

2024 IPM Update -16 July

Jhalendra Rijal, Ph.D.
Area IPM Advisor
UC Cooperative Extension - San Joaquin, Stanislaus, Merced

1

Monitoring

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



Or google "Run Degree Days UCIPM"

Note:

- All trapping data reported in this presentation were collected from 2-4 commercial orchards in Stanislaus County. The weather station used for calculating degree days was CIMIS Station #206, Denair.
- Therefore, the information provided here should be used as a general reference, this is not a recommendation of any kind. All growers/PCAs should have their monitoring systems and tools in place, and use that information in making pest management decisions as "every orchard is different"

2

Degree-day models: UCIPM

UC IPM
Statewide Integrated Pest Management Program

HOME

SEARCH

ON THIS SITE

- What is IPM?
- Home & landscape pests
- Agricultural pests
- Natural environment pests
- Exotic & invasive pests
- Weed gallery
- Natural enemies gallery
- Weather, models & degree-days
- Pesticide information
- Research
- Publications
- Events & training
- Links
- Glossary
- About us

How to Manage Pests

Run Models and Calculate Degree-Days

Our degree-day calculator has two branches. You can run preset models as recommended in our pest man Or, you can specify thresholds and method of calculation to calculate any degree-days. Weather data for th come from the UC IPM database for California, a file you supply, or data you enter online. | [Acknowledgme](#)

| [Using this calculator](#) | [Reference degree-day tables](#) | [About degree-days](#) |

[Run models](#)
[Calculate degree-days](#)

Run models—using degree-days, as recommended by UC Cooperative Extension

Select an organism and preset thresholds

- Beet armyworm (Lower=54 F)
- California red scale (Lower=53 F)
- Codling moth (Lower=50 F, Upper=88)
- Conspere stink bug (Lower=53.6 F)
- Cotton (Lower=60 F)
- Elm leaf beetle (Lower=52 F)
- Fuller rose beetle (Lower=51 F)
- Lygus bug (Lower=54 F)


- [Reference degree-day tables](#) for accumulating de
- [Other models](#) of plants, pests, and beneficials—u (unknown validation)

Calculate degree-days—specify thresholds

Specify thresholds and method of calculation

Thresholds

Fahrenheit
 Celsius






UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Statewide Integrated
Pest Management Program


3

2024 Insect monitoring

- ▶ Oriental Fruit Moth (OFM): 1st Biofix 21 February
 - ▶ 1st biofix 21 February
 - ▶ 1st gen. spray timing (500 - 600DD): 12-19 April
 - ▶ 2nd gen. biofix: 14 May
 - ▶ DD accumulated (as of 7/11): 1601
 - ▶ 2nd gen spray timing (400-500): 30 May - 3 June
 - ▶ 3rd gen. biofix: 18 June
 - ▶ 3rd gen spray timing (400-500): 30 June - 3 July
 - ▶ DD accumulated (as of 7/16): 958



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



UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

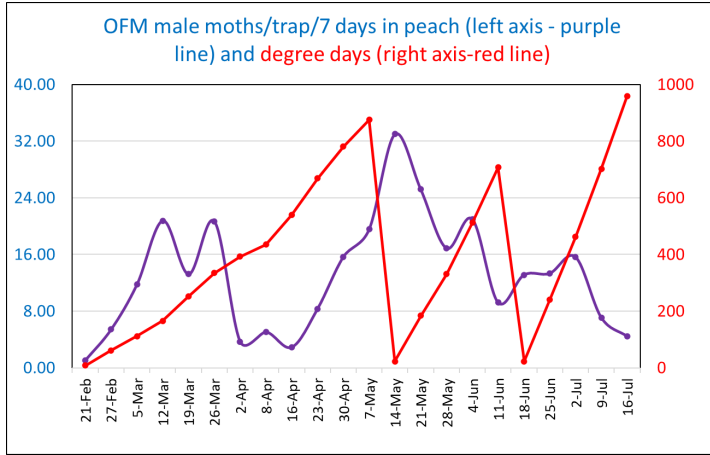
Statewide Integrated
Pest Management Program

4

2024 Insect monitoring

Oriental Fruit Moth (OFM)

1st biofix: 21 February; 2nd flight biofix: 14 May; 3rd flight biofix: 18 June



Since the accumulated DD (as of 7/16) is 958, and the total generation time ranged from 920 to 1010 DD, this week's count likely marks the tail end of the 3rd flight.

