Insect Trap Counts & Degree-Days Update (Tree Fruit and Nut Crop Insects in Modesto Area)

Aug 29, 2019

Jhalendra Rijal, Ph.D.
Area IPM Advisor-North San Joaquin Valley
UC Cooperative Extension, Modesto
jrijal@ucdavis.edu; 209-525-6800
www.IPMCorner.com

UC CE

UC IPM

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

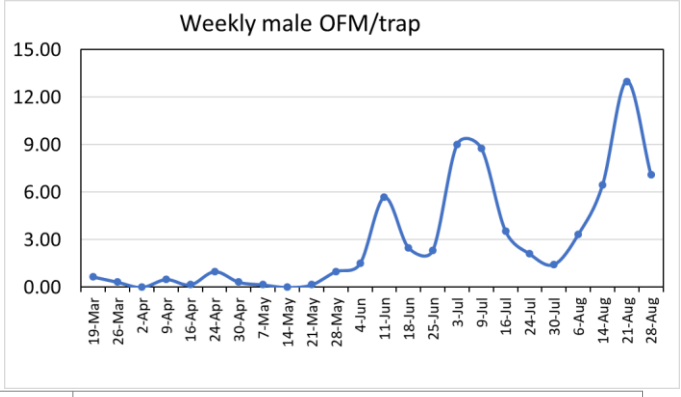
1

Oriental Fruit Moth

(Traps placed in almond)

1st gen. biofix: March 19
Spray timing 1st gen. (500-600 DD): 23-27 April
2nd gen. biofix: May 21; Spray timing 2nd gen. (400-500 DD): 3-6 June
3rd gen. biofix: June 25; Spray timing 3rd gen. (400-500 DD): 9-13 July
DD (7/25): 898
4th gen biofix: July 30
Spray timing 4th gen. (400-500 DD): 12-15 August; DD (8/29): 960

Weekly moths/trap	
19-Mar	0.66
26-Mar	0.33
2-Apr	0.00
9-Apr	0.50
16-Apr	0.16
24-Apr	1.00
30-Apr	0.33
7-May	0.16
14-May	0.00
21-May	0.16
28-May	1.00
4-Jun	1.50
11-Jun	5.67
18-Jun	2.50
25-Jun	2.33
3-Jul	9.00
9-Jul	8.78
16-Jul	3.56
24-Jul	2.11
30-Jul	1.44
6-Aug	3.33
14-Aug	6.44
21-Aug	13.00
28-Aug	7.11



Typical generation periods and spray timing

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

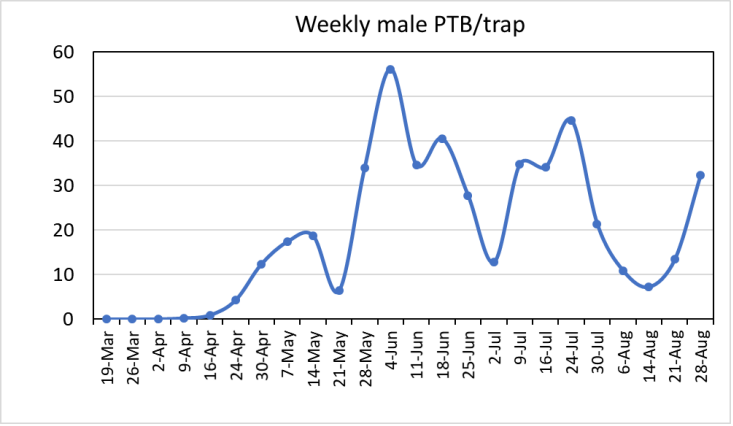
2

Peach Twig Borer
(Traps placed in almond)

Weekly moths/trap

19-Mar	0.00
26-Mar	0.00
2-Apr	0.00
9-Apr	0.22
16-Apr	0.88
24-Apr	4.22
30-Apr	12.33
7-May	17.33
14-May	18.78
21-May	6.33
28-May	34.00
4-Jun	56.17
11-Jun	34.67
18-Jun	40.56
25-Jun	27.78
2-Jul	12.77
9-Jul	34.78
16-Jul	34.11
24-Jul	44.67
30-Jul	21.33
6-Aug	10.89
14-Aug	7.22
21-Aug	13.44
28-Aug	32.37

1st Biofix: 9 April or 16 April (Some variations)
2nd Biofix: 11 June
2nd gen. spray timing (300-400DD): 22 June-26 June
Current: Third flight activity



