

European Grapevine Moth Biology and Management



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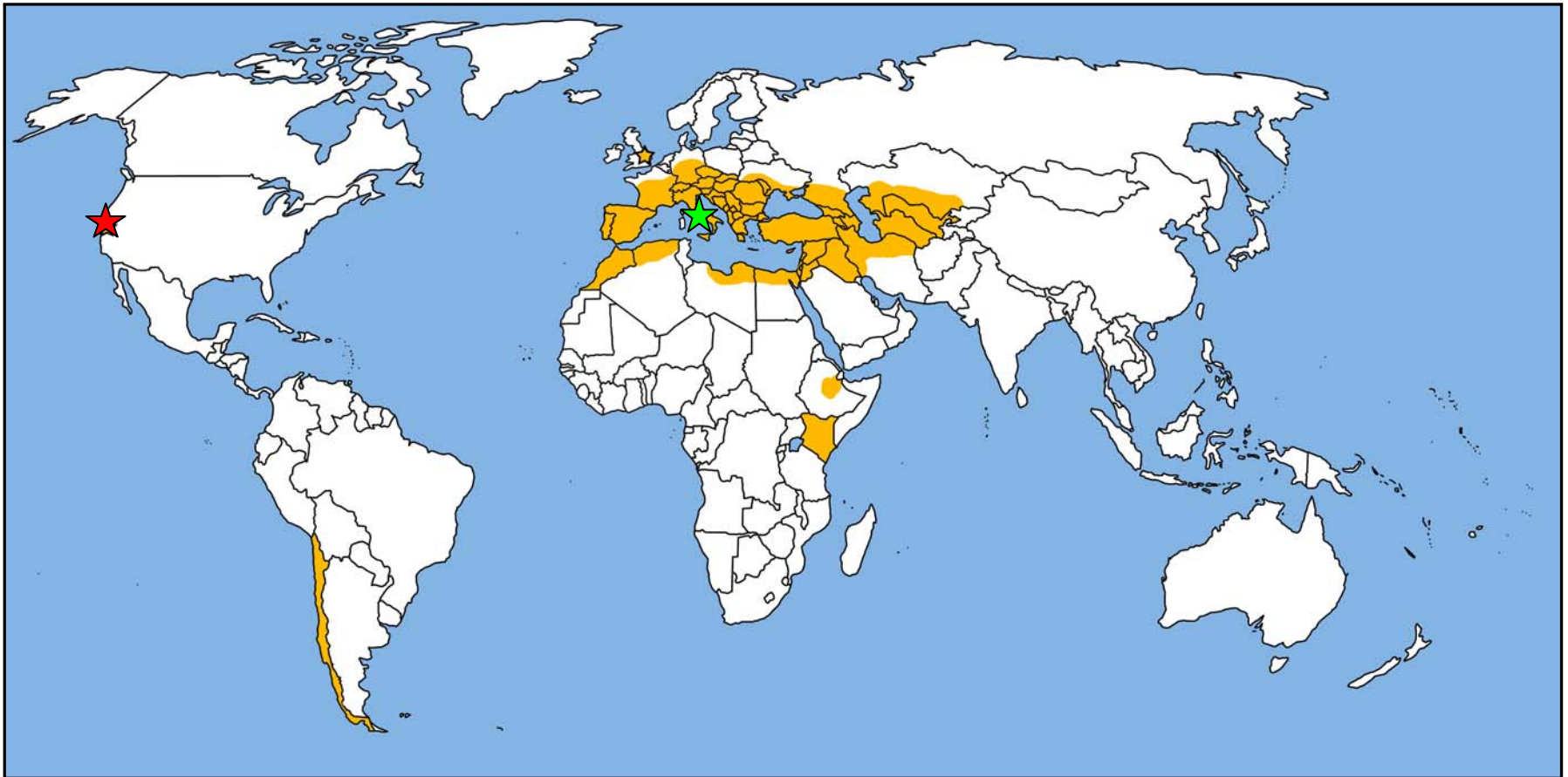


Lobesia botrana



Distribution of *Lobesia botrana*

★ Origin: Italy



Adapted from Distribution Maps of Pests, Commonwealth Institute of Entomology (1974) with additions of subsequent findings.

32 properties in Napa County

Most in Oakville/Rutherford

Few in East Napa (3rd Ave.)