5

2024 Insect monitoring

► Peach Twig Borer (PTB):

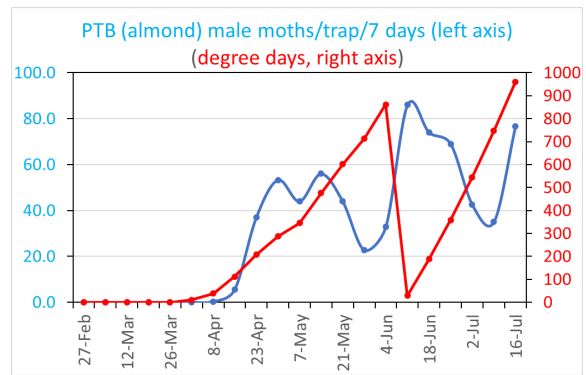
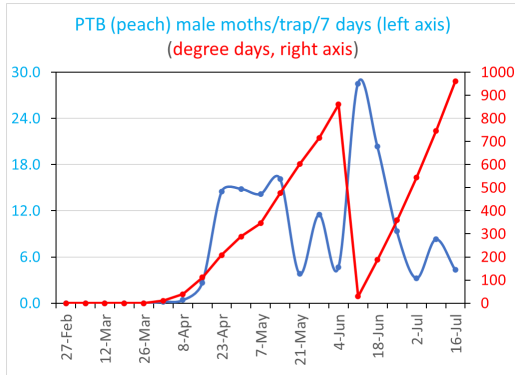
- 1st Biofix: 2 April
- 1st gen. spray timing (400 - 500DD): 10-15 May
- DD (1st gen, 6/11): 1050
- 2nd gen. Biofix: 11 June
 - 2nd gen. spray timing (300-400DD): 22-26 June
 - DD accumulated (as of 7/16): 960

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

6

2024 Insect monitoring

- ▶ Peach Twig Borer (PTB):
- ▶ 1st Biofix: 2 April; 2nd Biofix: 11 June



DD accumulated (2nd gen.; as of 7/16): 960



7

2024 Insect monitoring

- ▶ Codling Moth (CM): 1st flight biofix 8 April
 - 1st gen. spray timing:
 - ▶ 1A flight (300 DD): 4 May
 - ▶ 1B flight (600 - 700 DD): 23 May - 28 May
 - 2nd gen. biofix: 11 June
 - ▶ 2nd gen. spray timing (2A timing: 300DD): 23 June
 - ▶ DD accumulation (as of 7/16): 960

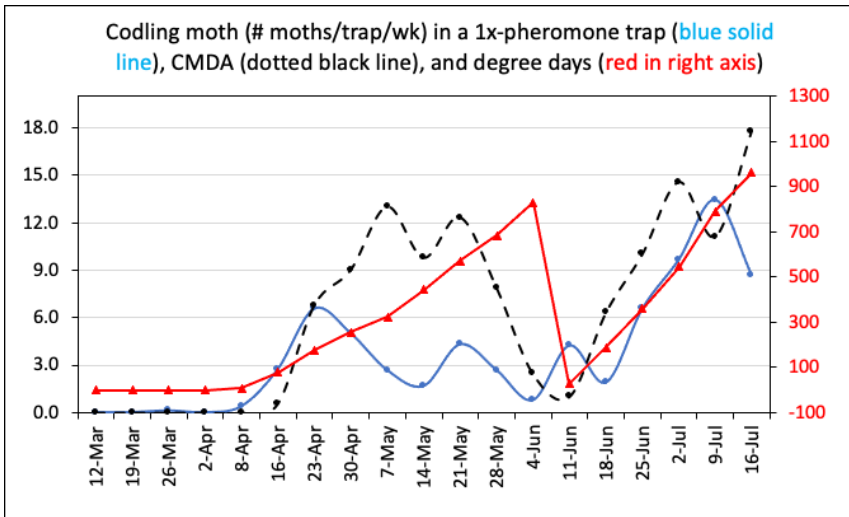
Generation Length (degree-days)			Spray Timing (degree-days)	
1st	2nd	3rd	Early generation	Later generations
1060	1100	1200	1A Peak: 300 1B Peak: 600-700	300

