



# Current Report

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

## COMMERCIAL APPLE INSECT AND DISEASE CONTROL - 1986

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In the following tables the quantity of materials to mix to apply to apples is based on a dilute spray rate of 400 gal/A, which is the amount of spray volume needed to cover one acre of well pruned, standard size trees. To determine the gallonage to use, fill a spray tank completely with water and spray one acre of your trees, then

determine how much water was used from the tank. Add the amount of chemical listed below in rate/acre column to that amount of water. For instance, if you use 200 gallons of water to cover one acre, use the rate of chemical/acre listed in the tables added to 200 gallons of water or double the amount listed in the rate/100 gal column.

APPLICATION AND TIMING	PESTS INVOLVED	MATERIAL <sup>1</sup>	AMOUNT OF MATERIALS NEEDED	
			Per Acre	Per 100 Gal
DORMANT: Apply when trees are dormant and temperature is above 40°F.	San Jose Scale Forbes Scale	Dormant Spray Oil <sup>2</sup>	8 gal	2 gal
DELAYED DORMANT: Green Tip	Scab	Dithane FZ Bordeaux Mixture Funginex 1.6EC Manzate 200F	3.2 - 6.4 qt see label 1 1/8 - 1 1/2 qt 3.2 - 6.4 qt	.8 - 1.6 qt see label 10 oz .8 - 1.6 qt
PREPINK: When flower buds first show pink.  The scab fungus has developed resistance to benomyl in many areas where Benlate has been used for several years as the only fungicide. Alternating Cyprex or Manzate or Captan with Benlate will help prevent development of resistance to benomyl.	Scab	Benlate 50W <sup>3</sup> + Manzate 200 or Benlate 50W + Captan 50WP or Cyprex 65W or Orthocide 50W or Captan 50W <sup>4</sup> or Manzate 200F or Dithane FZ	1/2 - 3/4 lb + 3 lb 1/2 - 3/4 lb + 3 - 4 lb 2 lb 8 lb 8 lb 3.2 - 6.4 qt 3.2 - 6.4 qt	2 - 3 oz + 3/4 lb 2 - 3 oz + 3/4 - 1 lb 1/2 lb 2 lb 2 lb .8 - 1.6 qt .8 - 1.6 qt
	Powdery Mildew	Benlate 50W + Manzate 200 Bayleton 50W Karathane LC	1/2 - 3/4 lb 3 lb 2 - 8 oz 2 - 3 pt	2 - 3 oz 3/4 lb 1/2 - 2 oz 4 - 6 oz
	Cedar Apple Rust	Benlate 50W + Manzate 200 Funginex 1.6EC	1/2 - 3/4 lb 3 lb 1 1/1 - 1 1/2 qt	2 - 3 oz 3/4 lb 10 oz
	Cankerworm Aphids	Malathion 57% EC Malathion 57% EC or Zolone EC or  Zolone 25% WP	4 pt 4 pt 2 2/3 - 5 1/2 pt  4 - 8 lb	1 pt 1 pt 2/3 - 1 1/3 pt 1 - 2 lb
BLOOM STAGE: Apply when the first blossom opens. Repeat with two or more applications at 4 day intervals (Agri-Strep) or 2-3 day intervals (Dithane Z-78). To protect bees do not use insecticide during the bloom stage.	Fireblight	Basic Cooper TS - 53WP Streptomycin <sup>5</sup> (Agri-Strep, Agri- mycin, Phytomycin, etc.)	see label see label	1/3 - 1/2 lb 50 - 100 ppm (see the label)

(continued on next page)