Statewide monitoring in 2010



Adults fly at dusk (>54° F)

Mating occurs in flight

Most females mate once per lifetime



Development thresholds:

Upper: 86° F

Lower: 50° F

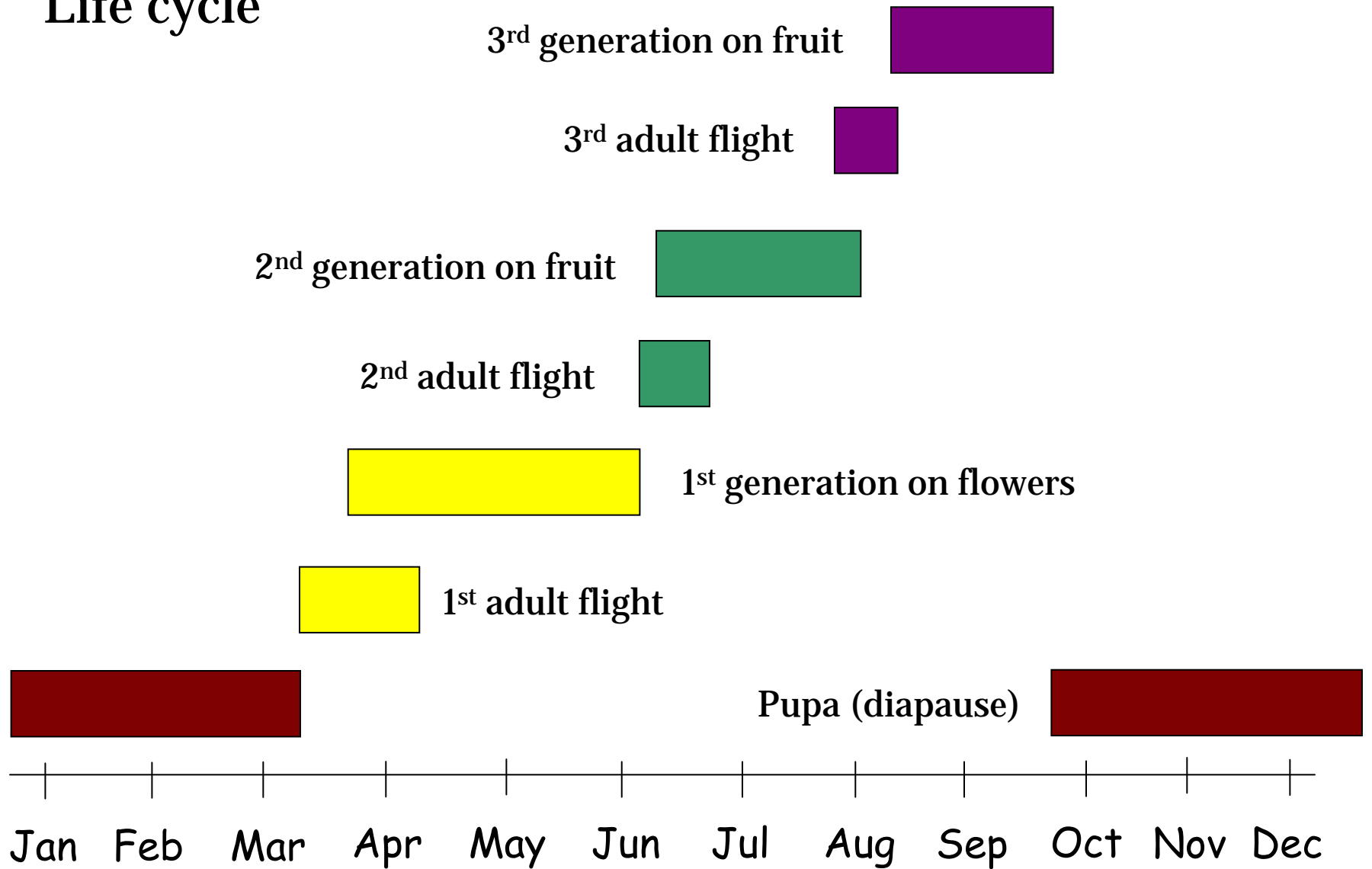
Optimal: 70-84° F

RH: 40-70%

Biology and Life Cycle



Life cycle



adapted from Maher, 2002 PhD thesis, Aquitaine, France

Oct to Mar

Pupa (diapause)

