

Insecticides for *Lobesia botrana* on grape

Insecticide [†]	Rate (per acre)	R.E.I (hours)	P.H.I. (days)	OMRI ¹ Listed	Ovicidal ²	Larvicidal ²	Activity
Insect Growth Regulator - Ecdysone mimic (IRAC Group 18)							
Intrepid® 2F (methoxyfenozide)	8-16 fl oz	4	30	no	yes	yes	Ingestion
Microbial insecticide (IRAC Group 11)							
Bacillus thuringiensis Kurstaki (Bt)	label rates	4	0	yes	no	yes	Ingestion
Biobit® HP, Deliver®, Dipel® DF, Javelin® WG							
Diamides (IRAC Group 28)							
Altacor® (chlorantraniliprole)	2-4.5 oz	4	14	no	yes	yes	Mainly Ingestion, slight contact
Belt® SC (flubendiamide)	3-4 fl oz	12	7	no	no	yes	Ingestion
Sodium channel blockers (IRAC Group 22)							
Avaunt® (indoxacarb)	5-6 oz	12	7	no	no	yes	Ingestion
Spinosyns (IRAC Group 5)							
Success® (spinosad)	4-8 fl oz	4	7	no	no	yes	Ingestion
Entrust® (spinosad)	1.25-2.5 oz	4	7	yes	no	yes	Ingestion
Delegate® WG (spinetoram)	3-5 oz	4	7	no	no	yes	Ingestion, Contact, Translaminar
Avermectins (IRAC Group 6)							
Agri-Mek® 0.15EC (abamectin)	8-16 fl oz	12	28	no	no	yes	Ingestion
Pyrethroids (IRAC Group 3)							
Baythroid® XL (beta-cyfluthrin)	2.4-3.2 fl oz	12	3	no	no	yes	Contact
Brigade® WSB (bifenthrin)	8-16 oz	12	30	no	no	yes	Contact
Renounce® 20 WP (cyfluthrin)	3-4 oz	12	3	no	no	yes	Contact, Ingestion
Tombstone Helios® (cyfluthrin)	2.4-3.2 fl oz	12	3	no	no	yes	Contact
Carbamates (IRAC Group 1A)							
* Lannate® SP (methomyl)	0.5-1 lb	7(21) ³ days	14	no	yes	yes	Contact
* Sevin® XLR Plus (carbaryl)	2 qt	12	7	no	no	yes	Contact ⁵
* Sevin® 80S or 80 WSP (carbaryl)	2.5 lb	12	7	no	no	yes	Contact ⁵
Organophosphates (IRAC Group 1B)							
Imidan® 70W (phosmet)	1-2.125 lb	14 days	7 (14) ⁴	no	no	yes	Contact

[†]Restricted material ¹Access <http://www.mrlatabase.com> for information on MRL's for export. MRL information may also be obtained from chemical company representatives.

¹ Approved for use in organic vineyards

² **Ovicidal:** applied at egg deposition; **larvicidal:** applied at egg hatch

³ REI is 21 days for applications on or after August 16

⁴ PHI is 14 days for rate(s) greater than 1.33 lb

⁵ sprays concentrated on the bunch can result in visible residues

Insecticides used in Europe not available in California for use on grapes

Organophosphate (IRAC Group 1B)

Lorsban® (chlorpyrifos) is registered in CA for use only as delayed dormant or post-harvest application.

Insect Growth Regulator - Chitin synthesis inhibitor (IRAC Grp 15)

(flufenoxuron) is not registered in the US.
(lufenuron) is not registered in the US.

Insect Growth Regulator - Ecdysone mimic (IRAC Group 18)

Confirm® 2F (tebufenozide) withdrawn from US market by Dow AgroSciences; replaced with Intrepid® 2F.

Carbamate (IRAC Group 1A)

(fenoxycarb) is only registered in the US as a fire ant bait (1% active ingredient).

