

**GRAPE INSECT CONTROL—COMMERCIAL**

<b>Insect</b>	<b>Material and Formulation</b>	<b>Amount to Use/Acre</b>	<b>Remarks/Precautions</b>	<b>Days to Harvest</b>
<b>DORMANT</b>				
Grape Scale	Look for weakened vines with loose trunk bark, peel bark off and check for grape scale. Flag vines that have live grape scale. See <b>BUD SWELL</b> about scale oil spray and <b>PREBLOOM TO BLOOM</b> for timing grape scale crawler spray.			
<b>BUD SWELL</b>				
Grape Scale	Superior oil (70 sec viscosity)	4 gal	Spray trunk and cordons of scale-infested vines by bud swell.	0
Flea Beetle	Altacor	3-4.5 oz	During bud swell, scout at least twice weekly for feeding holes in buds, or during daylight, check for presence of bluish-black flea beetle adults on buds or inspect buds after dusk for presence of cutworms. Spray weekly as long as there is more than 1% new bud damage.	14
Climbing Cutworm	Baythroid XL	2.4-3.2 fl oz		3
	Danitol 2.4EC	5 1/3-10 2/3 fl oz		21
	Delegate 25 WG	3-5 oz		7
	Sevin XLR	2 qt		7
	Success	4-8 fl oz		7
	Entrust 2SC (OMRI*)	4-6 fl oz		7
	Deliver (OMRI*)	0.5-1 lb		0
<b>BUD BREAK</b>				
Flea Beetle	<b>See BUD SWELL SPRAY</b>			
Climbing Cutworm				
<b>BY APRIL 1</b>				
Initiate grape berry moth scouting program	Place <b>3 grape berry moth pheromone traps</b> at eye level on perimeter trees of woods adjacent to vineyard (overwintering site of grape berry moth) and check twice weekly to record first consistent moth emergence (mid April) = <b>GBM biofix</b> . Be sure to keep trap bottoms clean and replace lures monthly or every two months for long-life lures. After GBM biofix date, begin <b>calculating number of daily degree days (DD) using base 47°F</b> = DD = (maximum daily temperature + minimum daily temperature) / 2 – 47.			
<b>PREBLOOM TO BLOOM</b>				
Honeybees	Since insects do not pollinate grapes, there is no danger to honeybees at this time unless they are working on blooming weeds in the vineyard. Mow drive row before spraying grapes to eliminate blooms on weeds in drive row.			
Grape Scale	Lorsban Advanced	1 qt	DO NOT make more than one application of Lorsban Advanced or another product containing chlorpyrifos per season. Spray Lorsban Advanced to trunk, canes and foliage by prebloom. Grape scale crawlers can be detected by wrapping double-stick tape around scale-infested limbs beginning in late April. Inspect tapes weekly for yellow crawlers or lift adult scale covers to check for crawler presence.	35
Flea Beetle Larvae	<b>See BUD SWELL</b>		Check for presence of flea beetle larvae on leaves any time between 4 to 10 inches of shoot growth and bloom.	
Rose Chafer	Assail 30 SG	2.5-5.3 oz	Check for rose chafer on clusters during and after bloom.	7
	Assail 70 WP	1.1 oz		7
	Danitol 2.4 EC	10 2/3 lb		21
	Imidan 70W	1 1/2-2 1/8 lb		7
	Sevin XLR	2 qt		7