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

3

Navel orangeworm (NOW) males, females and eggs in almonds

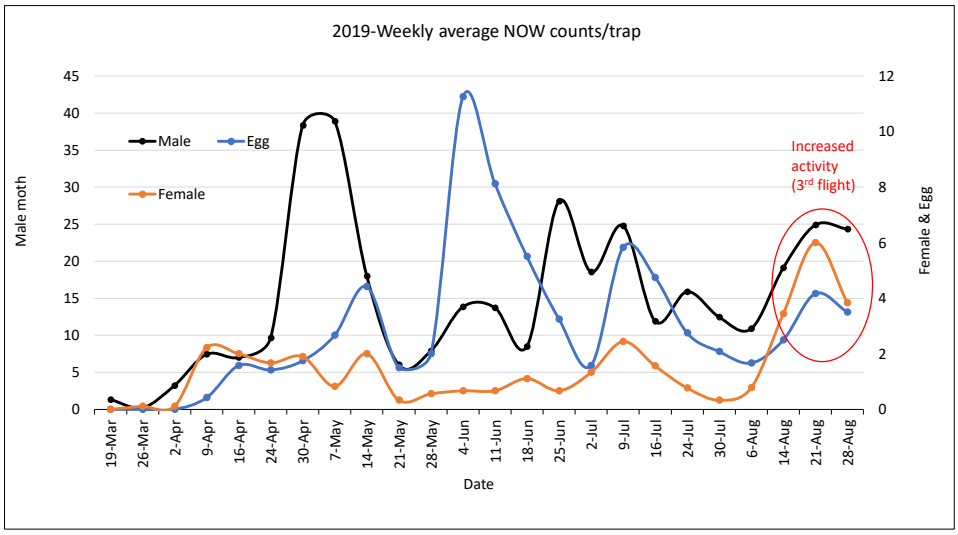
	Number per week			Remarks
	Egg	Female	Male	
19-Mar	0.00	0.00	1.33	
26-Mar	0.00	0.11	0.22	
2-Apr	0.00	0.11	3.22	
9-Apr	0.42	2.22	7.44	
16-Apr	1.58	2.00	7.00	
24-Apr	1.42	1.67	9.67	
30-Apr	1.75	1.90	38.33	
7-May	2.67	0.83	38.89	
14-May	4.42	2.00	18.00	
21-May	1.50	0.33	6.00	
28-May	2.00	0.56	7.89	
4-Jun	11.25	0.67	13.83	
11-Jun	8.13	0.67	13.72	
18-Jun	5.50	1.11	8.50	
25-Jun	3.25	0.67	28.11	
2-Jul	1.58	1.33	18.56	
9-Jul	5.83	2.44	24.78	
16-Jul	4.75	1.56	11.89	
24-Jul	2.75	0.77	15.89	
30-Jul	2.08	0.33	12.44	
6-Aug	1.67	0.78	10.89	
14-Aug	2.50	3.44	19.11	3rd flight initiation
21-Aug	4.17	6.00	24.89	
28-Aug	3.50	3.83	24.33	
Spring egg laying biofix: April 9				
1st hullsplit spray timing (1200 DD from the spring egg laying biofix): 7 July				
DD from January 1 (8/29): 2557				

- **DD to complete one generation in mummy nuts (i.e., 1st gen.): 1056**
- **DD to complete one generation in seasonal almond nuts (i.e., 2nd-4th gen): 700**
- **DD required to hatch eggs from egg laying: 100**
- **Spray decision should be made based on NOW activity and the stage of the nut development (hull split). For 1st hull split spray: spray at 1% hull split (i.e., 1% of the total nuts from the tree has 3/8 inch split).**
- **What is 'hull-split' for NOW control perspective? See the photo:**

Split <3/8 inch(=1cm)