ewide Integrated Management Program

8

2024 Insect monitoring

► Codling Moth (CM) in Walnut: 1st biofix: 8 April; 2nd biofix: 11 June



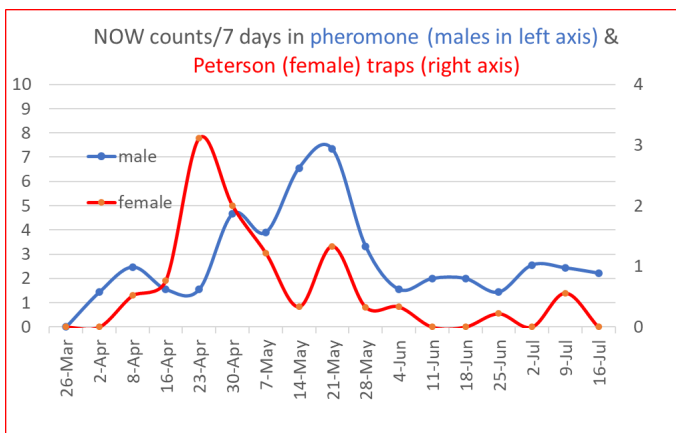
2A flight activities seem to be much higher this year.

UNIVERSITY OF CALIFORNIA Natural Resources | Statewide Integrated Pest Management Program

9

2024 Insect monitoring

► Navel Orangeworm (NOW) in Walnuts

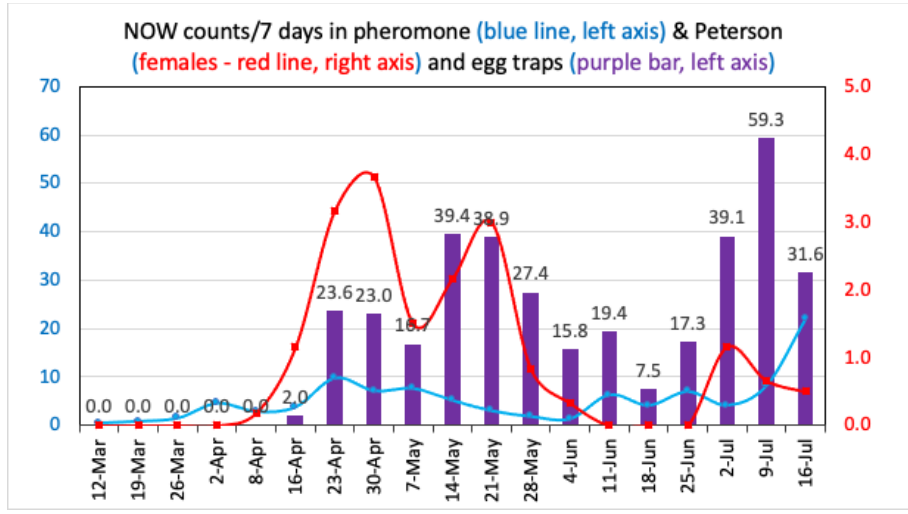


UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources | Statewide Integrated Pest Management Program

10

2024 Insect monitoring

► Navel Orangeworm (NOW) in almonds: Egg laying biofix: 16 April



- Spring spray timing (100DD): April 27
- Projected 2nd flight (1056 DD) was June 29

11

Year 2024

Date	Pheromone (left axis)	Peterson Females (right axis)	Egg Traps (left axis)
12-Mar	0.0	0.0	0.0
19-Mar	0.0	0.0	0.0
26-Mar	0.0	0.0	0.0
2-Apr	0.0	0.0	0.0
8-Apr	0.0	0.0	0.0
16-Apr	2.0	1.0	2.0
23-Apr	10.0	3.5	23.6
30-Apr	8.0	4.0	23.0
7-May	8.0	3.5	18.7
14-May	7.0	3.0	39.4
21-May	5.0	2.5	38.9
28-May	2.0	1.0	27.4
4-Jun	1.0	0.5	15.8
11-Jun	1.0	0.5	19.4
18-Jun	1.0	0.5	7.5
25-Jun	1.0	0.5	17.3
2-Jul	1.0	0.5	39.1
9-Jul	1.0	0.5	59.3
16-Jul	1.0	0.5	31.6

- Egg biofix: 16 April
- 1st gen. spray (100DD): 27 April
- Peak 1st flight: 17 May
- DD (6/20): 877
- Beginning of the 2nd gen. (1056DD): 29 June
- Predicted beginning of the 3rd gen. infested hullsplit nuts (700DD): 27 July
- Predicted beginning of the 3rd gen. infested mummy nuts (1056 DD): 10 August

2024

vs.

