

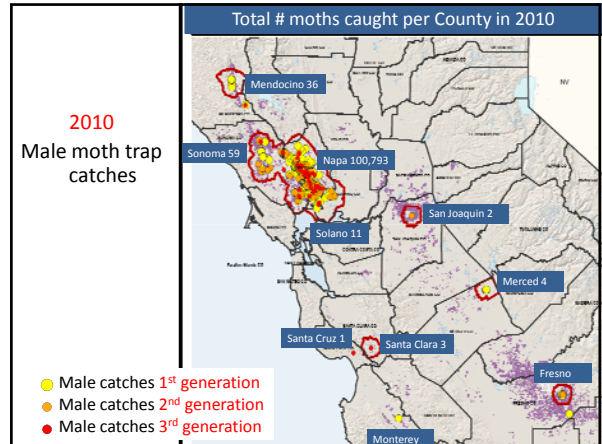
European grapevine moth in 2012:
How to time insecticide sprays and the
importance of monitoring with traps



Jack K. Clark

Lucia G. Varela
North Coast IPM
Advisor

University of California
Agriculture and Natural Resources



Number of Males Trapped by County (2010)

Flight	North Coast				Central Valley			Central Coast		
	Napa	Sonoma	Solano	Mendo- cino	Fresno	Merced	San Joaquin	Santa Cruz	Santa Clara	Mon- terey
1 st	99,236	24	8	35	6	4	0	0	0	1
2 nd	1,278	30	3	0	5	0	0	0	0	0
3 rd	279	5	0	1	0	0	2	1	3	0
Total	100,831	59	11	36	11	4	2	1	3	1

Sonoma County
2010

- 59 moths caught
- ~ 26 locations

2011

- 9 moths caught
- 2 locations

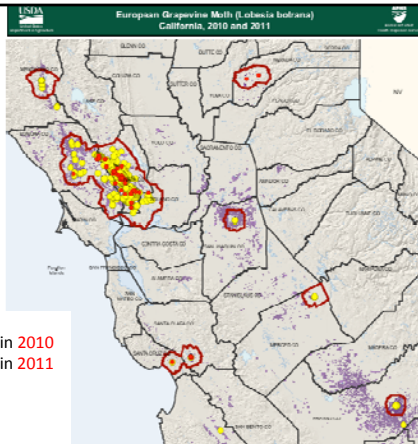
Vineyards treated within
500m radius of a find:
~2,395 acres

Quarantine area:
664 sq miles



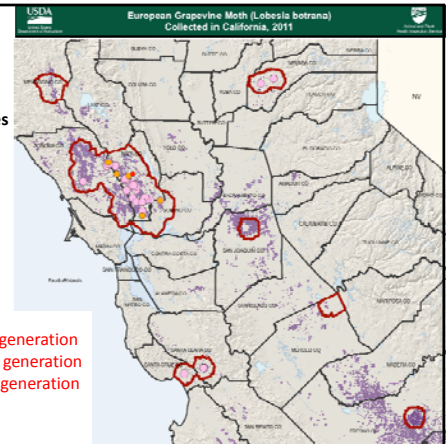
2011 State
quarantine area:
2,334 sq. miles

- Male trap catches in 2010
- Male trap catches in 2011



Male Moth Catches
In 2011
by generation

- Male catches 1st generation
- Male catches 2nd generation
- Male catches 3rd generation



Number of Males Trapped by County (2011)

Flight	North Coast				Central Valley			Central Coast			Sierra
	Napa	Sonoma	Solano	Mendocino	Fresno	Merced	San Joaquin	Monterey	Santa Cruz	Santa Clara	Nevada
2010	100 793	59	11	36	11	4	2	1	1	3	0
2011-1 st	96	9	0	0	0	0	0	0	1	19	4
2011-2 nd	16	0	0	0	0	0	0	0	0	0	0
2011-3 rd	1	0	0	0	0	0	0	0	0	0	0
Total 2011	113	9	0	0	0	0	0	0	1	19	4

Quarantine area reduction

- Counties released from regulation on 2/15/12:
 - Mendocino
 - San Joaquin
 - Merced
 - Fresno
- Revised quarantine area from 5 to 3 miles radius from finds, in the remaining six infested counties.
- ~ 50% reduction quarantine area

For deregulation in 2012 (Sonoma and other counties)