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Insecticide [†]	Toxicity			Signal word	Tank mix	Max. applications ¹¹	Max lbs AI (Max product) per acre per year	Minimum interval between applications (days)
	Predator	Parasitoid	Bee					
Insect Growth Regulator - Ecdysone mimic (IRAC Group 18)								
Intrepid® 2F (methoxyfenozide)	low	low	low	Caution	yes	No	0.75 lb (48 fl oz)	10-18
Microbial insecticide (IRAC Group 11)								
Bacillus thuringensis Kurstaki (Bt)	low	low	low	Caution	yes	No	No maximum	3-14
Biobit® HP, Deliver®, Dipel® DF, Javelin® WG								
Diamides (IRAC Group 28)								
Altacor® (chlorantraniliprole)	low	low	low	None ⁶	yes	4	0.2 lb (9 oz)	7
Belt® SC (flubendiamide)	low	low	low	Caution	yes	3	0.375 lb (12 fl oz)	5
Sodium channel blockers (IRAC Group 22)								
Avaunt® (indoxacarb)	low	medium	high	Caution	yes	2	0.22 lb (12 oz)	21
Spinosyns (IRAC Group 5)								
Success® (spinosad)	low	medium to high	medium	None ⁶	yes ⁷	No	0.45 lb (29 fl oz)	5
Entrust® (spinosad)	low	medium to high	medium	Caution	yes ⁷	3 in 30 days	0.375 lb (7.5 oz)	5
Delegate® WG (spinetoram)	medium	high	high	Caution	yes	5	0.305 lb (19.5 oz)	4
Avermectins (IRAC Group 6)								
Agri-Mek® 0.15EC (abamectin)	low	medium to high	high	Warning	yes	2	0.038 lb (32 fl oz)	21
Pyrethroids (IRAC Group 3)								
Baythroid® XL (beta-cyfluthrin)	high	high	high	Warning	yes ^{8,9}	4	0.10 lb (12.8 fl oz)	14 (3.2 fl oz rate) ¹²
Brigade® WSB (bifenthrin)	high	high	high	Warning	yes	No	0.10 lb (16 oz)	
Renounce® 20 WP (cyfluthrin)	high	high	high	Caution	yes ^{8,9}	No	0.20 lb (16 oz)	14 (4 oz rate) ¹²
Tombstone Helios® (cyfluthrin)	high	high	high	Warning	yes ^{8,9}	4	0.20 lb (12.8 fl oz)	14 (3.2 fl oz rate) ¹²
Carbamates (IRAC Group 1A)								
* Lannate® SP (methomyl)	high	high		Danger-Poison	yes ¹⁰	5	4.5 lbs (5 lbs)	
* Sevin® XLR Plus (carbaryl)	high	high	high	Caution	yes ¹⁰	5	10 lbs (10 qt)	7
* Sevin® 80S or 80 WSP (carbaryl)	high	high	high	Warning	yes ¹⁰	5	10 lbs (12.5 lb)	7
Organophosphates (IRAC Group 1B)								
Imidan® 70W (phosmet)	high	medium to high	high	Warning	yes	No	4.55 lbs (6.5 lb)	

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⁶ Reduced Risk

⁷ avoid acidifying buffers

⁸ see label for max rates for combination of beta-cyfluthrin and cyfluthrin to same crop in same year

⁹ except with products that release free chlorine or contain boron

¹⁰ not compatible with Bordeaux mix, triphenyltin hydroxide, lime sulfur, Rayplex iron, casein lime spreaders and highly alkaline solutions

¹¹ Maximum applications per season unless otherwise noted

¹² Maximum product allowed per 14 day interval



Prepared by Monica L. Cooper, Viticulture Farm Advisor, UC Cooperative Extension, Napa County and Lucia G. Varela, UC IPM Advisor, North Coast. Not all registered products are listed. Use of trade names is in no way an endorsement of the product, nor should it be considered a recommendation. Always consult the product label before making any pesticide application. We gratefully acknowledge editorial support from John Cooledge, Deputy Agricultural Commissioner, Napa County.