Withstands cold temperatures



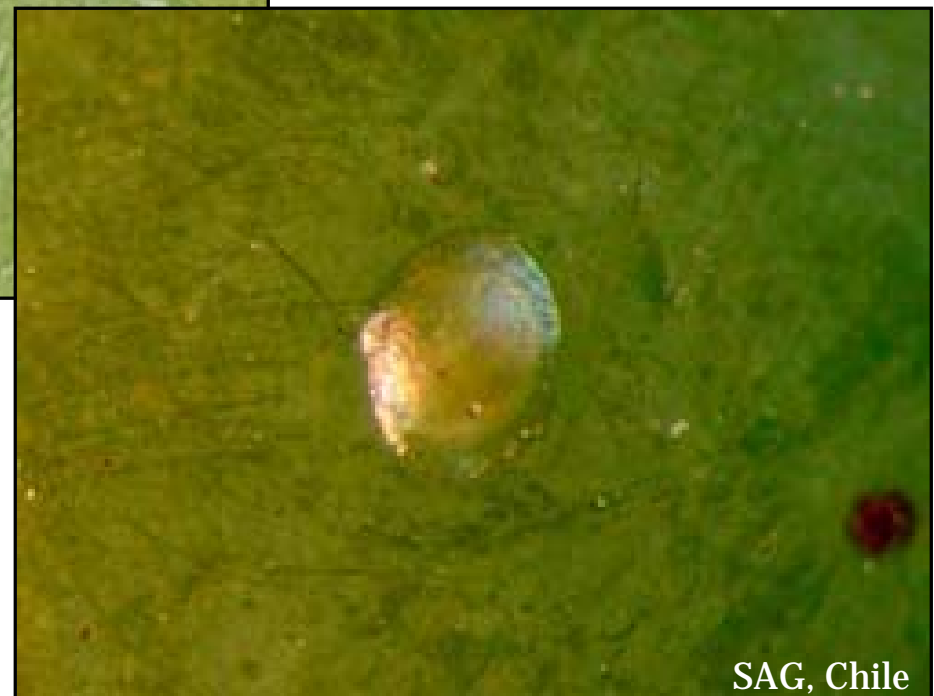
JK Clark

Eggs

Laid singly

35 eggs/day for 6-7 d.

80-160 per ♀
per lifetime



Mar-Apr

1st Flight

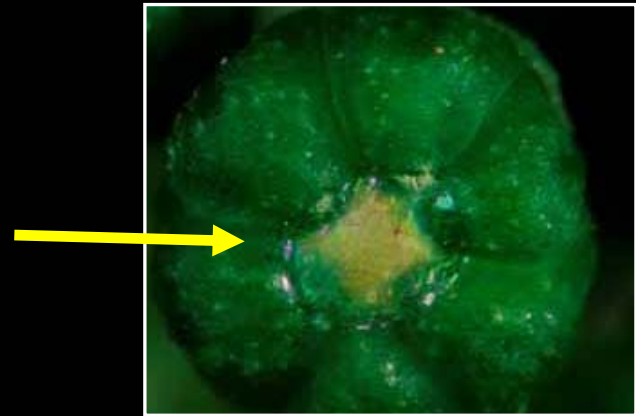
Apr-Jun

1st generation

Eggs laid in flowers

Larvae feed in flowers

Pupae in flower cluster, leaf lobe,
under bark



Apr-Jun: 1st generation



Apr-Jun: 1st generation



Andrea Lucci



Bruno Bagnoli



Bruno Bagnoli

Jun-Jul

2nd Flight

Jun-Aug

2nd generation

Eggs laid on green fruit

Larvae feed in fruit

Pupae in bunches, under bark

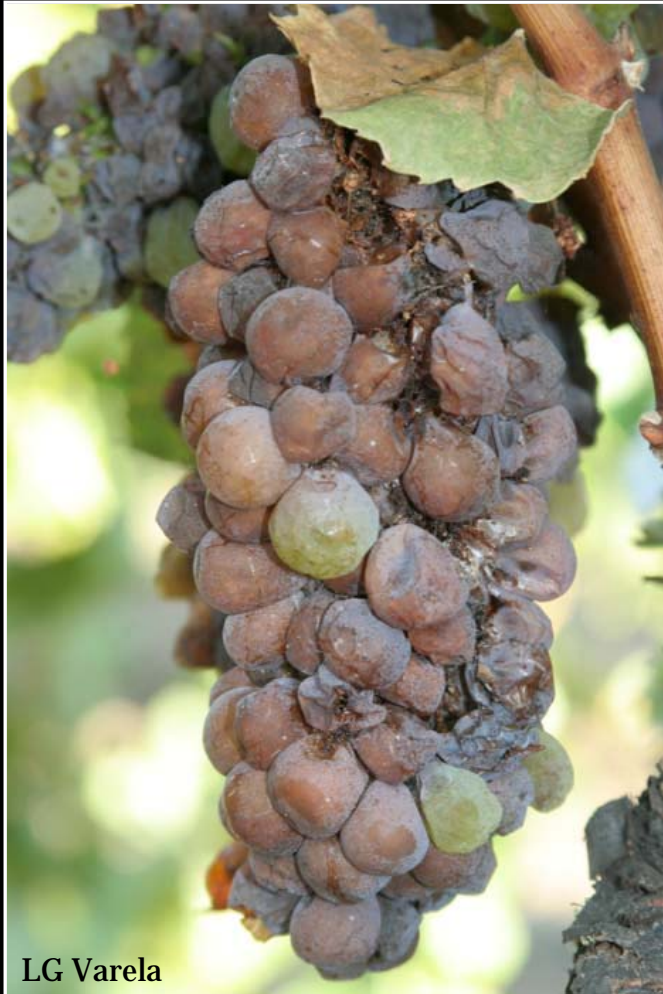


Jul-Aug

3rd Flight

Aug-Oct

3rd generation



LG Varela



Eggs laid on ripening fruit

Larvae feed in ripening fruit

Botrytis bunch rot develops

Pupae overwinter under bark, in
soil crevices

Aug-Oct: 3rd generation



JK Clark



JK Clark

Oct to Feb/Mar

Pupa (diapause)