- 5 consecutive generations without a find
- In 2012
 - Insecticide treatments allowed and recommended for the 1st and 2nd generation
 - NO mating disruption allowed
- Monitoring
 - Trap density: 100 traps/mi² ~ 1 trap/5 acres
 - for at least 2 full generations (or two full generations followed by a partial third, where a proportion of the insects from the 2nd are expected to enter diapause)

After deregulation

- The year after deregulation
 - Trapping continues at 100 traps per square mile within 500m of sites of earlier finds for two full generations.
 - All other restrictions are lifted.
- Subsequent years
 - Trapping at survey level (presently survey trapping is at 25 traps/sq mile in grape production areas throughout the state).

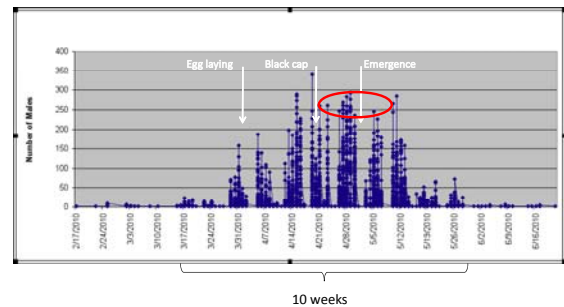
2010-11 control timing was established by monitoring and degree-days

- Monitored adults, egg and larval development in Oakville.
- Used degree-day to time control for each generation in affected counties where populations were too low to monitor.

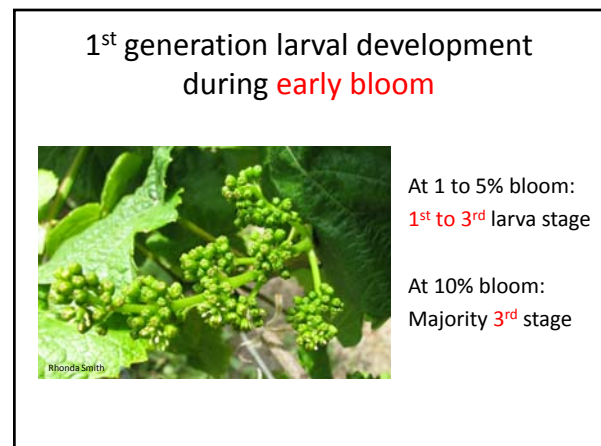
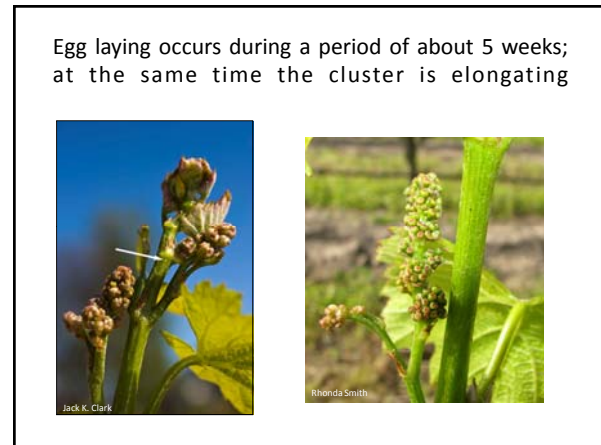
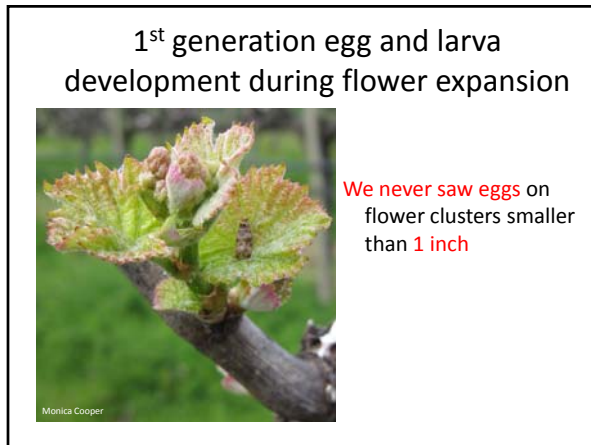
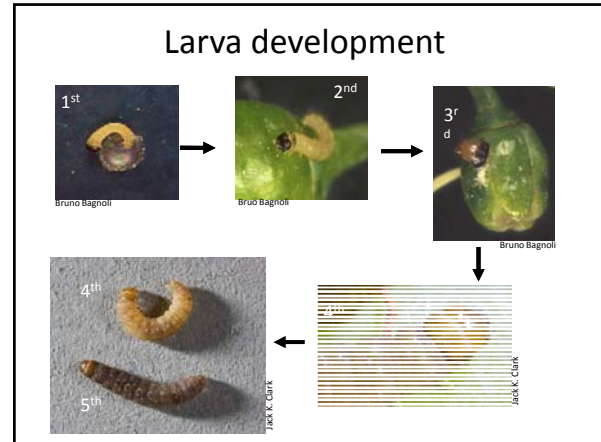
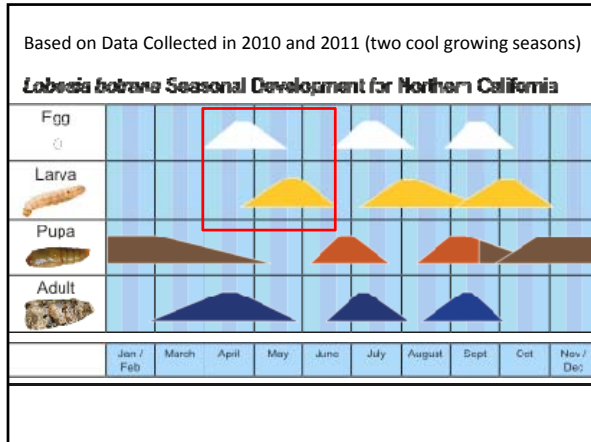
Preliminary analysis:
~ 90% of acres treated at the recommended time.



