

European grapevine moth cooperative program, 2010- 2016: a model collaborative effort

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*Making a Difference
for California*

EGVM Eradication

- USDA APHIS declared EGVM eradicated from California in August of 2016
- A post-eradication monitoring program is in place

Damage observed in September 2009 in Oakville, Napa County

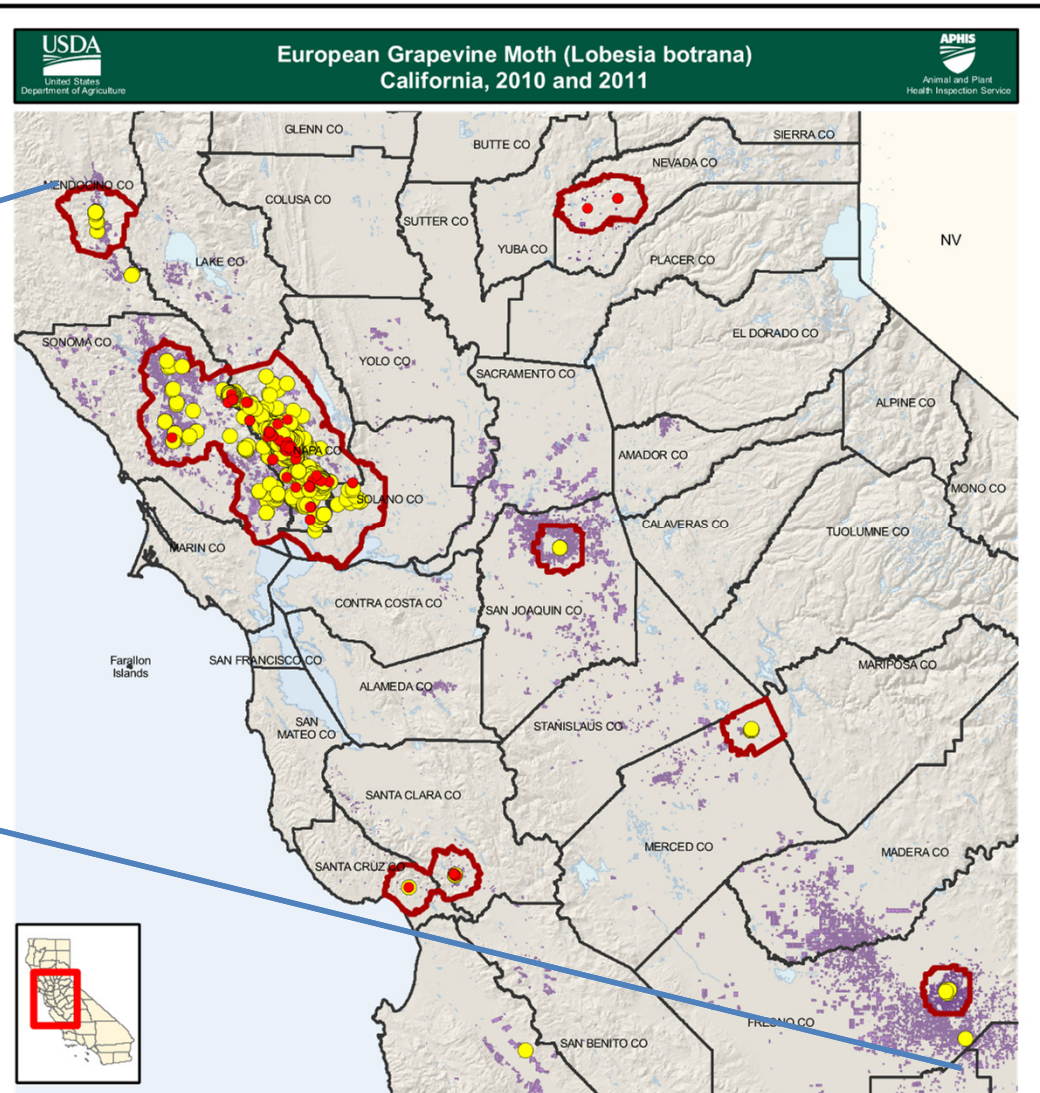


- Growers noticed unusual damage in 2008.
- European grapevine moth, *Lobesia botrana*, was first identified on 15 September 2009.