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<b>BY MAY 15</b> Grape Berry Moth (eggs)	Intrepid 2F	8-16 fl oz	Move grape berry moth pheromone traps into the vineyard interior. Grape berry moth larvae usually hatch and feed on perimeter grape clusters from mid-May to early June or from 400-800 DD since GBM biofix in April. Begin weekly inspections of 100-200 clusters in the perimeter and second row for new berry moth larvae tunneling under the berry skin (damaged berry skin appears pink to purple).	30
	<b>See SHATTER for other formulations</b>			
Foliar Grape Phylloxera	Admire Pro	7-14 oz	Spray the perimeter vines in May to early June, if greater than 1% clusters damaged by berry moth. Intrepid is an insect growth regulator that provides control of grape berry moth if first applied just before initiation of grape berry moth hatch (200-300 DD) and reapplied 10 days later.	30
	Assail 30 SG	2.5 oz	Grape phylloxera crawlers produce second generation foliar galls in May. These crawlers mature and produce additional generations of crawlers on susceptible cultivars including Catawba, Cayuga White, Chambourcin, Chardone1, Delaware, Norton/Cynthiana, Reliance, Vignoles and Vidal). Apply insecticide in May against grape phylloxera crawlers when you first see expanding terminal leaves on susceptible vines with a rash-like appearance (new leaf galls forming).	7
	Danitol 2.4EC	10 2/3-21 1/3 fl oz	For Admire Pro to be effective against grape phylloxera, it must be applied to soil around vines and watered in by irrigation or rain in early April to move systemically up trunk into leaves (see <b>BUD BREAK</b> ).	21
	Movento	6-8 oz	Use of Induce® adjuvant only with Movento is prohibited once fruit are present due to adverse plant compatibility.	7
Spider Mites	Agri-Mek 0.7 SC	1.75-3.5 fl oz <b>plus</b> nonionic surfactant	Spider mite flare-ups may occur due to road dust coating grape leaves. Apply miticide between 1 and 5 spider mites per leaf.	28
	Acramite 50WS	0.75-1.0 lb		14
	Nealta 1.67 SC	13.7 fl oz		14
	Pyramite	3.3 oz (dilute rate)		7
	Vendex 50WP	1.0-2.5 lb	Make no more than 2 applications of Vendex per season no closer than 21 days apart.	28
	JMS Stylet Oil (OMRI*)	1-2 gal	<b>Phytotoxicity:</b> DO NOT apply sulfur within 10 days of JMS Stylet Oil application, but you can repeat oil spray every 10-14 days.	0
	M-Pede (OMRI*)	2 gal/100 gal	<b>Phytotoxicity:</b> M-Pede should not be applied to <i>Vitis vinifera</i> or <i>Calmeria</i> grapes. M-Pede may cause plant injury if plants are drought stressed or temperatures exceed 90°F or burned by sulfur if applied within 3 days of sulfur application. M-Pede may alter the waxy bloom of grape and affect quality rating of table grapes.	0
Leafhopper	<b>See SHATTER</b> Assail 30 SG	2.5 oz	DO NOT make more than two applications per season at 14-day interval.	7
<b>SHATTER</b> Grape Berry Moth (newly hatched) Leafrollers	Deliver (OMRI*)	0.5-1.25 lb	<b>Grape berry moth:</b> Spray if greater than 1% of clusters in perimeter vines are damaged by grape berry moth.	0

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<b>SHATTER (cont.)</b>				
Rose Chafer	Actara	1.5-3.5 oz	Actara has a 14-day minimum interval between applications. DO NOT make more than two applications per season at 14-day interval.	5
Grape Curculio	Admire Pro	1.0-1.4 fl oz	Admire Pro used as a foliar spray against sucking insects: leafhoppers and grape mealy bugs. <b>Grape curculio</b> (the legless larvae that feed in berries from mid-June into July): These larvae have recently attacked grape blocks receiving only a perimeter spray against grape berry moth. Starting on June 15, check clusters weekly in the unsprayed vineyard interior for new berry damage by these legless larvae.	30
Japanese Beetle				
Leafrollers	Altacor	2-4.5 oz	<b>Leafhopper:</b> Inspect leaves in four locations for white stippling by leafhopper. If stippled, inspect underside of 5 leaves on each of 5 vines in 4 locations for presence of leafhoppers. Spray if greater than 5 leafhopper nymphs found per leaf.	14
Leafhoppers				
Grape Mealy Bug	Assail 30 SG	2.5-5.3 oz		7
	Assail 70WP	1.1 oz		7
	Avaunt DG	5-6 oz		7
	Brigade 2 EC	8-16 oz		30
	Danitol 2.4 EC	10.6-21.3 fl oz		21
	Entrust 2SC	4-6 fl oz		7
	Imidan 70W	1 1/3-2 1/8 lb		7
	Intrepid 2F	8-16 fl oz		30
	Sevin XLR	2 qt		7
	Sivanto 200 SL	7-14 fl oz	Sivanto is applied to foliage.	0
<b>FIRST COVER TO VERASION</b>				
Grape Berry Moth	<b>See SHATTER</b>		Spray whole vineyard if greater than 1% of clusters damaged by grape berry moth. Second- and third-generations of grape berry moth hatch in mid to late June (1330-1700 DD), and after mid-July (2300 DD) or continue weekly inspections of 100 to 200 clusters in the perimeter and second row for new grape berry moth larvae tunneling.	
Rose Chafer	Assail 30SG	2.5-5.3 oz	Leafhopper usually is not a problem in Arkansas. You can inspect underside of leaves weekly and spray if you detect more than 10 nymphs per leaf.	7
Leafhopper	Movento	6-8 fl oz	Use of Induce® adjuvant only with Movento is prohibited once fruit are present due to adverse plant compatibility.	7
Grape Mealybug				
	Sevin XLR	2 qt		7
<b>VERASION TO HARVEST</b>				
Grape Berry Moth	<b>See SHATTER</b>		Spray whole vineyard if greater than 1% of clusters damaged by grape berry moth.	
Japanese Beetle	<b>See SHATTER</b>		Continue weekly monitoring for insect pests. Apply insecticides as needed	
Leafhopper	Danitol 2.4 EC	10.67-21.33 fl oz	<b>Japanese Beetle:</b> This is a pest that was introduced to Northwest Arkansas in the late 1990s and became an economic pest defoliating grapes and other fruits and ornamentals by 2002. Late June and July, Japanese beetles will defoliate most of the canopy of susceptible grapes on Norton, Vidal, Vignoles, Chambourcin, Cabernet Franc and others. Weekly insecticide sprays are required to prevent foliar damage.	21
	Mustang Maxx			1