2023

Year 2023

Date	Pheromone (left axis)	Peterson Females (right axis)	Egg Traps (left axis)
15-Mar	0.0	0.0	0.0
23-Mar	0.0	0.0	0.0
4-Apr	0.0	0.0	0.0
12-Apr	0.0	0.0	0.0
18-Apr	0.0	0.0	0.0
26-Apr	5.9	1.5	20.9
2-May	20.6	3.0	20.6
9-May	10.0	2.5	43.5
17-May	10.0	2.5	55.5
23-May	10.0	2.5	77.0
30-May	10.0	2.5	59.6
6-Jun	10.0	2.5	33.9
13-Jun	10.0	2.5	9.3
20-Jun	10.0	2.5	9.3
27-Jun	10.0	2.5	38.6
6-Jul	10.0	2.5	52.8
18-Jul	10.0	2.5	63.8
26-Jul	10.0	2.5	42.9
1-Aug	10.0	2.5	12.9
8-Aug	10.0	2.5	31.7
15-Aug	10.0	2.5	31.7

- Egg biofix: 26 April
- 1st gen. spray (100DD): 8 May
- Peak 1st flight: 30 May
- DD (6/20): 712
- Predicted beginning of the 2nd gen. (1056DD): 5 July

12

Predicted hullsplit time (bloom date 2/14/24)

Hull Split Calculator

Please Select a Station
Full Bloom Date 2/24/2024

CIMIS Station 206 Denair

Cultivar	2024	2023	2022	2021	2020	2019	2018
NonPareil	07/14	07/19	07/11	07/13	07/12	07/12	07/15
Sonora	07/29	08/05	07/25	07/28	07/26	07/26	07/31
Price	08/01	08/08	07/29	07/31	07/30	07/30	08/03
Wood Colony	08/12	08/17	08/09	08/11	08/10	08/10	08/13
Winters	08/12	08/19	08/09	08/11	08/10	08/10	08/14
Aldrich	08/13	08/18	08/10	08/12	08/11	08/11	08/14
Padre	08/15	08/22	08/12	08/14	08/13	08/13	08/17
Butte	08/18	08/23	08/16	08/18	08/17	08/17	08/20
Ruby	08/23	08/28	08/20	08/22	08/21	08/21	08/24
Carmel	08/24	08/29	08/22	08/24	08/23	08/23	08/26
Monterey	08/25	09/01	08/22	08/24	08/23	08/23	08/27
Mission	08/27	09/01	08/24	08/26	08/25	08/25	08/28

You must wait until 90 days after bloom for this calcula

Stages of hull split

- unsplit hull;
- initial separation;
- deep V split;
- deep V split, but nut pops when squeezed;
- split, but less than 1 cm;
- split, more than 1 cm;
- initial drying stages;
- completely dry

Statewide Integrated Pest Management Program

15

Factors affecting insecticide efficacy for NOW -2022

Timing of Application:

- Aligning insecticide application with the most vulnerable stages of the crop and NOW life cycle

Coverage and Application Method:

- Using appropriate equipment and techniques, speed, etc., ensure thorough tree coverage, including nuts.

