Table Grape—Sampling for Omnivorous Leafroller and Orange Tortrix using Pheromone Traps and Degree-days

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Supplement to UC IPM Pest Management Guidelines

Grower/Vineyard: _____ **Trapping period: From _____ to _____**

Insect monitored: _____

Bottoms changed: _____ **Lures or bait changed: _____**

Comments:_____

_____

How to monitor pheromone traps and use the degree-day table

1. Check traps twice weekly until a biofix date is established; thereafter, check traps weekly.
2. Once biofix occurs, start accumulating degree-days by following steps 3 through 6.
3. Count trapped moths and record trap catch in the “trap counts” columns (see page 2). Then remove insects from trap bottom.
4. Record the minimum and maximum temperature for the date under "temperature" (page 2) columns.
5. To calculate degree-days for a specific date:
    a. Locate the minimum and maximum temperatures on the appropriate degree-days reference table (see pages 3 and 4).
    b. Follow the "Minimum" temperature column down and the "Maximum" temperature column across to the value where the two meet; for odd numbers, interpolate between numbers. Record this degree-day value in the “For day” column.
6. Add the degree-days for the day to the last value in the "accumulation" column (page 2).
    a. Compare your degree-day accumulations to the known degree-day requirements for the moth, until you reach the sum when specific actions such as an insecticide application are recommended (see PMG).

Monitor omnivorous leafroller with pheromone traps through fruit set, until berries are pea sized, to track adult flights of subsequent generations. Monitoring orange tortrix with pheromone traps after biofix will provide more information about subsequent generations in the vineyard.

	Biofix	**Lower and Upper Threshold**
Omnivorous Leafroller	First date that moths are consistently caught in pheromone traps.	48° and 87°F
Orange Tortrix	Low trap catches in late January through early February, and in early June.	43° and 78°F

See next page for table.

Date	Temperature (°F)		Degree-days		Trap counts					
	Max	Min	For day	Accumulation	Trap 1	Trap 2	Trap 3	Trap 4	Trap 5	Average (moths/ trap/day)

Omnivorous Leafroller

To find total degree-days for a day, locate the minimum and maximum temperatures and follow the column and row to where they intersect. For odd-numbered temperatures, interpolate between numbers.

Lower Threshold: 48.0°F **Upper Threshold:** 87.0°F **Method:** Single Sine **Cutoff:** Horizontal

	Minimum temperatures																												
Max temps	**34**	**36**	**38**	**40**	**42**	**44**	**46**	**48**	**50**	**52**	**54**	**56**	**58**	**60**	**62**	**64**	**66**	**68**	**70**	**72**	**74**	**76**	**78**	**80**	**82**	**84**	**86**	**88**	**90**
48	0	0	0	0	0	0	0	0																					
50	0	0	0	0	0	1	1	1	2																				
52	1	1	1	1	1	1	2	2	3	4																			
54	1	2	2	2	2	2	2	3	4	5	6																		
56	2	2	2	3	3	3	3	4	5	6	7	8																	
58	3	3	3	3	4	4	4	5	6	7	8	9	10																
60	4	4	4	4	5	5	5	6	7	8	9	10	11	12															
62	4	5	5	5	5	6	6	7	8	9	10	11	12	13	14														
64	5	6	6	6	6	7	7	8	9	10	11	12	13	14	15	16													
66	6	6	7	7	7	8	8	9	10	11	12	13	14	15	16	17	18												
68	7	7	8	8	8	9	9	10	11	12	13	14	15	16	17	18	19	20											
70	8	8	8	9	9	10	10	11	12	13	14	15	16	17	18	19	20	21	22										
72	9	9	9	10	10	11	11	12	13	14	15	16	17	18	19	20	21	22	23	24									
74	10	10	10	11	11	12	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26								
76	11	11	11	12	12	13	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28							
78	11	12	12	13	13	14	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
80	12	13	13	14	14	15	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32					
82	13	14	14	15	15	16	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34				
84	14	15	15	15	16	17	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36			
86	15	16	16	16	17	18	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38		
88	16	16	17	17	18	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	39	
90	17	17	18	18	19	19	20	21	22	23	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37	38	39	39	39
92	17	18	18	19	19	20	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	37	38	39	39	39
94	18	18	19	19	20	20	21	22	23	24	25	26	27	28	29	30	30	31	32	33	34	35	36	37	38	38	39	39	39
96	18	19	19	20	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	34	34	35	36	37	38	38	39	39	39
98	19	19	20	20	21	21	22	23	24	25	26	27	27	28	29	30	31	32	33	34	35	35	36	37	38	38	39	39	39
100	19	20	20	21	21	22	22	23	24	25	26	27	28	29	30	31	31	32	33	34	35	36	36	37	38	38	39	39	39
102	20	20	21	21	22	22	23	24	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	37	38	38	39	39	39
104	20	20	21	21	22	22	23	24	25	26	27	28	28	29	30	31	32	33	34	34	35	36	37	37	38	38	39	39	39
106	20	21	21	22	22	23	23	24	25	26	27	28	29	30	30	31	32	33	34	35	35	36	37	37	38	39	39	39	39
108	21	21	22	22	23	23	24	25	25	26	27	28	29	30	31	31	32	33	34	35	35	36	37	37	38	39	39	39	39
110	21	21	22	22	23	23	24	25	26	27	27	28	29	30	31	32	32	33	34	35	36	36	37	38	38	39	39	39	39
112	21	22	22	23	23	24	24	25	26	27	28	29	29	30	31	32	33	33	34	35	36	36	37	38	38	39	39	39	39
114	22	22	22	23	23	24	25	25	26	27	28	29	30	30	31	32	33	34	34	35	36	36	37	38	38	39	39	39	39
116	22	22	23	23	24	24	25	26	26	27	28	29	30	31	31	32	33	34	34	35	36	36	37	38	38	39	39	39	39
118	22	23	23	23	24	24	25	26	27	27	28	29	30	31	32	32	33	34	35	35	36	37	37	38	38	39	39	39	39

