



Current Report

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Commercial Apple Insect and Disease Control — 2011

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Read and follow all label directions

In the following tables, the quantity of materials to mix to apply to apples is the amount of spray volume needed to cover one acre of well pruned, standard size trees. In Oklahoma, application rates will vary from 25 gallons to 200 gallons per acre. Effectiveness of spray volumes will be determined by several factors including: tree sizes, tree densities, canopy density, and nozzle type. Irrespective of the amount of liquid

per acre applied, use the amount of chemical per acre listed below as a guide for mixing. Numerous insecticides are labeled for use and are effective against insect and mite pests on apples. See the list of labeled insecticides for materials we have been able to determine are labeled for current use. However, registrations and use patterns are constantly changing and all recommendations should be offered with the advice to READ THE LABEL of any and all pesticides to be used on any crop.

Application and Timing	Pests Involved	Amount of Materials Needed		Comments
		Material ¹ (MOA Group)*	Per Acre	
DORMANT: Apply when trees are dormant and temperature is above 40 F.	San Jose Scale	Superior Summer Oil ² (*)	See label	For scale insect control apply a minimum of 150 gallons of liquid per acre.
	Forbes Scale	Microthiol Special (M) (Mites only)	10-20 lbs	Delayed dormant application
	European red mite Apple aphid	Battalion 0.2EC ^r (3) Beleaf 50SG (9C) Lorsban 4E (1B)	14.1 oz 2.0-2.8 oz 1.5 pts	Suppression of aphids. Aphids only.
GREEN TIP:	Scab	Flint (11)	2-3 oz	
		Nova 40 W (3)	5-8 oz	
		Rubigan EC (3)	8-12 oz	
		Sovran (11)	4-6.4 oz	
		Topsin-M 70W (1)	1-1.5 lb	
		Ziram 76DF (M4)	6-8 lb	
	Powdery Mildew	Nova 40W (3)	5-8 oz	
		Rubigan EC (3)	8-12 oz	
		Topsin-M 70W (1)	1-1.5 lb	
		Ziram 76DF (M4)	6-8 lb	
	Cedar Apple Rust	Nova 40W (3)	5-8 oz	
		Rubigan EC (3)	8-12 oz	
Ziram 76DF (M4)		6-8 lb		
Scale or Mites	Battalion 0.2EC ^r (3)	Superior Oil or highly refined summer oil (*)	7.0-14.1 oz See label	Scale only. If application is delayed until tight cluster to pink, reduce oil to ½-1 gal per 100 gal.
		Pasada 1.6F (4A)	8 oz	
	Provado 1.6 F (4A)	8 oz		
	Danitol 24EC ^r (mites only) (3)	16.0-21.33 oz	Superior Oil, Pasada, Provado and Danitol kill overwintering eggs of mites.	
	Zeal (10B)	2-3 oz		
	Savey 50WP (mites only) (10A)	3 oz		
	Acramite 50WS (mites only) (25)	0.75-1.0 lb		