COMMERCIAL APPLE INSECT AND DISEASE CONTROL CONT'D

APPLICATION AND TIMING	PESTS INVOLVED	MATERIAL <sup>1</sup>	AMOUNT OF MATERIALS NEEDED	
			Per Acre	Per 100 Gal
BLOOM STAGE Cont'd	Scab Cedar Apple Rust Powdery Mildew	Funginex 1.6EC Manzate 200F Funginex 1.6EC Funginex 1.6EC Bayleton 50W	1 1/8 - 1 1/2 qt 3.2 - 6.4 qt 1 1/8 - 1 1/2 qt 1 1/8 - 1 1/2 qt 2 - 8 oz	10 oz .8 - 1.6 qt 10 oz 10 oz 1/2 - 2 oz
PETAL FALL: When most of the petals have fallen.  Sevin should not be applied until two weeks after petal fall to avoid <u>thinning of fruit.</u>	Scab, Cedar Apple Rust, Quince Rust  Black Rot (Frogeye Leaf Spot) & Blotch Powdery Mildew	Dikar 76.7% or Dithane M-45 or Manzate 200 or Zineb 75W or Carbamate 76W Manzate 200F Dithane FZ Bayleton 50W	8 lb 8 lb 8 lb 4 - 6 lb 4 - 6 lb 3.2 - 6.4 qt 3.2 - 6.4 qt 2 - 8 oz	2 lb 2 lb 2 lb 1 - 1 1/2 lb 1 - 1 1/2 lb .8 - 1.6 qt .8 - 1.6 qt .5 - 2 oz
	Codling Moth, Curculio	Guthion 50W or Imidan 50W or Zolone EC or  Zolone 25% WP	2 - 2 1/2 lb 4 - 6 lb 2 2/3 - 5 1/3 pt  4 - 8 lb	1/2 - 5/8 lb 1 - 1 1/2 lb 2/3 - 1 1/3 pt  1 - 2 lb
FIRST COVER: Two weeks after petal fall.	Scab, Cedar Apple Rust	Same as Petal Fall.		
	Codling Moth	Guthion 50W or Imidan 50W or Zolone EC or  Zolone 25% WP	2 - 2 1/2 lb 4 - 6 lb 2 2/3 - 5 1/3 pt  4 - 8 lb	1/2 - 5/8 lb 1 - 1 1/2 lb 2/3 - 1 1/3 pt  1 - 2 lb
SECOND COVER: Ten days after first cover.	Blotch, Scab	Same as Petal Fall Spray above.		
	Bitter Rot	Captan 50W <sup>4</sup> or Orthocide 50W <sup>4</sup> or Phaltan 50W or Dithane FZ	8 lb 8 lb 4 - 5 lb 3.2 - 6.4 qt	2 lb 2 lb 1 - 1 1/4 lb .8 - 1.6 qt
	Codling Moth	Same as First Cover Sprays above.		
THIRD COVER: Ten days after Second Cover.	Blotch, Scab	Same as Petal Fall or Second Cover Sprays above.		
	Codling Moth	Guthion 50W or Imidan 50W or Sevin 50W or Zolone EC or  Zolone 25% WP	2 - 2 1/2 lb 4 - 6 lb 4 lb 2 2/3 - 5 1/3 pt  4 - 8 pt	1/2 - 5/8 lb 1 - 1 1/2 lb 1 lb 2/3 - 1 1/3 pt  1 - 2 lb
FOURTH COVER: Ten days after Third Cover. About June 1.	Bitter Rot	Same as Second Cover Sprays.		
	Codling Moth	Same as Third Cover Sprays.		
	Mites	Kelthane EC or Kelthane 35W or Omite 30W <sup>6</sup>	4 qt 4 lb 6 lb	1 qt 1 lb 1 1/2 lb

COMMERCIAL APPLE INSECT AND DISEASE CONTROL CONT'D

APPLICATION AND TIMING	PESTS INVOLVED	MATERIAL <sup>1</sup>	AMOUNT OF MATERIALS NEEDED	
			Per Acre	Per 100 Gal
FIFTH AND LATER COVERS: At 10 day intervals until 2 weeks before harvest.	Codling Moth	Same as Third Cover Sprays.		
	Mites	Same as Fourth Cover.		

<sup>1</sup>Check table on last page for date of last application prior to harvest.

<sup>2</sup>Scale insects may not be a problem if trees were regularly sprayed in cover applications with Guthion in the previous year.

<sup>3</sup>Benlate has an adverse effect on Golden Delicious fruit finish and color. Reduce rate to 2 oz.

<sup>4</sup>Early season application of Captan may injure Red Delicious and other sensitive varieties.

<sup>5</sup>Fifty ppm = 1/4 lb of Streptomycin Formulations/100 gallons of water.

<sup>6</sup>Do not apply more than 3 applications per season.

DAYS FROM LAST APPLICATION TO HARVEST

CHEMICALS*	APPLES	CHEMICALS*	APPLES
Bayleton	0	Imidan, Kelthane	7
Benlate 50W	30	Karathane	21
Captan, Orthocide	0	Lorsban	-
Carbamate	7	Malathion	3
Cyprex	7	Manzate 200, Dithane M-45	30
Dikar, Zineb 75W	30	Omite	7
Dithane Z-78, Dithane FZ	30	Sevin	1
Funginex 1.6EC	0	Streptomycin	50
Guthion 50W	15	Topsin-M	-
Guthion 2L	7	Zolone	

\*See label for other limitations.

**MITES.** The most important mites of this region are red mites and two-spotted 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 overwinter 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 2 spring generations on elm, they migrate 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 a 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.

**Bitter Rot:** Use Captan 50W at manufacturer's

recommended rates, beginning with second spray and continuing in later sprays.

**Blotch:** Either Carbamate or Dithane Z-78 are very effective in controlling blotch. Blotch is more serious when weather is warm and humid during April and May. It is important to follow the schedule completely for control. Blotch may cause serious injury to leaves, twigs, buds, branches, and fruits. Twig and branch infestions appear at leaf nodes or at the base of spurs as dark purple spots which continue to enlarge with growth of the branch until complete girdling has occurred. On the fruit, infected areas appear brownish to black with small black spots scattered over them. The margins of the spots are feathery or very irregular and may cover large areas of the fruit.

**CEDAR APPLE RUST OR QUINCE RUST:** Dikar, Dithane M-45, or Manzate 200 must be applied in the petal fall and first cover for control. (See OSU Fact Sheet No. 7611), Cedar Apple Rust.

For detailed information on using pesticides safely, see OSU Extension Facts No. 7451, Agricultural Pesticide Storage; OSU Extension Facts No. 7457, Toxicity of Pesticides; and OSU Extension Facts No. 7454, Check Your Pesticide Label.

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