Night length > 11 hours

Withstands cold temperatures



JK Clark

V. vinifera

Daphne gnidium

Olive

Blackberry

Gooseberry

Black & Red currant

Cherry

Prune

Persimmon

Kiwi

Pomegranate

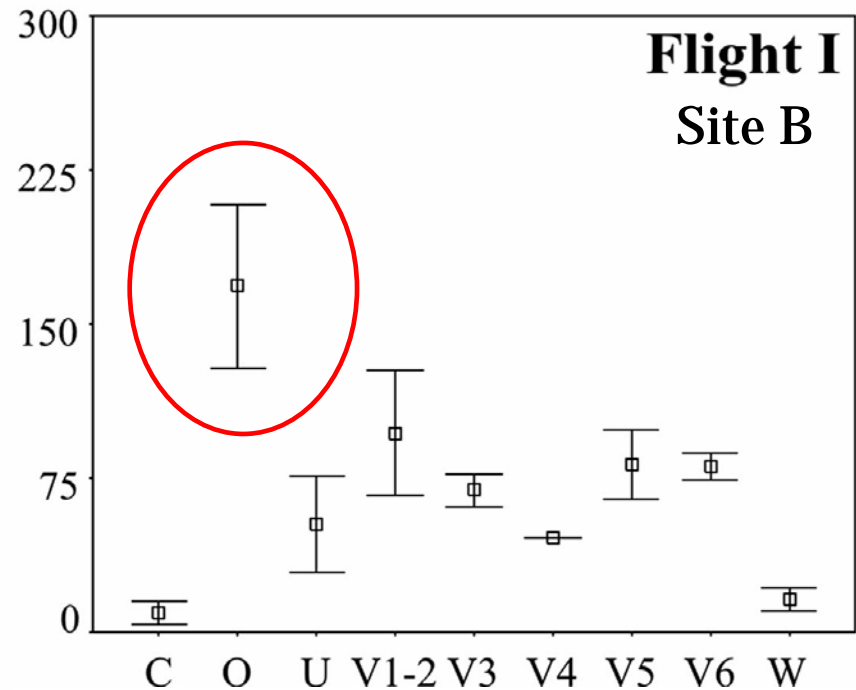
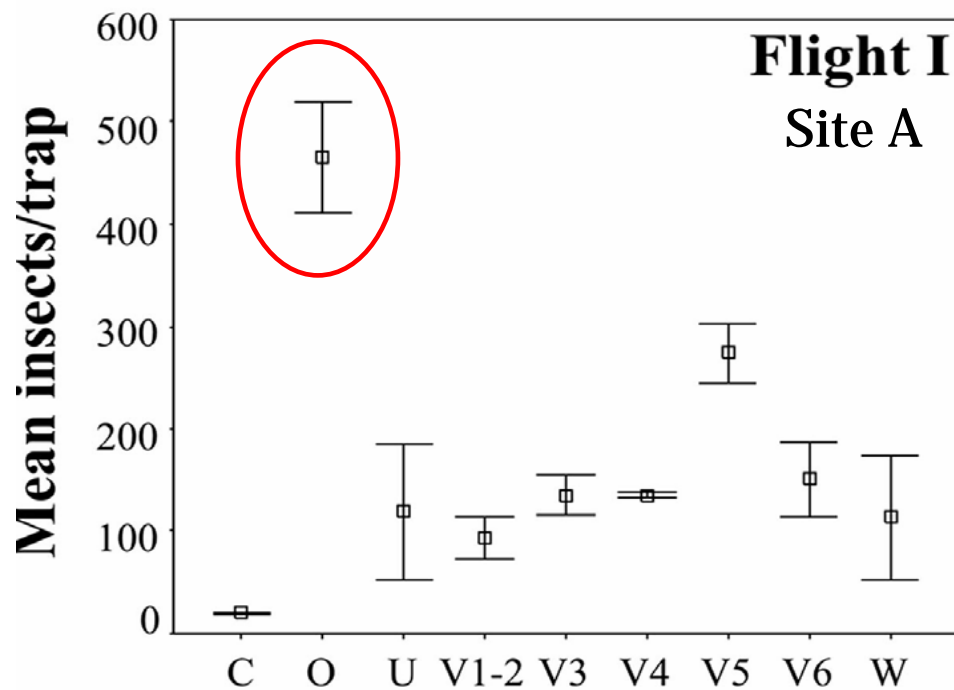
Daphne gnidium



JF Gaffard

Olive flowers host 1st generation in Italy and Greece—
in California?





C= cereal
 O= olive
 V= vineyard
 U= uncultivated
 W= woodlots



Sciarretta et al., 2008, Spatial analysis of *L. botrana* in Central Italy

Unique characteristics of *Lobesia botrana*

Lay eggs singly...

NOT in masses



Orange Tortrix



Omnivorous
Leafroller



Unique characteristics of *Lobesia botrana*

Feed on flowers and fruit...