<i>Application and Timing</i>	<i>Pests Involved</i>	<i>Amount of Materials Needed</i>		<i>Comments</i>
		<i>Material¹ (Group)*</i>	<i>Per Acre</i>	
PREBLOOM: When flower buds first show pink.	Scab	Same as Green Tip		
	Powdery Mildew	Same as Green Tip		
	Cedar Apple Rust	Same as Green Tip		
	Cankerworm	Asana XL (3)	4.8-14.5 oz	
	Aphids	Assail 70WP (4A)	1.1-1.7 lbs	
		Ambush 2EC ^r (3)	6.4-25.6 oz	
		Battalion 0.2EC ^r (3)	7.0-14.1 oz	Aphids only.
		Beleaf 50SG (9C)	2.0-2.8 oz	Aphids only.
		Danitol 2.4EC ⁴ (3)	10.66-21.33 oz	
		Dimethoate 4EC (1B)	2-4 pt	
		Lannate LV ^r (1A)	2 pt	
		Lorsban 4E ^r (1B)	1.5 pt	
		(No preharvest interval, because labeled use is prior to fruiting.)		
	Mustang-Max ^r (3)	1.28-4.0 oz		
	Pasada 1.6F (4A)	8 oz		
BLOOM STAGE: When the first blossoms open. To protect bees do not use insecticide during the bloom stage.	Fireblight			
	Scab, Powdery Mildew, Cedar Apple Rust	Same as Green Tip		
	Codling moth	Do not apply insecticides. Isomate CT or Checkmate CM	400 200	See footnote 3
PETAL FALL: When most of the petals have fallen.	Scab, Powdery Mildew, Cedar Apple Rust	Same as Green Tip		
	Sevin should not be applied until 30 days after full bloom to avoid thinning of fruit.			
Codling Moth, Plum Curculio	Ambush 25W ^r (3)	6.4-25.6 oz		
	Asana XL ^r (3)	4.8-14.5 fl oz		
	Assail 70WP (4A)	1.7-3.4 lbs		
	Battalion 0.2EC ^r (3)	7.0-14.1 oz		
	Danitol 2.4EC ^r (3)	16.0-21.33 oz		
	Dimethoate 4EC (1B) (codling moth)	1 pt		
	Entrust (5)	2-3 oz		
	Guthion 50WP ^r (1B)	2-3 lb		
	Imidan 70WP ⁶ (1B)	2.13-5.33 lb		
	Intrepid 2F (18)	10-16 oz		
	Javelin (11B2)	0.5-4.0 lb		Javelin, Intrepid and Entrust are for codling moth and other caterpillar pests only.
	Lannate LV ^r (1A)	2 pt		
	Mustang-Max ^r (3)	1.28-4.0 oz		
	Pounce 3.2EC ^r (3)	4-8 oz		
	Rimon 0.83EC (15)	30-50 oz		
Warrior ^r (3)	2.56-5.12 oz			
FIRST COVER: Two weeks after petal fall.	Scab, Cedar Apple Rust, Powdery Mildew	Same as Green Tip		
	Codling Moth	Assail 70WP (4A) Asana XL (3) Battalion 0.2EC ^r (3) Danitol 2.4EC ^r (3) Dimethoate 4Ec (1B) Guthion 50WP ^r (1B) Imidan 70WP ⁶ (1B) Intrepid 2F (18) Javelin (11B2) Lannate LV ^r (1A) Mustang-Max ^r (3) Thiodan 3EC (2A)	1.7-3.4 lbs 4.8-14.5 fl oz/A 7.0-14.1 oz 16.0-21.33 oz 1 pt 3 lb 2.13-5.33 lb 12-16 oz 0.5-4.0 lb 2 pt 1.28-4.0 oz 6 pt	

<i>Application and Timing</i>	<i>Pests Involved</i>	<i>Amount of Materials Needed</i>		<i>Comments</i>
		<i>Material^r (Group)[*]</i>	<i>Per Acre</i>	
	Aphids Scale	Asana XL (3) Beleaf 50SG (9C) Danitol 2.4EC ^r (3) (aphids only) Dimethoate 4EC (1B) Mustang-Max ^r (3) Pasada 1.6F (4A) Provado 1.6F (4A)	4.8-14.5 oz 2.0-2.8 oz 10.66-21.33 oz 2 pt 1.28-4.0 oz 8 oz 8 oz	Aphids only. Aphids only.
SECOND COVER: Ten days after first cover.	Black Rot (Frog Eye Leaf Spot), Sooty Blotch, Bitter Rot, Flyspeck	Captan 50WP (M4) Flint (11) Sovran (11) Topsin-M 70W (1) Ziram 76DF (M4)	4-8 lb 2-3 oz 4-6.4 oz 1-1.5 lb 6-8 lb	
	Codling Moth Aphids	Same as First Cover.		
THIRD COVER: Ten days after second cover.	Sooty Blotch, Scab, Bitter Rot	Same as Second Cover.		
	Codling Moth	Same as First Cover plus Sevin ⁴	1 lb	
FOURTH COVER: Ten days after third cover. About June 1.	Bitter Rot	Same as Second Cover.		
	Codling Moth	Same as First Cover plus Sevin. ⁴	1 lb	
	Mites	Acramite 50WS (25) Agri-Mek ⁵ 0.15 EC (6) Dicofol 4E (20) Kelthane 35W (20) Onager 1EC (10A) Pyramite 60 WP (21) Summer oil* Wettable Sulfur (M) Vendex 50WP ^r (12B) Zeal (10B)	0.75 - 1.0 lbs 10-20 oz 4 pt 4-8 lb 12-24 oz 4.4-13.2 oz ½-1% solution 5-15 lb 1-2 lb 2-3 oz	
FIFTH AND LATER COVERS: At 10-day intervals until two weeks before harvest.	Codling Moth	Same as First Cover plus Sevin. ⁴	1 lb	
	Mites	Same as Fourth Cover Sprays.		