Resistance Management:

- Rotating insecticides with different modes of action. Do not apply insecticide with documented resistance

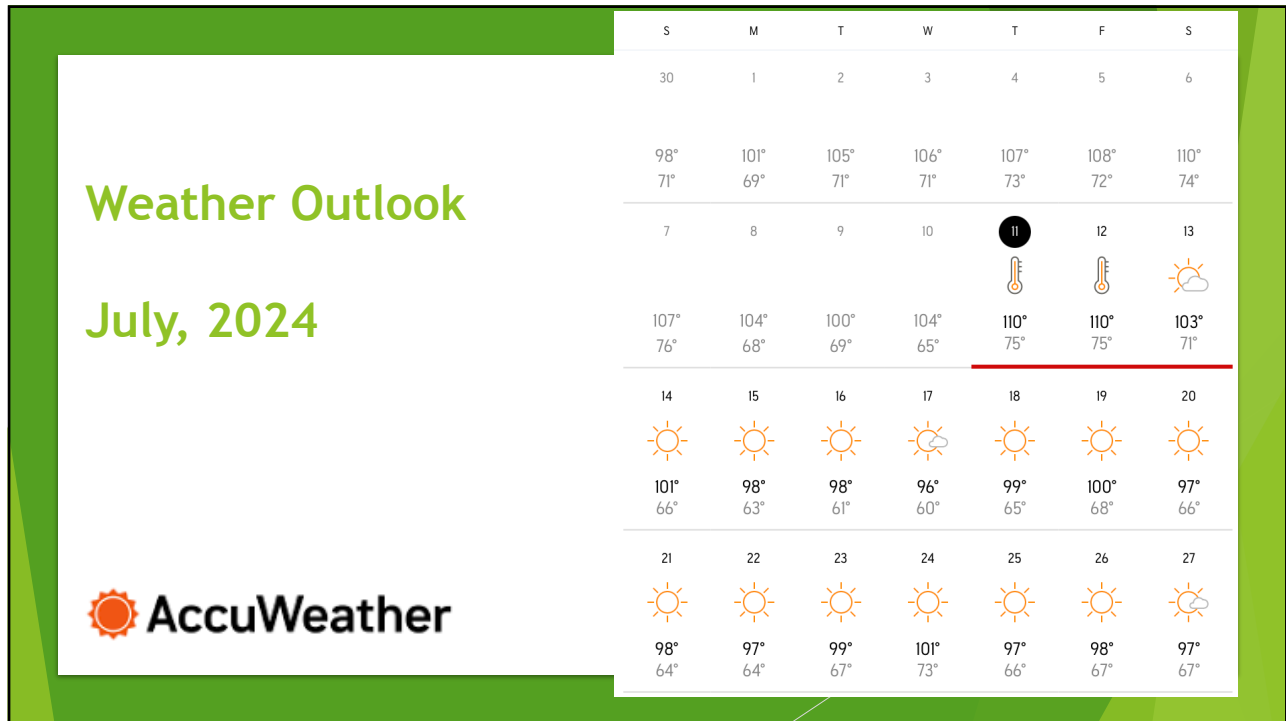
Environmental Conditions:

- Considering weather factors like temperature, humidity, wind to prevent rapid degradation

Integration with Other Pest Management Practices:

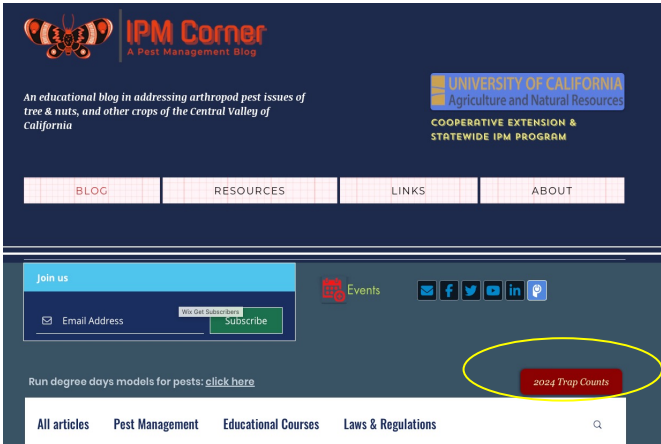
- Combining insecticide use with cultural (mummy sanitation) and biological (mating disruption) practices

16






17

Updated information is also available in www.IPMCorner.com website as well.



Disclaimer/Note

- All trapping data reported in this presentation were collected from 2-4 commercial orchards in Stanislaus County. The weather station used for calculating degree days was CIMIS Station #206, Denair.
- Therefore, the information provided here should be taken as a general reference; this is not a recommendation. All growers/PCAs should have their monitoring systems and tools in place and use that information in making pest management decisions as "every orchard is different"

18