NOT on leaves



LG Varela



LG Varela

Unique characteristics of *Lobesia botrana*

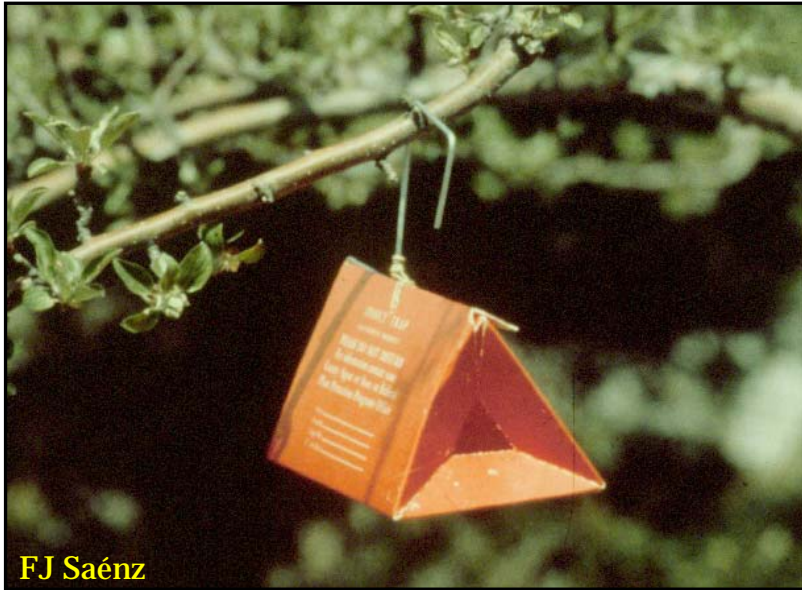
Overwinter as pupae under the bark...



not as larvae in mummied berries or on spurs



Monitoring



FJ Saénz

Delta Traps to monitor male flights

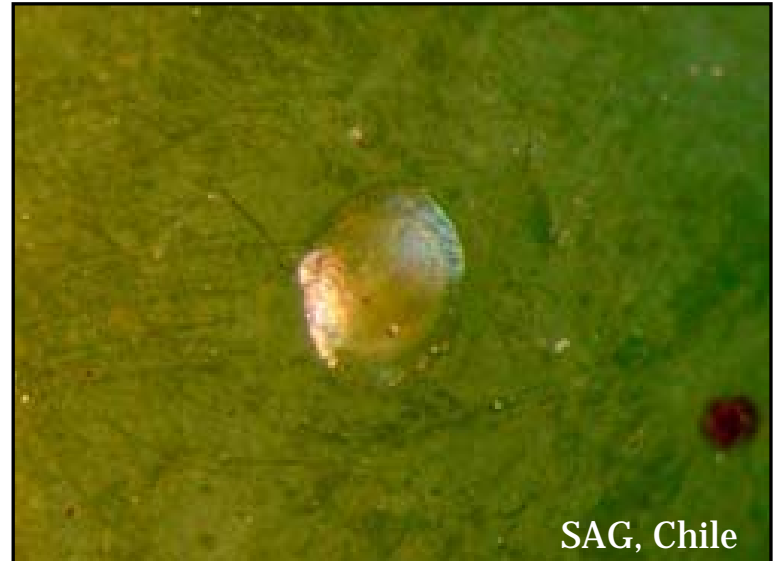
Start before bud break

High in the canopy (>5 ft)

Check traps weekly and Plot catches



FJ Saénz



SAG, Chile

Monitor for Eggs

1st generation

Monitor the flowers
Hatch begins 5-10 days;
emergence over 3-5 weeks

2nd & 3rd generations

Monitor the fruit
Egg hatch in 3-7 days

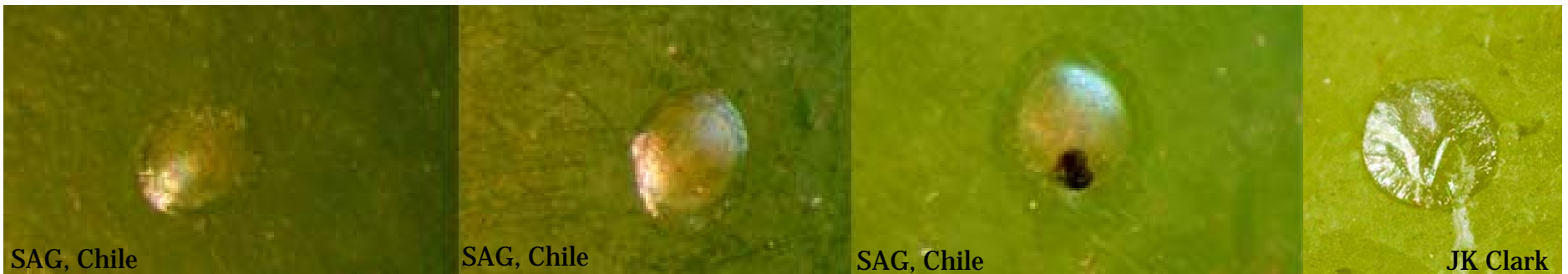
As they mature, the eggs change color

White

Yellow

“Black head”