* Horticultural oils are physical toxicants which act as suffocant and entrapment insecticides.

^r Restricted Use Pesticide.

MOA Group Tables start on page 46 of E-834 Extension Agent's Handbook of Insect, Disease and Weed Control.

¹ Check Table 1 for date of last application prior to harvest.

² Scale insects may not be a problem if trees were regularly sprayed in cover applications with Guthion in the previous year. Horticultural oils act as suffocant and entrapment insecticides.

³ Mating disruption dispensers are only recommended in orchards with low codling moth populations and not in blocks of less than 5 acres. Isomate CT releases pheromone for a minimum of 100 days, but Checkmate CM dispensers release pheromone for only 75 days. Two applications of Checkmate CM per season should be made.

⁴ Avoid use of Sevin from bloom to 30 days after full bloom, unless fruit thinning is desired, then follow directions on the label. Avoid use of Sevin in areas exhibiting heavy mite infestation.

⁵ Do not exceed 20 fl oz per acre per application or 40 fl oz per acre in a growing season. Do not make more than 2 applications per growing season. Do not apply in less than 40 gals of water per acre. If second application is needed, do not re-treat within 21 days. See label for additional precautions about certain varieties.

⁶ Imidan is very sensitive to alkaline hydrolysis; therefore, check the pH of the tank mix and add a buffering agent if necessary, to adjust the pH to 6.0 or lower. Do not attempt to acidify solutions containing copper compounds.

Chemical Group Classifications can be found at the following Web sites:

Herbicides: <http://www.plantprotection.org/hrac/>; **Insecticides:** <http://www.irac-online.org/>; **Fungicides:** <http://www.frac.info/>.

Table 1. Limitations. NUMBER OF DAYS BEFORE HARVEST

DAYS FROM LAST APPLICATION TO HARVEST

<i>CHEMICALS*</i>	<i>DAYS</i>	<i>CHEMICALS*</i>	<i>DAYS</i>
Acramite 50WS	7	Omite	7
Agri-Mek	28	Onager	28
Ambush ^r	Do not apply after petal fall.	Pasada	7
Asana XL ^r	21	Pounce ^r	Do not apply after petal fall.
Battalion ^r	21	Provado	7
Beleaf	21	Pyramite 60WP	25
Captan	0	Rubigan EC	30
Danitol 2.4EC	14	Savey WP	Do not apply after pink stage.
Dimethoate 4EC	28	Sevin	3
Flint	30	Sovran	30
Guthion 50W ^r	14	Summer Oil	0
Imidan	7	Thiodan	21
Javelin	0	Topsin-M 70W	0
Lannate LV	14	Vendex ^r	14
Lorsban 4E ^r 14	14	Wettable Sulfur	7
Lorsban 50W ^r	28	Zeal	28
Mustang-Max ^r	14	Ziram	14
Nova	14		

* See labels for other limitations.

^r = Restricted use pesticide.

MITES. The most important mites of this region are red spider mites and two spotted spider mites. Red mites pass the winter as somewhat spherical eggs of a bright red to orange color on twigs and smaller branches of the tree. Two spotted mites generally over winter as orange, hibernating females in protected locations of cover crops or other debris. They then migrate to the foliage of the trees in the spring and summer. Mites overwintering on the tree may be controlled by delayed dormant oil sprays. In the event control is not satisfactory, one should rotate between Kelthane, Omite or Guthion sprays.

WOOLY APPLE APHID. The winter is spent as eggs and young nymphs on elm trees. After two spring generations on elm, they mi-

grate to apples, usually in late June or early July. Several generations are produced on apples during the remainder of the summer. These aphids are purplish and characteristically covered with white, waxy secretion. Their presence can be detected by visual observations of the scaffold limbs. They are usually found where there are wounds from pruning or at the base of water sprouts. Chemicals, such as Guthion, applied to control other aphids usually suppress populations of this pest as well.

For detailed information on using pesticides safely, see OSU Extension Fact Sheet EPP-7451, "Agricultural Pesticide Storage;" Fact Sheet EPP-7454, "Check Your Pesticide Labels;" and Fact Sheet EPP-7457, "Toxicity of Pesticides."

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