

Integrated Pest Management in Action: European Grapevine Moth

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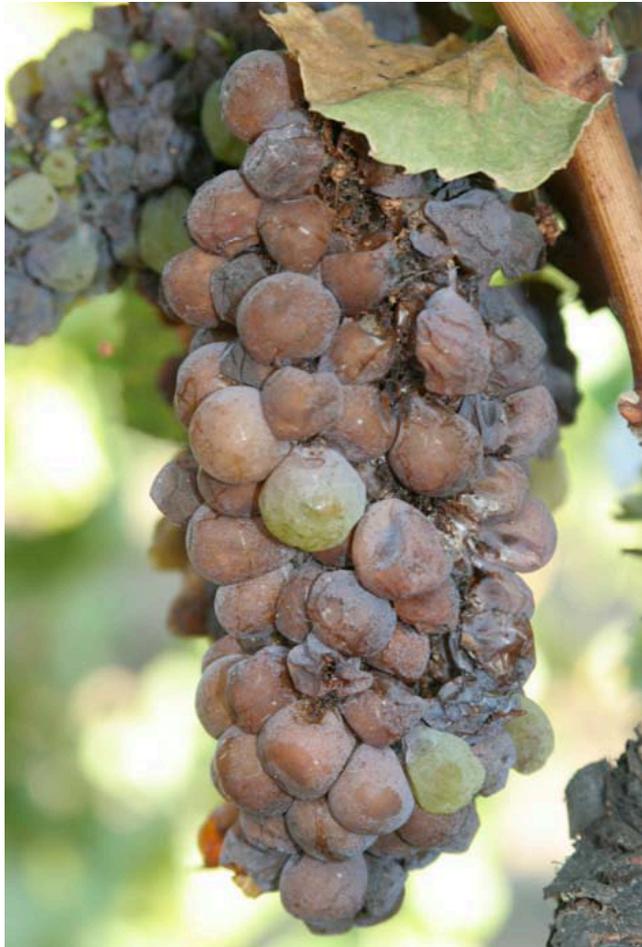


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Damage observed in September 2009 in Oakville, Napa County



- Considered the most important insect pest of grapevines in Europe
- Larvae feed on berries
- Injury to berries leads to bunch rot

Integrated Pest Management

- Correct identification of pest
- Monitoring
- Decision based on thresholds
- Integration of control practices

International Technical Working Group for EGVM in California

- Bruno Bagnoli – CRA, Firenze, Italy
- Ring Cardé – UC Riverside, CA
- Gertrud Wegner-Kiss – SIVO, Freiburg, Germany
- Claudio Ioriatti – IASMA, S.Michele all'Adige, Italy
- Uwe Koch – Tech. Univ. Kaiserslautern, Germany
- Dave Lance - USDA-APHIS-PPQ, MA
- Andrea Lucchi – Univ. de Pisa, Italy
- Vic Mastro (Chair) – USDA-APHIS-PPQ, MA
- Gonçal Barrios Sanromá – Dept. of Ag., Spain
- Luis Sazo – Univ. of Chile, Santiago, Chile
- Rene Sforza - USDA-ARS-EBCL, France
- Bob Steinhauer – Wineland Cons., St. Helena, CA
- Lucia Varela – UC Coop. Ext., Santa Rosa, CA

TWG Recommendations for EGVM Control in 2010

- Insecticide Treatments
 - To Vineyards within 1000 meters of a find
 - For the 1st, 2nd and 3rd generations
- Mating Disruption
 - Napa vineyards within 1000 meters of a find

Monitored to determine control timing

- Monitored for egg and larval development in Oakville.
- Validated degree-day models developed in Europe under California conditions.
- Use degree-day validations to appropriately time control for each generation in affected counties where populations were too low to monitor larval stages.



Insecticide Trials

- Reduced-risk insecticides
- Organic insecticides
- Evaluated populations of natural enemies of secondary pests on insecticide treatments
 - Predatory mites
 - Natural enemies of scales and mealybugs

Insecticide	OMRI	Ovicide	Larvicide	Toxicity	
				Predator/Parasitoid	
Insect growth regulator (ecdysone mimic)--IRAC group 18					
Intrepid methoxyfenozide	N	Y	Y	low	low
Microbial (disrupt midgut membranes)--IRAC group 11					
<i>Bt</i> Kurstaki (Biobit, Deliver, Dipel, Javelin)	Y	N	Y	low	low
Diamide (target nerves and muscles)--IRAC group 28					
Altacor chloranthraniprole	N	Y	Y	low	low
Belt flubendiamide	N	N	Y	low	low
Sodium channel blocker (paralysis)--IRAC group 22					
Avaunt indoxacarb	N	N	Y	low	med
Spinosyn (block nervous system, paralysis)--IRAC group 5					
Success spinosad	N	N	Y	low	med-high
Entrust spinosad	Y	N	Y	low	med-high
Delegate spinetoram	N	N	Y	med	high
Avermectin (nervous system)--IRAC group 6					
Agri-Mek abamectin	N	N	Y	low	med-high

