



# Current Report

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

## COMMERCIAL APPLE, PEAR, PEACH AND NECTARINE DISEASE AND INSECT CONTROL-1982

O. Norman Nesheim  
Pesticide Coordinator

George Barnes  
Extension Plant Pathologist

Stanley Coppock  
Extension Entomologists

Glenn Taylor  
Extension Horticulturists

### APPLE

In the following tables the quantity of materials to mix to apply to apples and pears 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 your spray tank completely with water and spray one acre of your trees, then determine how much water was

used from your 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 your one acre, you would 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	Bordeaux Mixture	-	8 - 8 - 100
PREPINK: When flower buds first show pink.  The scab fungus has developed resistance 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.	Scab	Benlate 50W <sup>3</sup> + Manzate 200 80W or Benlate 50W + Captan 50WP or Cyprex 65W or Orthocide 50W or Captan 50W <sup>4</sup>	1/2 - 3/4 lb + 3 lb  1/2 - 3/4 lb + 3 - 4 lb 2 lb 8 lb 8 lb	2 - 3 oz + 3/4 lb  2 - 3 oz + 3/4 - 1 lb 1/2 lb 2 lb 2 lb
	Cankerworm Aphids	Malathion 57% EC	4 pt	1 pt
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	Agri-Strep (Streptomycin <sup>5</sup> ) Dithane Z-78	- 8 lb	50 - 100 ppm 2 lb
PETAL FALL: When most of the petals have fallen.  Sevin should not be applied until two weeks after petal fall to <u>avoid thinning of fruit</u> .	Scab, Cedar Apple Rust, Quince Rust	Dikar 76.7% or Dithane M-45 or Manzate 200 80W or Zineb 75W or Carbamate 76W	8 lb 8 lb 8 lb 4 - 6 lb 4 - 6 lb	2 lb 2 lb 2 lb 1 - 1 1/2 lb 1 - 1 1/2 lb
	Codling Moth, Curculio	Guthion 50W or Imidan 50W	2 - 2 1/2 lb 4 - 6 lb	1/2 - 5/8 lb 1 - 1 1/2 lb

APPLE CONT'D

APPLICATION AND TIMING	PESTS INVOLVED	MATERIAL <sup>1</sup>	AMOUNT OF MATERIALS NEEDED	
			Per Acre	Per 100 Gal
FIRST COVER: Two weeks after petal fall.	Scab, Cedar Apple Rust	Same as Petal Fall.		
	Blotch	Carbamate 76W or Dithane Z-78 78% or Thylate 65%	4 - 6 lb 8 lb 6 lb	1 - 1 1/2 lb 2 lb 1 1/2 lb
	Codling Moth	Guthion 50W or Imidan 50W	2 - 2 1/2 lb 4 - 6 lb	1/2 - 5/8 lb 1 - 1 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	8 lb 8 lb 4 - 5 lb	2 lb 2 lb 1 - 1 1/4 lb
	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	2 - 2 1/2 lb 4 - 6 lb 4 lb	1/2 - 5/8 lb 1 - 1 1/2 lb 1 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
FIFTH AND LATER COVERS: At 10 day intervals until 2 weeks before harvest.	Codling Moth	Sevin 50W or Guthion 50W or Imidan 50W	4 lb 2 - 2 1/2 lb 4 - 6 lb	1 lb 1/2 - 5/8 lb 1 - 1 1/2 lb
	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 Agri-Strep/100 gallons of water.

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

## PEAR

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 and will remain above 40°F for 24 hours after application	San Jose Scale Forbes Scale	Dormant Spray Oil <sup>2</sup>	8 gal	2 gal
DELAYED DORMANT: When buds first show pink.	Scab Fireblight	Bordeaux mixture	-	8 - 8 - 100
PREPINK: When flower buds first show pink.	Scab	Benlate 50W or Captan 50W or Carbamate 76 or Orthocide 50W or Manzate 200 80 W	1 - 1 1/2 lb 8 lb 4 - 6 lb 8 lb 4 - 8 lb	4 - 6 oz 2 lb 1 - 1 1/2 lb 2 lb 1 - 2 lb
		Cankerworm Aphids	Malathion 57% EC	4 pt
BLOOM STAGE: Apply when first blossom opens. Repeat with two more applications at 4 day (Agri-Strep), 2-3 day (Dithane Z-78), or 5 day intervals (Kocide 101). Do not use insecticides during bloom stage.	Fireblight	Agri-Strep (Streptomycin) Kocide 101 or Dithane Z-78	-- 1 lb 8 lb	50-100 ppm <sup>5</sup> 0.25 lb 2 lb
		Scab	Same as Prepink Spray above.	
PETAL FALL: When most of the petals have fallen. <sup>4</sup>	Codling Moth Curculio	Guthion 50W <sup>3</sup> or Imidan 50W	2 - 2 1/2 lb 4 - 6 lb	1/2 - 5/8 lb 1 - 1 1/2 lb
	Scab	Same as Prepink Spray above.		
FIRST COVER: Two weeks after petal fall.	Codling Moth	Sevin 50W or Guthion 50W <sup>3</sup>	4 lb 2 - 2 1/2 lb	1 lb 1/2 - 5/8 lb
	Scab	Same as Prepink Spray above.		
SECOND COVER: Ten days after second cover.	Codling Moth	Same as First Cover Spray above.		
	Scab	Same as Prepink Spray above.		
THIRD COVER: Ten days after second cover.	Codling Moth Leafhoppers	Same as First Cover Spray above.		
	Scab	Same as Prepink Spray above.		