Hatched egg



Insecticides (mainly larvicidal)

Ovicide: apply to plant before egg is laid

Larvicide: most effective against young larvae

JK Clark



Insecticide

OMRI

Ovicide/
Larvicide

Toxicity
Predator/Parasitoid

Insect growth regulator (Ecdysone mimic)—IRAC grp. 18

Intrepid (methoxyfenozide)	N	Y / Y	low/low
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Microbial (disrupts midgut membranes)—IRAC grp. 11

Dipel (<i>Bt</i> Kurstaki)	Y	N / Y	low/low
Biobit (<i>Bt</i> Kurstaki)	Y	N / Y	low/low

Diamides (nerve and muscle targets)—IRAC grp. 28

Altacor (chloranthraniprole)	N	Y / Y	low/low
Belt (flubendiamide)	N	N / Y	low/low

Sodium channel blockers (paralysis)—IRAC grp. 22

Avaunt (indoxacarb)	N	N / Y	low/ med
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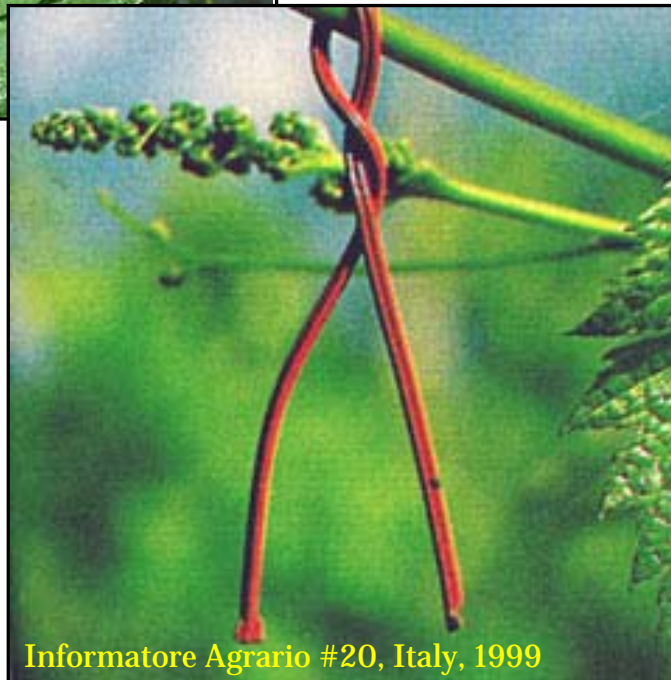
Spinosyns (nicotinic AChR—nervous system block, paralysis)—IRAC grp. 5

Success (spinosad)	N	N / Y	low/ med-high
Entrust (spinosad)	Y	N / Y	low/ med-high
Delegate (spinetoram)	N	N / Y	med/ high