Quarantine Areas
&
Individual Moth
Catches
As of 10/08/2010

Mendocino 36

Sonoma 59

Napa 100,793

San Joaquin

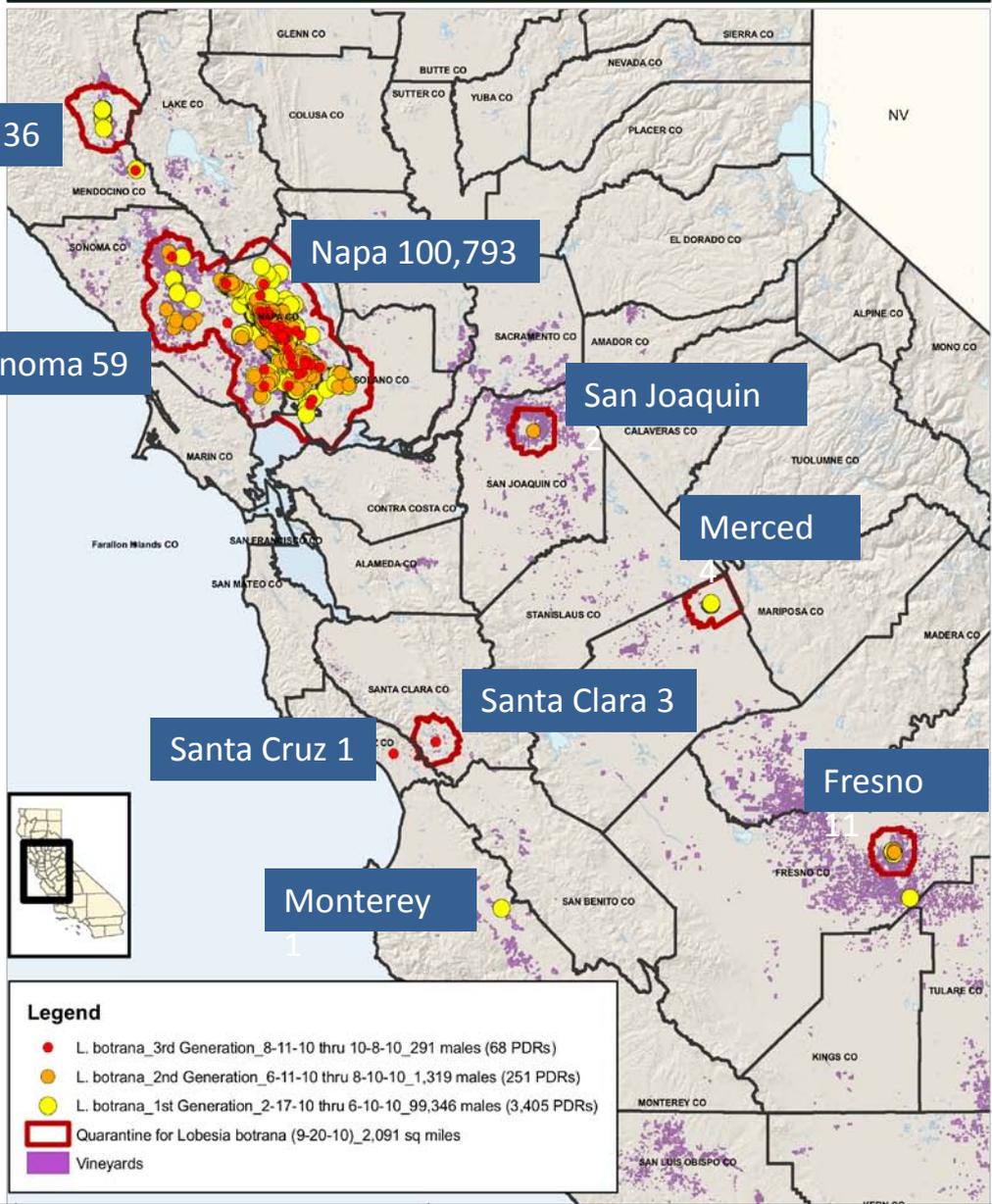
Merced

Santa Cruz 1

Santa Clara 3

Monterey

Fresno



Legend

- L. botrana_3rd Generation_8-11-10 thru 10-8-10_291 males (68 PDRs)
- L. botrana_2nd Generation_6-11-10 thru 8-10-10_1,319 males (251 PDRs)
- L. botrana_1st Generation_2-17-10 thru 6-10-10_99,346 males (3,405 PDRs)
- Quarantine for Lobesia botrana (9-20-10)_2,091 sq miles
- Vineyards

Total # moths caught per County in 2010

Males Trapped by County (2010)

Flight	Napa	Sonoma	Solano	Mendo- cino	Fresno	Merced	Mon- terey	San Joaquin	Santa Cruz	Santa Clara
1 st	99,236	24	8	35	6	4	1	0	0	0
2 nd	1,278	30	3	0	5	0	0	0	0	0
3 rd	279	5	0	1	0	0	0	2	1	3
Total	100 793	59	11	36	11	4	1	2	1	3

European Grapevine Moth Hosts



Preferred Hosts

- *Vitis* spp.
- *Daphne gnidium*

Other Hosts



TWG Recommendations for EGVM Control in 2011

- Insecticide Treatments
 - To Vineyards within 500 meters of a find
 - For the 1st and 2nd generations
- Mating Disruption
 - All vineyards within 500 meters of a find (except in counties that may be deregulated)

Males Trapped by County (2011)

Flight	Napa	Sonoma	Solano	Mend-cino	Fresno	Merced	Mon-terey	San Joaquin	Santa Cruz	Santa Clara	Nevada
2010	100 793	59	11	36	11	4	1	2	1	3	
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
Total 2011	119	9	0	0	0	0	0	0	1	19	4

Research and Education program

University of California, CDFA, USDA

Outreach

Articles, brochures, posters
UC IPM and Coop.Ext. websites
Guide to vineyard tortricids

Monitoring

Commercial pheromone lures
Evaluate bait traps
Degree-day model validation

Sanitation

Fate of larvae in wine making
process

Biology

Traps and field surveys
Alternate host surveys

Management

Insecticide trials
Mating disruption
Beneficial insects

Newsletter: <http://ucanr.org/NapaLobesia>

EGVM Websites: cesonoma.ucdavis.edu & cenapa.ucdavis.edu

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.cdfa.ca.gov>

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