2009: detected in the Napa Valley

2011: detected in 11 counties

(10 counties in quarantine)



- Male catches 2010
- Male catches 2011

Program Detection Trapping

Quarantine area:

- 2010/11: 5 mi from a find
- 2012/16: 3 mi from a find

Traps deployed in vineyards:

- Quarantine area: ~25 traps/mi²
- Outside quarantine: ~9 traps/mi²

Traps deployed in urban areas:

- ~5 traps/mi²

- **We do not know** the pathway of introduction into California
- Movement in California is associated with:
 - Movement of infested winegrapes.
 - Movement of infested machinery.
 - Movement of vineyard wooden stakes.

Dual Control Program

- Treatments:

- To Vineyards within 500 meters of a find

- In 2010-12: insecticide & MD treatments any find since 2009
 - In 2012-2016: Insecticide treatments finds previous 2 years, MD finds from previous year.

1. Application of Insecticides:

1st generation: 1 conventional or 2 (or 3) organic insecticides.

2nd generation: 1 conventional or 2 organic insecticides.

Insecticides used:

1. Conventional: methoxyfenozide, chlorantraniliprole
2. Organic: Bt, spinosad

2. Mating disruption – Isomate EGVM

CDFA treated urban areas

- Treatment area:
500 meter radius from EGVM detection.
- Homeowner was given the following choices:
 - ✓ Fruit/flower removal.
 - ✓ Bt applications.
 - ✓ Mating disruption in selected County locations.



Year	Napa	Sonoma	Solano	Mendo- cino	Fresno	Merced	San Joaquin	Santa Cruz	Santa Clara	Monte- rey	Nevada
<i>Number of male moths (number of traps)</i>											
2009	5 (248)	<i>data available</i>									
2010	100.831 (3.882)	59 (6.932)	11 (1.514)	36 (1.594)	11 (8.648)	4 (860)	2 (3.522)	1 (449)	3 (596)	1 (1.733)	0 (55)
2011	113 (4.930)	9 (9.048)	0 (2.644)	0 (2.237)	0 (11.013)	0 (1.502)	0 (7.537)	1 (552)	19 (1.346)	0 (2.651)	4 (1.902)
2012	77 (4.706)	0 (8.393)	0 (1.844)	0 (1.432)	0 (8.630)	0 (86)	0 (4.714)	0 (318)	0 (658)	0 (2.033)	0 (920)
2013	40 (11.621)	0 (6.906)	0 (1.383)	0 (1.430)	0 (7.651)	0 (1.265)	0 (1.301)	0 (202)	0 (267)	0 (1.998)	0 (60)
2014	0 (11.656)	1 (7.046)	0 (1179)	0 (1.474)	0 (7.840)	0 (828)	0 (4.243)	0 (144)	0 (252)	0 (1.978)	0 (635)
2015	0 (11.627)	0 (6.271)	0 (502)	0 (1.230)	0 (8.738)	0 (870)	0 (4.410)	0 (100)	0 (253)	0 (1.963)	0 (66)
2016	0 (11.603)	0 (6.900)	0 (ND)	0 (ND)	0 (ND)	0 (ND)	0 (ND)	0 (ND)	0 (ND)	0 (ND)	0 (ND)

ND = No preliminary

Year	Napa
	Insecticide-treated hectares (hectares under MD)
2010	
2011 ^a	9.590 (5.382)
2012 ^b	11.330 (9.336)
2013 ^c	4.775 (1.133)
2014 ^c	1.335 (772)
2015 ^c	790 (0)

^a Treatment areas are within 500 m of any detection in 2010 or 2011.

^b Treatment areas are within 500 m of any detection in 2010, 2011 or 2012.