1st Generation in 2010



2/12/2012



1st generation larval development during bloom



3rd to 5th larva stages

1st generation larva and pupa development at fruit set



Mature larvae and pupae

Optimal timing for 1st generation (organic and conventional insecticides)

IMMEDIATELY BEFORE BLOOM

- Prior to fall of 1st flower caps
- Inflorescence fully developed
- Single flowers separating



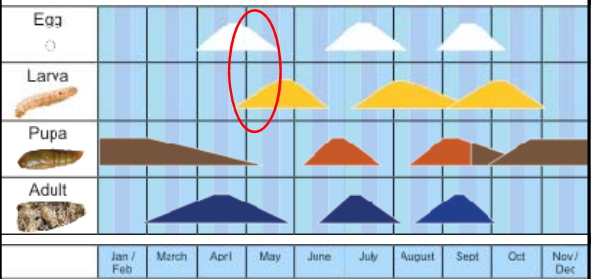
Eichhorn-Lorenz stage 17



17

Based on Data Collected in 2010 and 2011 (two cool growing seasons)

Lobesia botrana Seasonal Development for Northern California



Treatment timing for the 1st generation

Too Early

- Before flower separation
- If more than 14 days have elapsed since treatment, and on average the treated block has 10% bloom or less.



Rhonda Smith

Too Late

- If full bloom is upon you and you have not treated



Jack K. Clark

Monitored Other Hosts



Photo: JF Giffard

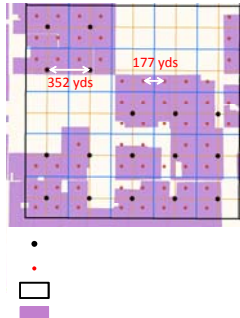
- Only detected in the flower of olives during 2010 first generation



Olive flower

Are traps accurately measuring population?

- For deregulation:
Trap density: 100 traps/mi²
= 1 trap/5 vineyard acres
- If on average traps pull moths from ~ 54 yards (50 meters)
 - To cover the area, you need ~1 trap/ 2 acres
 - Or continue trapping through time



Pheromone Traps to Monitor Males



- Deploy traps before bud-break
- 1 trap/10 acres
- Place at canopy height



Information

- UCCE Sonoma – <http://cesonoma.ucdavis.edu>
 - IPM - European grapevine moth/leafrollers
- UC IPM – <http://www.ipm.ucdavis.edu>
 - Exotic and invasive pests - EGVM
- UCCE Napa County - <http://cenapa.ucdavis.edu>
 - Viticulture - EGVM
- California Department of Food and Agriculture
<http://www.cdffa.ca.gov>

University of California
Agriculture and Natural Resources