Orange Tortrix

To find total degree-days for a day, locate the minimum and maximum temperatures and follow the column and row to where they intersect. For odd-numbered temperatures, interpolate between numbers.

Lower Threshold: 43.0°F **Upper Threshold:** 78.0°F **Method:** Single Sine **Cutoff:** Horizontal

	Minimum temperatures																												
Max temps	**34**	**36**	**38**	**40**	**42**	**44**	**46**	**48**	**50**	**52**	**54**	**56**	**58**	**60**	**62**	**64**	**66**	**68**	**70**	**72**	**74**	**76**	**78**	**80**	**82**	**84**	**86**	**88**	**90**
48	1	1	2	2	2	3	4	5																					
50	2	2	2	3	3	4	5	6	7																				
52	3	3	3	4	4	5	6	7	8	9																			
54	4	4	4	5	5	6	7	8	9	10	11																		
56	5	5	5	6	6	7	8	9	10	11	12	13																	
58	5	6	6	7	7	8	9	10	11	12	13	14	15																
60	6	7	7	8	8	9	10	11	12	13	14	15	16	17															
62	7	8	8	8	9	10	11	12	13	14	15	16	17	18	19														
64	8	9	9	9	10	11	12	13	14	15	16	17	18	19	20	21													
66	9	9	10	10	11	12	13	14	15	16	17	18	19	20	21	22	23												
68	10	10	11	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25											
70	11	11	12	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27										
72	12	12	13	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29									
74	13	13	14	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31								
76	14	14	15	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33							
78	15	15	16	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35						
80	16	16	17	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	35					
82	16	17	17	18	19	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	34	35	35	35				
84	17	17	18	18	19	20	21	22	23	24	25	26	27	28	29	30	30	31	32	33	34	35	35	35	35	35			
86	17	18	18	19	20	20	21	22	23	24	25	26	27	28	29	30	31	32	32	33	34	35	35	35	35	35	35		
88	18	18	19	19	20	21	22	23	24	25	26	27	27	28	29	30	31	32	33	33	34	35	35	35	35	35	35	35	
90	18	19	19	20	20	21	22	23	24	25	26	27	28	29	29	30	31	32	33	33	34	35	35	35	35	35	35	35	35
92	19	19	20	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	34	35	35	35	35	35	35	35	35
94	19	19	20	20	21	22	23	24	25	26	27	27	28	29	30	31	31	32	33	34	34	35	35	35	35	35	35	35	35
96	19	20	20	21	21	22	23	24	25	26	27	28	28	29	30	31	32	32	33	34	34	35	35	35	35	35	35	35	35
98	20	20	21	21	22	23	24	24	25	26	27	28	29	29	30	31	32	32	33	34	34	35	35	35	35	35	35	35	35
100	20	20	21	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	33	34	34	35	35	35	35	35	35	35	35
102	20	21	21	22	22	23	24	25	26	27	27	28	29	30	31	31	32	33	33	34	34	35	35	35	35	35	35	35	35
104	20	21	21	22	23	23	24	25	26	27	28	28	29	30	31	31	32	33	33	34	34	35	35	35	35	35	35	35	35
106	21	21	22	22	23	24	24	25	26	27	28	28	29	30	31	31	32	33	33	34	34	35	35	35	35	35	35	35	35
108	21	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	32	33	33	34	34	35	35	35	35	35	35	35	35
110	21	22	22	23	23	24	25	26	26	27	28	29	30	30	31	32	32	33	33	34	34	35	35	35	35	35	35	35	35
112	21	22	22	23	23	24	25	26	27	27	28	29	30	30	31	32	32	33	33	34	34	35	35	35	35	35	35	35	35
114	22	22	22	23	24	24	25	26	27	28	28	29	30	30	31	32	32	33	34	34	34	35	35	35	35	35	35	35	35
116	22	22	23	23	24	25	25	26	27	28	28	29	30	31	31	32	32	33	34	34	34	35	35	35	35	35	35	35	35
118	22	22	23	23	24	25	25	26	27	28	28	29	30	31	31	32	32	33	34	34	34	35	35	35	35	35	35	35	35