^c Treatment acres are within 500 m of any detection in current and previous 2 years.

Final Conditions for Deregulation

- 6 consecutive generations without a find (=3 years)
 - Insecticide treatments allowed and recommended for the 1st and 2nd generation
 - **NO** mating disruption allowed
- Monitoring
 - Trap density: **100 traps/mile²**
 - for at least 4 full generations (eg. 1st and 2nd flight)

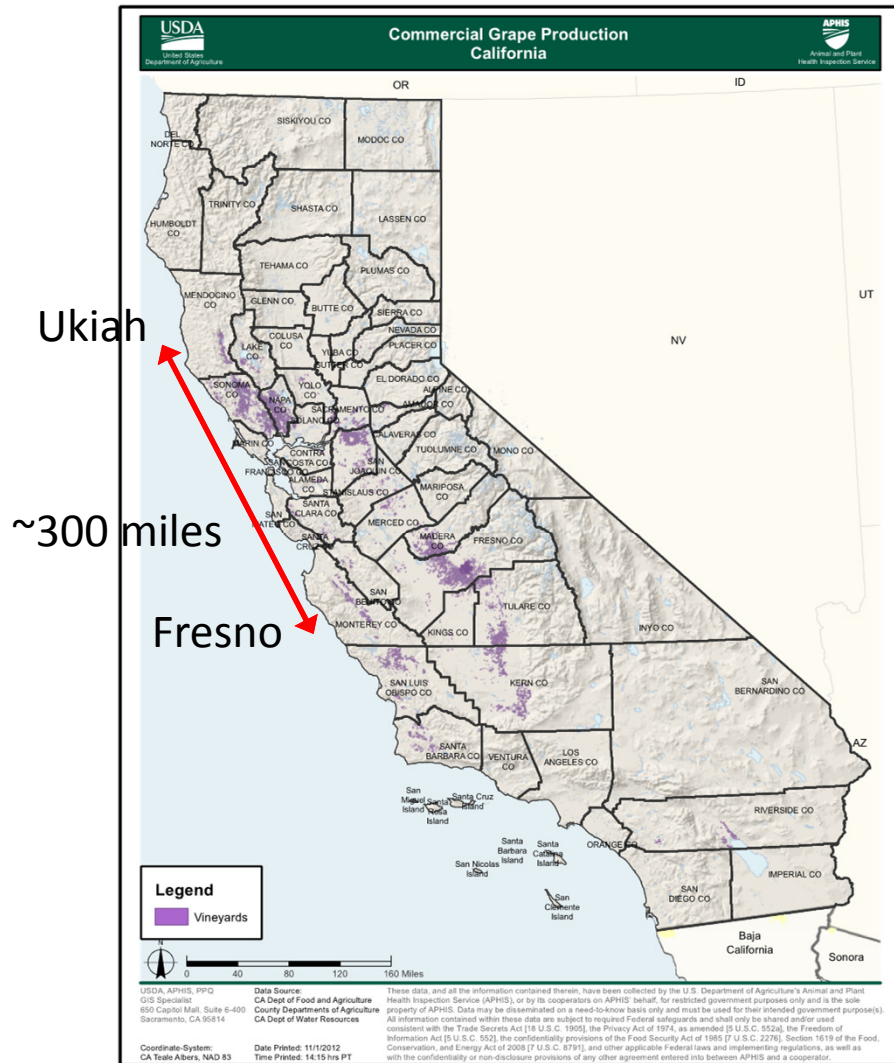
Alternative hosts in California



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

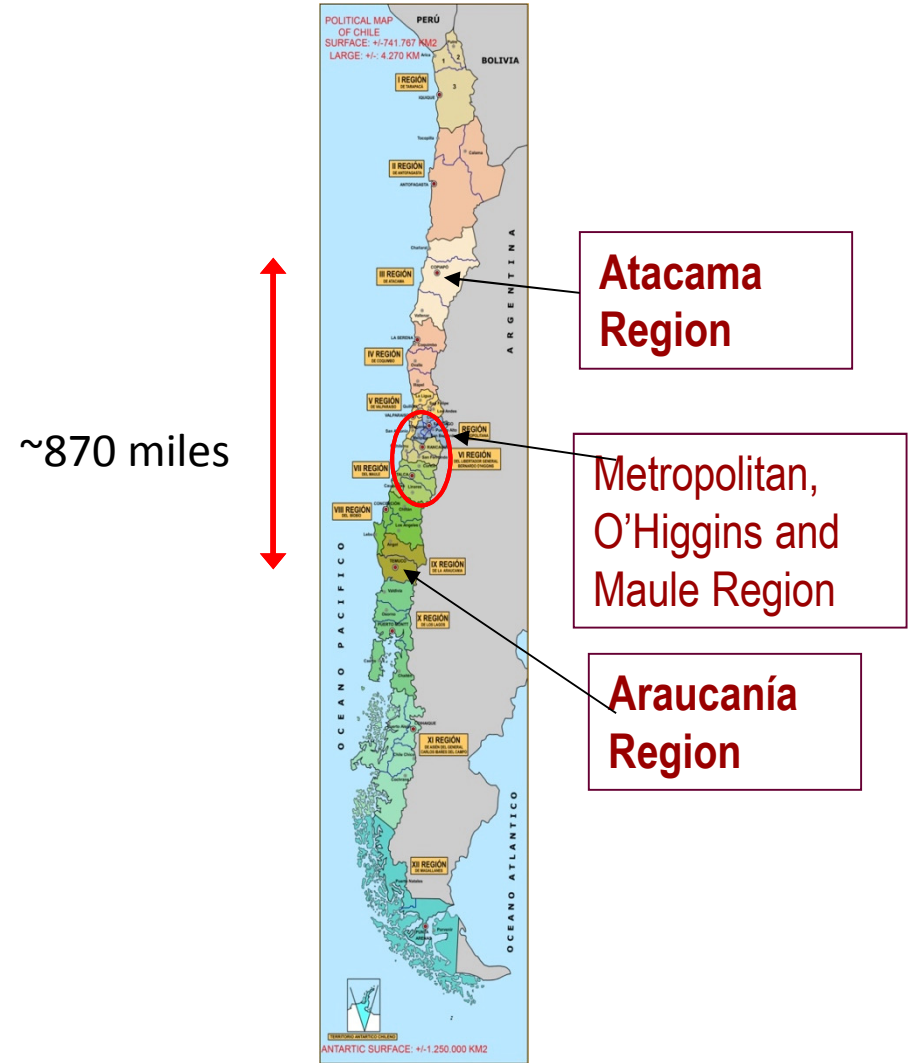


California



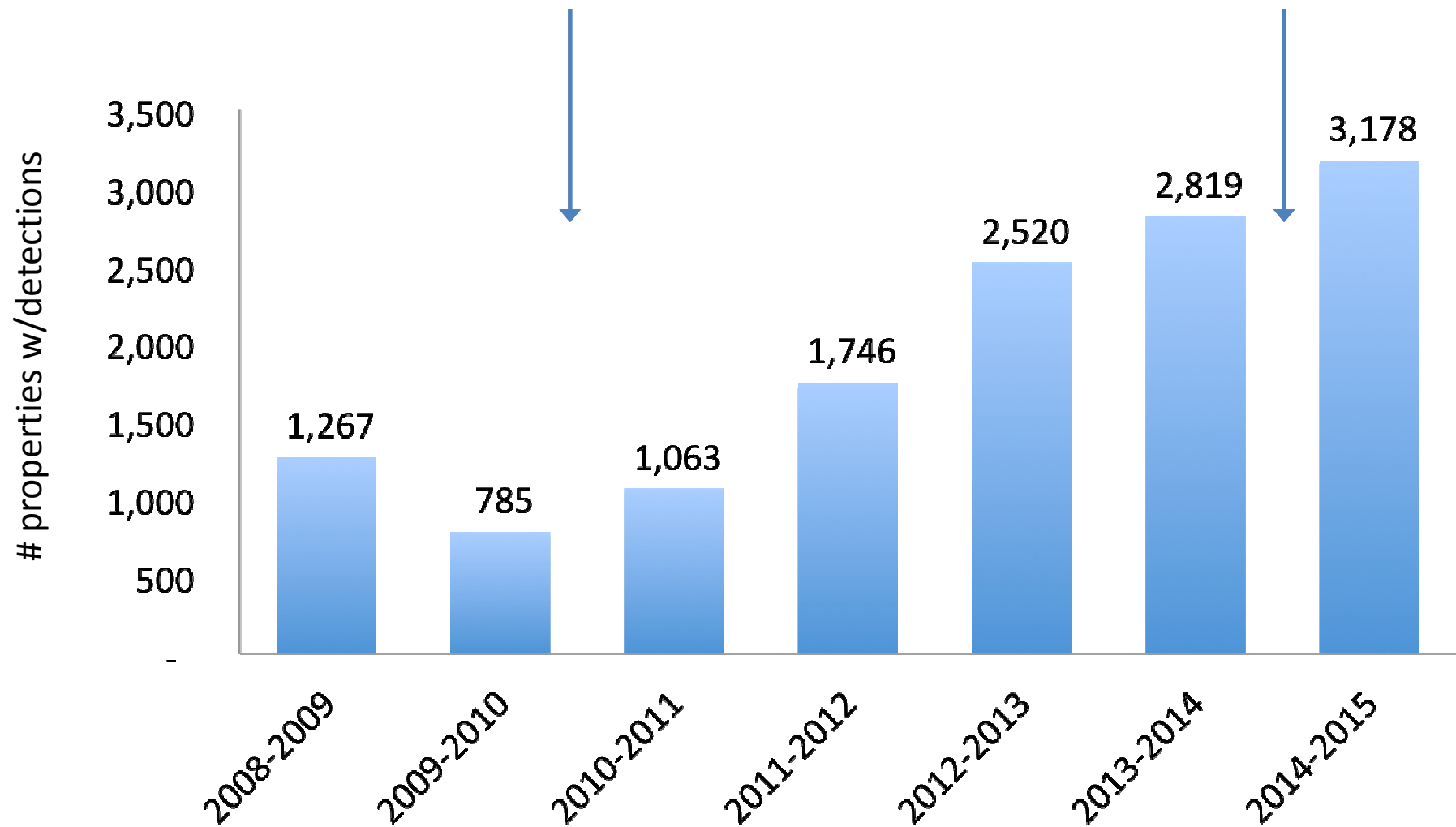
163,696 sq. miles
878,000 grape acreage
Initially ~17% grape acreage under regulation (~150,000 acres)

Chile



286,398 sq. miles
451,353 grape acreage
Initially ~ 65% grape acreage under regulation (~300,000 acres)

Chilean properties with detections



Differences



75% of rural homes in Chile have backyard vines

Other differences

- Infrastructure problems:
 - Small growers lack resources, some only glean
 - Limits to communication for insecticide timing
 - No extension service, all information provided by SAG (regulatory agency)
- Insecticides
 - List of 45 active ingredients
 - Efficacy & residue data provided by manufacture
 - Timing issues
- Large canopies: ↓insecticide coverage
- Pheromone dispensers from several companies: BASF RAK, Suterra puffers, Sin-Etsu Isonet-L
- Grower disincentives:
 - Table grape growers need to fumigate to export
 - Winegrape growers can control populations w/o eradicating them; eradication program of 5 treatment + pheromone is too expensive

Conclusion

- European grapevine moth was declared eradicated from California in August 2016.
- 2017 Post eradication monitoring
- Strengths of the program:
 - Collaboration between USDA APHIS, CDFA, County Agriculture Commissioners, growers, PCA, UC and international scientists.
 - A control dual approach of mating disruption and insecticide treatments.

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