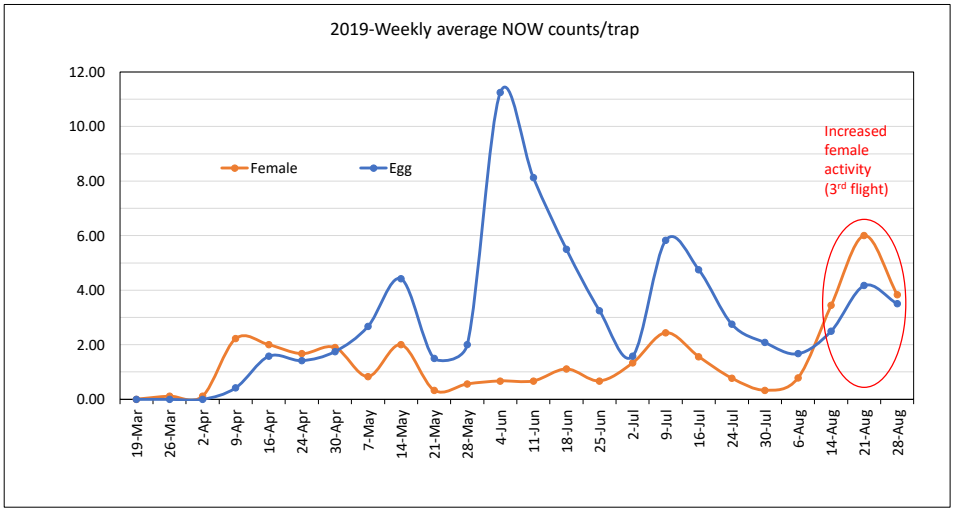
4

Navel orangeworm (NOW) males, females and eggs in almonds-2019



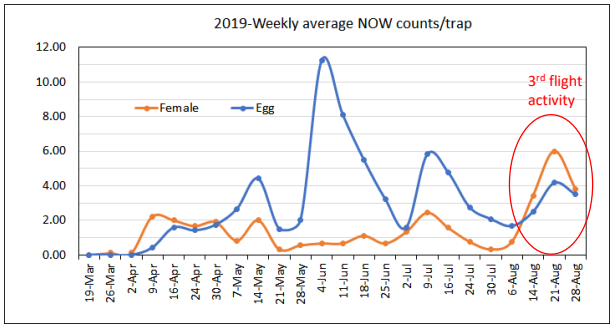
5

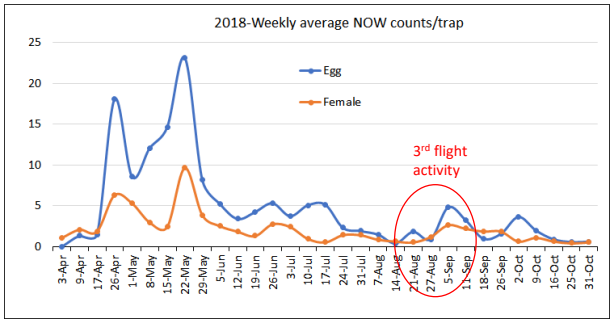
Navel orangeworm (NOW) females and eggs in almonds-2019



6

2018 vs. 2019 NOW female and egg laying activities





3rd flight NOW activity comparison 2018 vs. 2019 (general observation and trend):

Based on what I have seen recently especially in female traps, looks like 3rd flight started earlier this year compared to the last year (2018), and has been active as of this week (yesterday). See my trap counts (egg and female comparison between 2018 and 2019) in the graph (note the difference in y-axis scale). In 2018, average female counts from 9 traps across 3 sites, female counts highest was 2.7 females/trap, and that was on Sept. 5. This year, past 3-weeks counts (14, 21, 28 August) all exceeded avg. 3.5 females/trap highest being 6 females/trap on 21 August. I had all sites (Modesto, Turlock, Denair) and the number of traps in each site the same past couple of years. By the way, the third flight was even earlier started 8 Aug and peaked 15 Aug in 2017 (don't have a graph here). These numbers may not be very high compared to some of you have experienced, but certainly provides trends and difference within and among years. All sites were mummy sanitized and have no mating disruption.

Yes, pollinizers may be at a higher risk, and potentially Monterey and Fritz which might get even more NOW pressure from the combination of 3rd and 4th flights (predicted 4th flight: 16 Sept based on 700 DD needed for the generation to complete from 15 Aug).

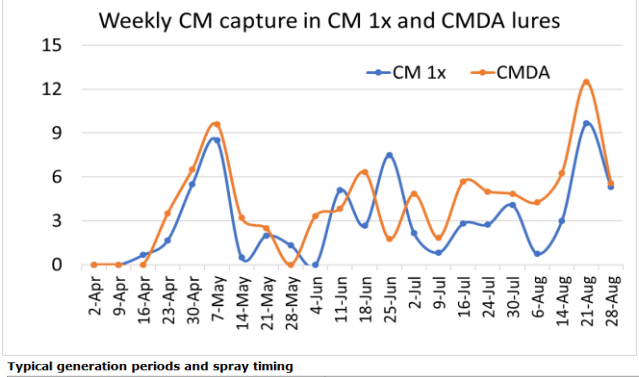
7

Codling moth in walnuts

1st Biofix: 16 April
Spray timing (1A, 300 DD): 6 May
Spray timing (1B, 600-700 DD): 28 May – 2 June
2nd Biofix: June 11; 2nd gen. DD (7/25): 1075
Spray timing (2A, 300 DD): 23 June
3rd gen. biofix: August 6;
3rd generation spray timing (300 DD): Aug 17
DD (8/29): 619

Weekly moths/trap

	CM 1x	CMDA
2-Apr	0.00	0.00
9-Apr	0.00	0.00
16-Apr	0.67	0.00
23-Apr	1.67	3.50
30-Apr	5.50	6.50
7-May	8.50	9.60
14-May	0.50	3.20
21-May	2.00	2.50
28-May	1.33	0.00
4-Jun	0.00	3.33
11-Jun	5.10	3.83
18-Jun	2.67	6.33
25-Jun	7.50	1.75
2-Jul	2.16	4.83
9-Jul	0.83	1.83
16-Jul	2.83	5.67
24-Jul	2.75	5.00
30-Jul	4.08	4.83
6-Aug	0.75	4.25
14-Aug	3.00	6.25
21-Aug	9.67	12.50
28-Aug	5.33	5.56