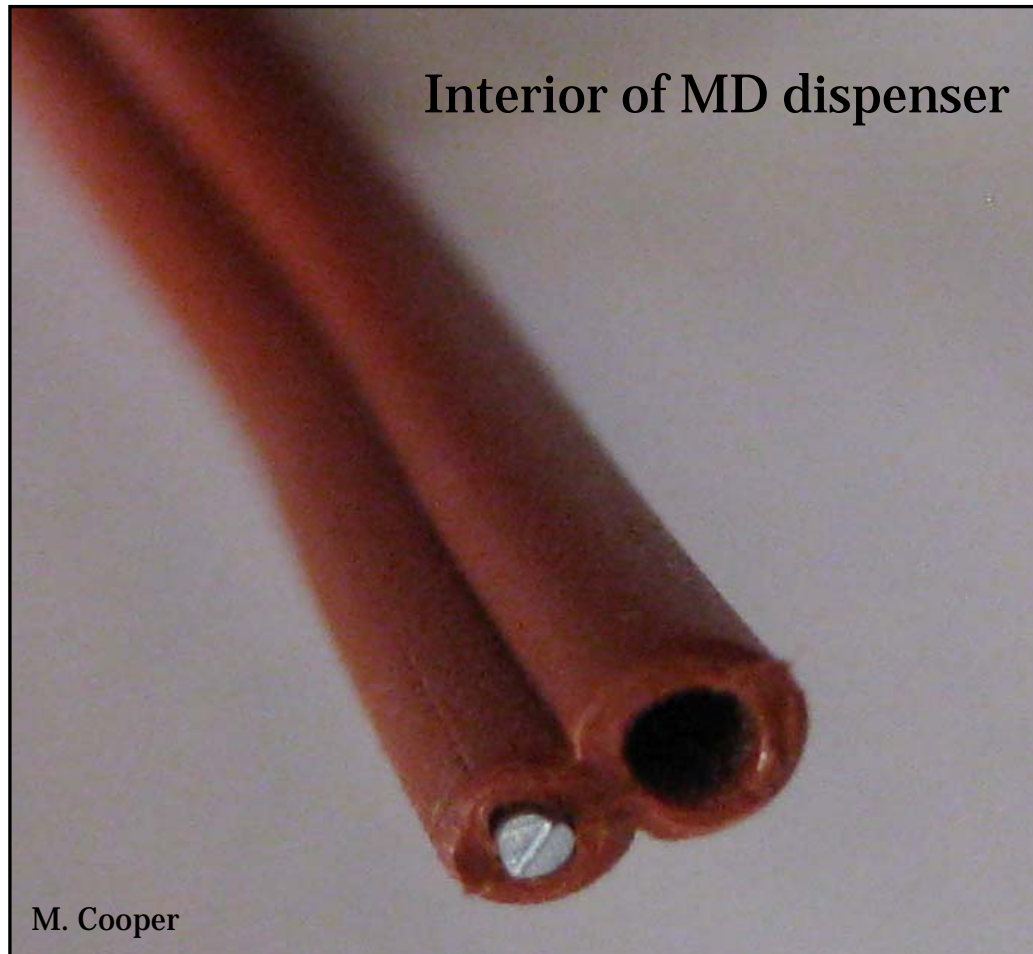
Mating Disruption

Not yet registered in CA

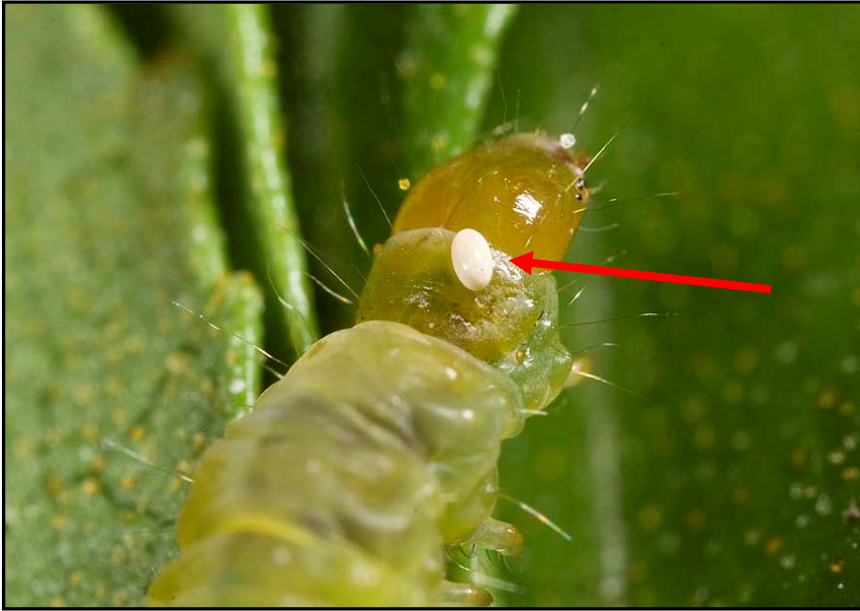
Best as Area-wide program
& when populations are low



Pacific Biocontrol Corporation, Shin-Etsu Fine Chemicals Division

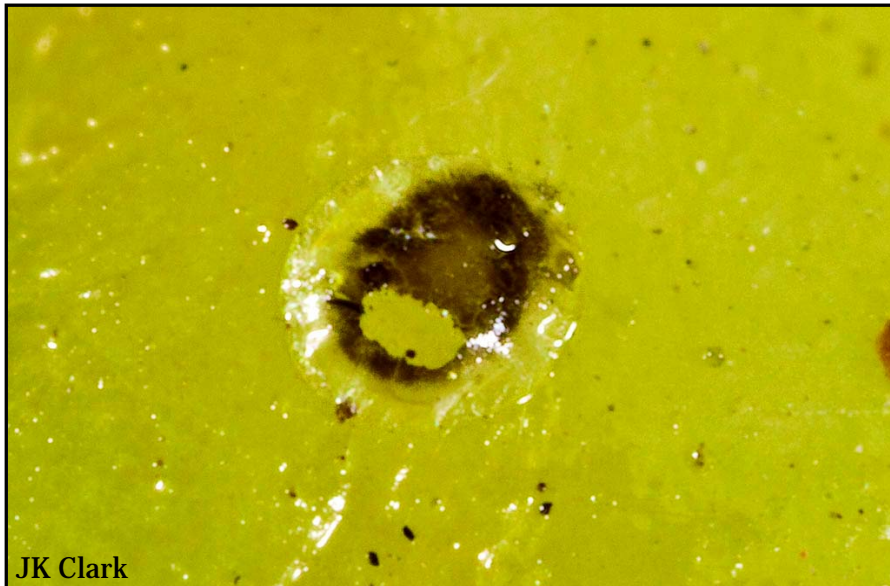


Biological Control



Egg parasite:
Trichogramma sp.