PEAR CONT'D

APPLICATION AND TIMING	PESTS INVOLVED	MATERIAL <sup>1</sup>	AMOUNT OF MATERIALS NEEDED	
			Per Acre	Per 100 Gal
FOURTH COVER: Ten days after third cover - June 1.	Bitter rot	Dithane M-45 or Manzate 200	4 - 8 lb 4 - 8 lb	1 - 2 lb 1 - 2 lb
	Codling Moth	Same as First Cover Spray above.		
	Mites	Kelthane EC or Kelthane 35W or Guthion 50W <sup>3</sup>	4 qt 4 lb 2 - 2 1/2 lb	4 qt 1 lb 1/2 - 5/8 lb
FIFTH AND LATER COVERS: At 10 day intervals until 2 weeks before harvest.	Codling Moth	Sevin 50W or Imidan 50W	4 lb 5 - 6 lb	1 lb 1 - 1 1/2 lb
	Mites	Same as Fourth Cover.		

<sup>1</sup>Check Table 1 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 years.

<sup>3</sup>Sevin should not be applied until two weeks after petal fall to avoid thinning fruit.

<sup>4</sup>Fifth ppm = 1/4 lb of Agri-Strep/100 gallons of water.

**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, Morocide, 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.

**POWDERY MILDEW.** Use Benlate 50W 4-6 oz in 100 gallons of water at green tip and repeat at 7-14 day intervals or as needed. Karathane LC 4-6 oz in 100 gallons of water applied full coverage spray. Begin application at delayed dormant to prepink stage, 7-14 day interval until mildew activity is completed. Follow label instructions.

**Bitter Rot:** Use Captan 50W at manufacturer's recommended rates, beginning with second spray and continuing in later sprays.

**Blotch:** Either Carbamate, Thylate 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 cover 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. 7450, Pesticides Can Be Used Safely and No. 7457, Toxicity of Pesticides.

## PEACH - NECTARINE

In the following table the quantity of materials to use to apply to peaches and nectarines is based on a dilute spray of 300 gal/A which is the amount of spray volume needed to cover one acre of well

pruned, standard size trees. Determine the amount of water being used per acre on your trees then add the rate of the chemical listed below in the rate/acre column to the amount of water.

APPLICATION AND TIMING	PESTS INVOLVED	MATERIAL	AMOUNT OF MATERIALS NEEDED	
			Per Acre	Per 100 Gal
DORMANT: Apply when the trees are dormant and the temperature is above	San Jose Scale	Dormant Oil or	4 1/2 - 6 gal	1 1/2 - 2 gal
	Forbes Scale	Liquid Lime Sulfur <sup>1</sup>	36 gal	12 gal
	Peach Leaf Curl Bacteria Leaf Spot	Bordeaux or Dithane Z-78 <sup>3</sup> or Kocide 101	--- 6 lb 6 - 9 lb	8 - 8 - 100 2 lb 2 - 3 lb
PRE-BLOOM: Flower buds show pink.	Lygus bugs	Guthion 50W	1 1/2 - 2 lb	1/2 - 5/8 lb
EARLY BLOOM	Brown Rot	Benlate 50W or	3/4 - 1 1/2 lb	1/4 - 1/2 lb
		Captan 50WP or	6 lb	2 lb
		Orthocide 50W or	6 - 12 lb	2 - 4 lb
		Topsin-M or	1 1/2 - 2 1/4 lb	1/2 - 3/4 lb
		Wettable Sulfur <sup>2</sup>	15-30 lb	5 - 10 lb
PETAL FALL SPRAY: Apply when 50-75% of the petals have fallen.	Plum Curculio	Imidan 50W or	3 - 4 1/2 lb	1 - 1 1/2 lb
	Plum Gouger	Guthion 50W or	1 1/2 - 2 lb	1/2 - 5/8 lb
		Sevin 50W	6 lb	2 lb
Insecticide and Fungicide materials may be combined starting with Petal Fall and continuing through cover sprays.	Brown Rot Scab	(For scab Benlate 50W only)	3/4 - 1 1/2 lb	1/4 - 1/2 lb
		or		
		Captan 50WP or	6 lb	2 lb
		Orthocide 50W or	6 - 12 lb	2 - 4 lb
		Topsin-M or Wettable Sulfur <sup>2</sup>	1 1/2 - 2 1/4 lb 15 - 30 lb	1/2 - 3/4 lb 5 - 10 lb
SHUCK-SPLIT: Apply when around 3/4 of shucks have split and are shedding about 7-10 days after Petal Fall.	Brown Rot, Scab Plum Curculio, Plum Gouger	Same as Petal Fall.		
SECOND AND LATER COVER SPRAYS: Apply 10-14 day intervals	Oriental Fruit Moth, Twig Borer, Scab, Brown Rot	Same as Petal Fall.		
June	Mites-Two sprays may be needed.	Kelthane EC or	3 qt	1 qt
		Kelthane 35W or	3 lb	1 lb
		Omite 30W <sup>3</sup>	4 lb	1 1/2 lb
HARVEST: Apply just before harvest in July and August.	Green June Beetles	Sevin 50W	6 lb	2 lb