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<b>VERASION TO HARVEST</b>				
Grape Berry Moth	Sevin XLR			7
Japanese Beetle	Surround WP (OMRI*)		Surround applied to white-washed foliage will suppress/prevent Japanese beetle defoliation but should be reapplied as often as needed to keep vines white-washed, especially after a rain.	0
Leafhopper			Surround is approved for organic production.	
<b>Multicolored Asian Lady Beetle**</b>	Belay 2.13SC	2-4 fl oz	See Multicolored Asian Lady Beetle**. Scout vineyards several days before harvest to determine the abundance of multicolored Asian lady beetle. Additional insecticides (including Baythroid and Mustang Maxx) have short pre-harvest intervals, and although not labeled specifically for this pest, they have been effective in trials and vineyard use.	0/30
	Scorpion 35SL	2-5 fl oz		12 hours
	Venom 70SG	1-3 oz.		12 hours
Green June Beetle	Sevin XLR	2 qt	In July and early August, green June beetles will feed on and damage ripening fruit. Apply spray in July when first beetles enter the vineyard. Reapply as needed (weekly).	7
Grape Root Borer	Lorsban Advanced	4.5 pt/100 gal water	Use to control the pest just prior to adult emergence from the soil or new larvae entering soil. Apply Lorsban to the soil surface in a 1- to 2-foot band on either side of the vine. DO NOT allow spray to contact fruit or foliage. Make one application per season by 35 days pre-harvest or after harvest. Generic formulations of chlorpyrifos are also labeled for use against grape root borer. Application can be made with flood nozzles and at low pressure (40-60 psi).	35
	Cultural Control		<b>Cultural tactic:</b> Maintain weed-free area under vines. Use a grape root borer pheromone trap to detect first moth emergence. Use grape hoe at first catch of grape root borer moths and repeat 1 month later to pile soil to 4- to 6-inch depth and 1-foot width on both sides of trunk. Mounded soil needs to be removed by September 1. This practice will greatly suppress moth ability to emerge from the soil.	
Spotted Wing Drosophila	So far, no reports of fly larvae in grape berries		See <b>blackberry and raspberry, blueberry</b> and <b>strawberry</b> sections in MP144.	

\*OMRI = Organic Materials Review Institute lists compounds approved for organic production.

\*\***Multicolored Asian Lady Beetle** (MALB), a late season vineyard inhabitant, can significantly reduce wine quality. These beetles are attracted to ripening grapes as a source of sugars in late summer and fall. They may congregate, often by the hundreds or thousands, in and among grape clusters from August through October. Although they may cause direct yield loss, they more often reduce wine quality when sufficient numbers become trapped in the harvested grapes and are crushed along with the grapes at the winery. MALB secretes a defense chemical when they are stressed. This defense chemical causes wine to smell “dirty” (a musty, damp odor), masking the flavors and smells of the grapes. As few as two MALB per lug of grapes can alter wine flavor and bouquet enough to be detected. Excessive numbers of MALB in grape clusters are most common in late-ripening varieties such as Cabernet Franc, Cabernet Sauvignon, Chambourcin, Riesling, Vidal and Vignoles, but earlier grapes that are prone to cracking can also be infested. Scout vineyards several days before harvest to determine the abundance of MALB.