Larva parasite:
Tachnid fly
Phytomyptera nigrina

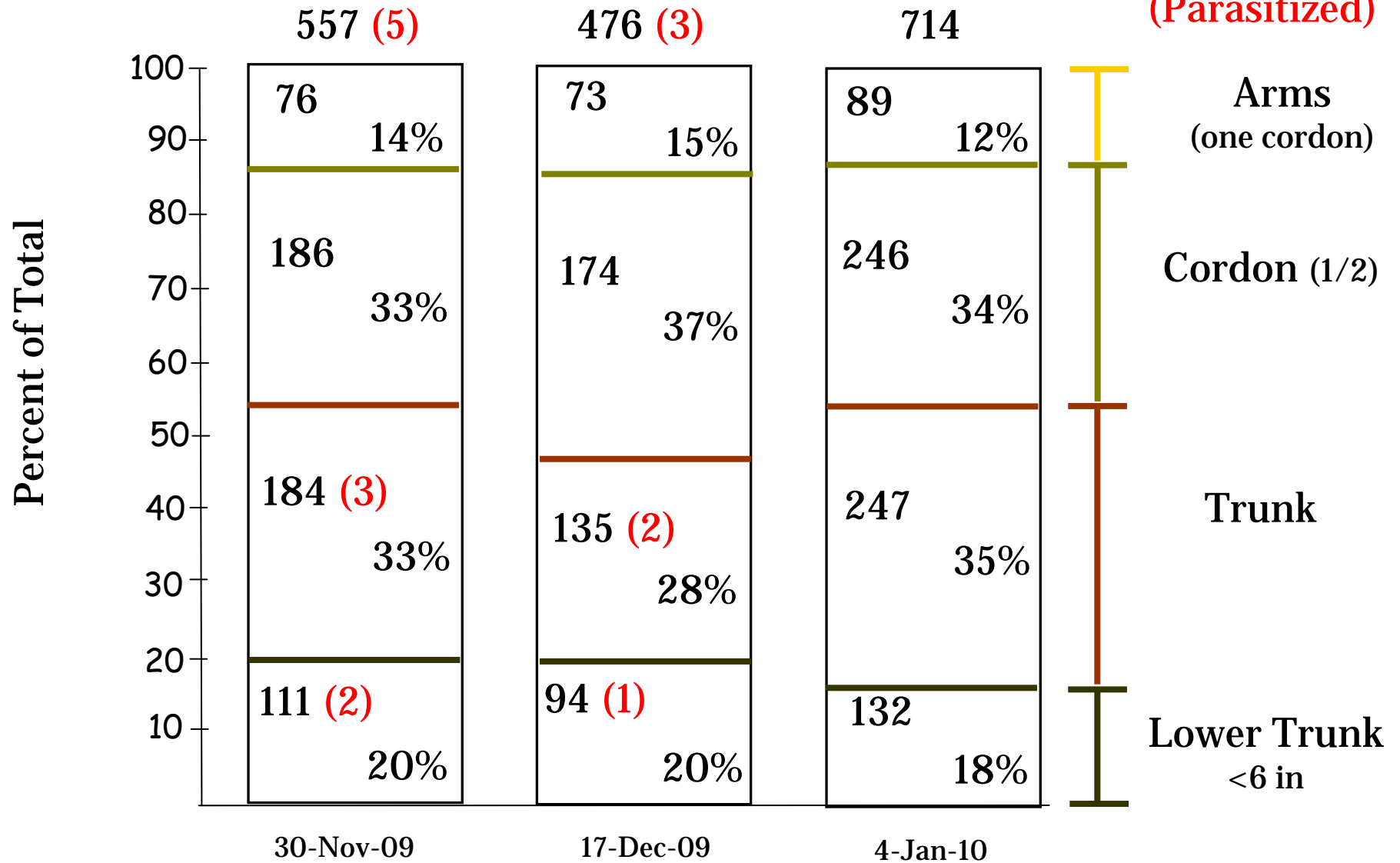


Pupa parasites:
Campoplex capitator &
Dicaelotus infexus
(Ichneumonidae)

Dibrachys cavus &
D. affinis
(Pteromalidae)

Pupa collections (Varela, Cooper, & Daane)
 Oakville, CA
 10 vines per sample date

Vine sections
 Total
 (Parasitized)



Sanitation



www.fatcow.com.au

Additional Information

UC IPM, Grape Pest Management Guidelines:

<http://www.ipm.ucdavis.edu/EXOTIC/eurograpevinemoth.html>

SUBSCRIBE TO OUR NEWSLETTER:

<http://cenapa.ucdavis.edu/newsletterfiles/newsletter2084.htm>

Napa County Agricultural Commissioner:

<http://www.countyofnapa.org/agcom>

California Department of Food and Agriculture:

<http://www.cdfa.ca.gov/PHPPS/egvm/index.html>