<sup>1</sup>Liquid lime sulfur, 12 gal in 100 gal of water, may be substituted for Bordeaux and Kocide to control peach leaf curl.

<sup>2</sup>When air temperature is above 85°F, foliar burn can occur when sulfur is used.

<sup>3</sup>Dithane Z-78 and Omite are not labeled for Nectarine and Omite can be applied only twice per season on Peaches.

PEACH TREE BORER CONTROL: Thiodan 50W, 1 lb. in 100 gallons of water or Lorsban 4E, 3 qts. in 100 gallons water. Three applications, mid-June, mid-July and mid-August for Thiodan. Only need spray Lorsban one time in late May. Spray thoroughly the trunks from the large branches to the ground line (1 1/2 to 2 feet). DO NOT SPRAY THE FRUIT with Lorsban.

If the borer spray program is not followed, PDB crystals applied in October will kill the peach tree borer. Crystals, 1/2 to 1 1/2 oz. are used around each tree depending upon its age and size. Ask your County Director for instructions in using PDB for peach tree borer control.

LESSER PEACH TREE BORER AND SHOT HOLE BORER CONTROL: Peach and plum trees maintained in a healthy, vigorous condition will have fewer borer attacks. Lesser peach tree borers work above ground level in crotches and branch scars. Shothole borers feed underneath the bark of unhealthy weak wood. Keep the trees growing actively by pruning, cultivating and watering and by making generous applications of commercial fertilizer by February 15. Sevin or Guthion will control lesser peach tree borer if used in cover sprays.

ORIENTAL FRUIT MOTH: The earliest indication of injury by this insect is similar to that of the peach twig borer and consists of a "dying-back" of new growth in the spring. The worms found burrowing in the twigs are pinkish or creamy-white with brown heads. Later generations of the worm enter the

fruit near the stem before the fruit ripens. The fruit may look perfect at the time of harvest, but breaks down shortly after packing. Control the oriental moth by using Sevin, Guthion or Imidan.

BACTERIAL SPOT: The disease attacks the leaves, fruits, and stems. No completely satisfactory control is known for the disease. There is a varietal difference to susceptibility.

A certain degree of control can be obtained by spraying the trees in the fall (when half the leaves have fallen). For dormant application, apply Kocide 101 at 2 lbs. or Kocide 404 at 2 qts/ 100 gals. At first and second cover sprays use Kocide 101 at 1/4 lb or Kocide 404 at 1/4 qt/100 gallons. Do not spray later than three weeks prior to harvest. Do not use at rates above those recommended after bloom. During wet spring, delay first application until second cover spray to reduce potential phytotoxicity.

POWDERY MILDEW: For control on peaches use Benlate 50W 3/4-1 1/2 lbs/100 gals water applied at shuck-split and again at first cover. Or use Karathane LC 4 oz. to 100 gal. water applying full coverage spray at pink bud, petal fall, shuck-split and early covers. No application within 45 days of harvest. Use wettable sulfur in later applications.

For detailed information on using pesticides safely, see OSU Extension Facts No. 7450, Pesticides Can Be Used Safely and OSU Extension Facts No. 7457, Toxicity of Pesticides.

TABLE 1 LIMITATION  
NUMBER OF DAYS BEFORE HARVEST

CHEMICALS*	APPLES	PEARS	PEACHES	NECTARINES	CHEMICALS*	APPLES	PEARS	PEACHES	NECTARINES
Benlate	30	0	0	0	Lorsban	-	-	21	-
Captan, Orthocide	0	0	0	0	Malathion	3	1	-	-
Carbamate	7	7	-	-	Manzate 200,				
Cyprex	7	-	-	-	Dithane M-45	30	15	-	-
Dikar, Zineb 75W	30	-	-	-	Omite	7	-	14	-
Dithane Z-78	30	7	30	-	Sevin	1	1	1	3
Guthion 50W	15	7	21	21	Streptomycin	50	30	-	-
Guthion 2L	7	7	21	21	Sulfur	-	-	0	0
Imidan, Kelthane	7	7	14	14	Thylate	0	-	-	-
Kocide, Thiodan	-	-	21	21	Topsin-M	-	-	1	1

\*See label for other limitations.