Note: Based on feedback from some of the consultant, in some areas/orchards in Oakdale (Stanislaus County) area, CM activity seems to be slower than my trap counts and thereby different biofix dates. The information and biofix dates that I provided here is based on what I think what's happening based on my 3 orchard trap counts, it may not necessarily match with what's going on in your orchard. Therefore, use your trap counts, biofix dates, nut sampling data to make informed decision

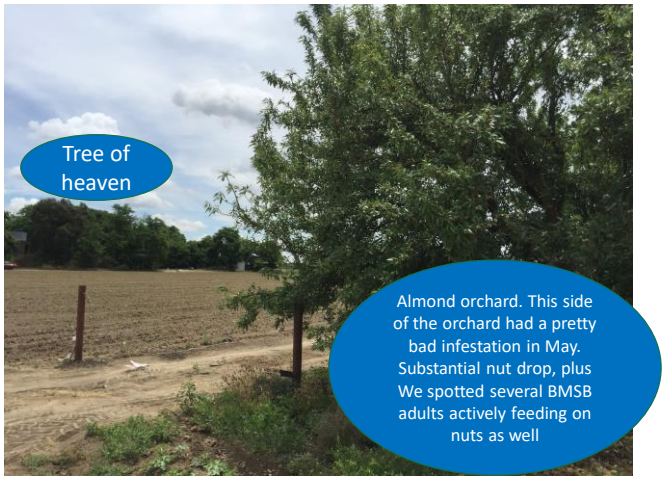
Typical generation periods and spray timing

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

8

Advisory regarding the Brown Marmorated Stink Bug (BMSB) infestation in Stanislaus and Merced counties orchards

If you have almond or peach orchards in proximity to BMSB favorite host- tree of heaven (*Ailanthus altissima*), watch for the BMSB presence/infestation in the orchard (also in tree of heaven if possible). Plus, put the BMSB trap in edge of the orchard to intercept incoming BMSB from the nearby overwintering source. Keep in mind, infestation is not limited to the orchards near to tree of heaven. Any orchards can have BMSB infestation in these counties.

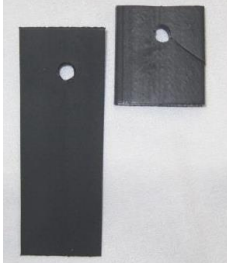


9

Recommendation for Brown Marmorated Stink Bug (BMSB) Monitoring

- Put couple of sticky traps (minimum 3 traps with BMSB dual lure) in border rows beginning mid-March. Idea is that intercepting stink bugs while they are moving into the orchard from nearby overwintering sites.
- In BMSB dual lure, there are two pieces (see the picture). Both needs to be placed together in one trap for the effective attraction
- Change lure in every 12 wks (Trece lure)
- Change sticky panel as necessary

Sticky Panel Trap



Trécé dual lure
(murgantiol & MDT)

10

DAY	DESCRIPTION	HIGH / LOW	PRECIP	WIND	HUMIDITY
TODAY AUG 30	Sunny	94° / 61°	0%	NW 12 mph	37%
SAT AUG 31	Sunny	98° / 64°	0%	NW 11 mph	38%
SUN SEP 1	Sunny	98° / 64°	0%	NW 13 mph	37%
MON SEP 2	Sunny	96° / 64°	0%	NW 13 mph	37%
TUE SEP 3	Sunny	95° / 63°	0%	NW 13 mph	38%
WED SEP 4	Sunny	94° / 65°	0%	NW 13 mph	40%
THU SEP 5	Sunny	95° / 65°	0%	NW 12 mph	38%
FRI SEP 6	Sunny	93° / 62°	0%	NW 14 mph	38%
SAT SEP 7	Sunny	90° / 61°	0%	NW 13 mph	43%
SUN SEP 8	Sunny	90° / 61°	0%	NW 11 mph	44%
MON SEP 9	Sunny	89° / 60°	0%	NW 9 mph	45%
TUE SEP 10	Sunny	88° / 60°	0%	NW 11 mph	45%
WED SEP 11	Sunny	88° / 61°	0%	NW 12 mph	44%
THU SEP 12	Partly Cloudy	89° / 61°	10%	NW 11 mph	41%

weather forecast- Modesto (Aug 30- Sept 12)

11

Disclaimer:

The information provided here is for your reference purpose only. Every orchard is different with regard to insect activities and potential damage to the crop. Therefore, we recommend to use your own monitoring tools, biofix dates, and degree-days for making pest management decisions.

Weather station that I used to calculate degree-days is,

Denair_II.A (CIMIS #206, Denair II)

12