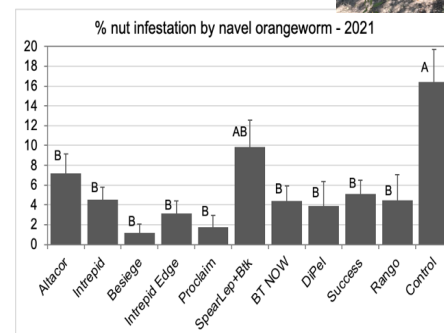
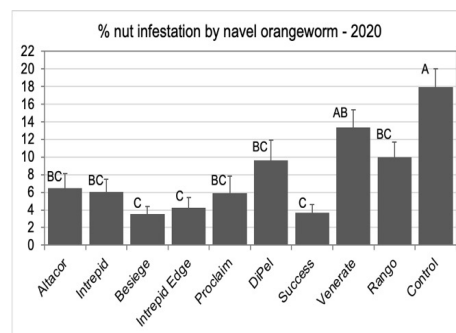
- 20 nuts/strand; 15 replicates/treatment; Treated with insecticides,
- Left for 2 weeks in the orchard, evaluated nuts for damage
- Done in the first wk of August (3rd gen.)



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Insecticide Options for NOW

Efficacy of various insecticide products against navel orangeworm. The products were applied in 1-ft long strand of 20 nuts glued together and put them out in the orchard to allow navel orangeworm for egg laying



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Chemical control - Insecticides

- Insecticide coverage is important
- Sprayed in the field
- Collected fruits from low and high tree heights and eggs/larvae were exposed to the fruits
- For the same tractor speed, two different heights, there is a clear difference on mortality (dotted box)

Authors: Joel P Siegel, Mathew M Strmiska, Franz JA Niederholzer, D Ken Giles, Spenser S Walse
<https://doi.org/10.1002/ps.5265>

Ground speed x tree height

Ground speed (kph)	Day	Height	Live	Dead	% Mortality	Eggs
1						
2.90 (= 1.8 mph)		High (17-20 ft)	9	791	98.9	800
2.90		Low (5-7 ft)	25	1455	98.3	1480
3.86 (= 2.4 mph)		High	8	792	99.0	800
3.86		Low	11	789	98.6	800
14						
2.90 (= 1.8 mph)		High	66	1534	95.9 A	1600
2.90		Low	54	1546	95.6 A	1600
3.86 (= 2.4 mph)		High	206	1394	87.1 B	1600
3.86		Low	68	1532	95.8 A	1600

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Green stink bug in-season,
Tracy, CA (7/26/2023)



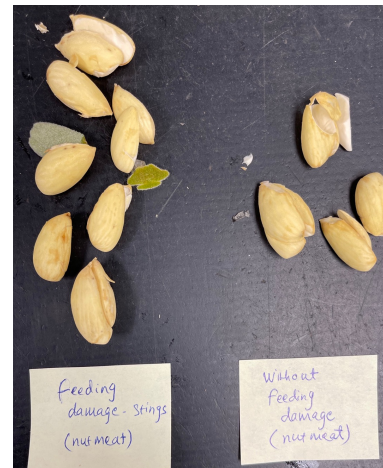
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Green stink bug in-season damage, 7/27/23
Tracy, CA



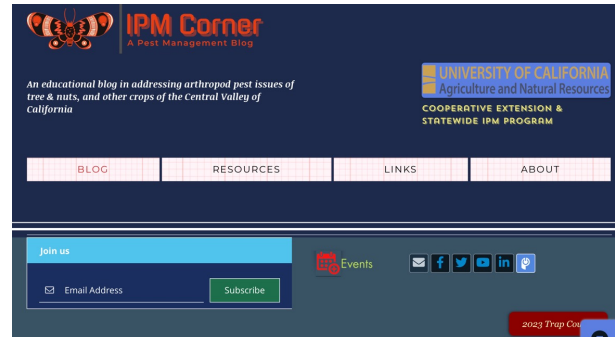
About 30-40% of the green stink bug feeding after shell-hardening can translate to kernel damage. So, watch out for GSB!



We collected nuts with showing clear gumming on the hull, and some did not have damage in the kernel, but others did have kernel damage.

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Disclaimers

The information provided here is for your reference purpose only. Every orchard is different regarding the insect activity and damage history. We highly encouraged to use your own monitoring tools, biofix dates, and degree-days for making pest management decisions.

In this presentation, discussing research results requires the use of pesticide trade names, but this does not constitute an endorsement of the products, nor does not imply that other products are not available. Some products mentioned may be for experimental use only and included for informational purposes. Pesticide Label is the law! Please follow all instructions and safety precautions on the label when applying pesticide products.