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Controlling Diseases and Insects in Home Orchards



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Controlling diseases and
insects in home orchards



OREGON STATE UNIVERSITY
EXTENSION SERVICE

Spray schedule for controlling diseases and insects in home orchards^a

Time of application	Insect or disease	Materials and amount per 3 gallons of water (T = tablespoon)
Apples and pears		
Late winter (dormant)	Scale, blister mites, aphid and mite eggs, pear psylla, moss, lichens, scab	Lime sulfur + superior spray oil, as labels direct. <i>Warning:</i> lime sulfur will discolor painted surfaces.
	Apple anthracnose, moss, and lichens	Fixed copper as label directs. ^b
	Pear psylla (pear only) ^c	Thiodan 9.15% EC 6 T + superior spray oil 5 T. Apply two sprays: one at true dormant, the other at the delayed-dormant period. Check with your Extension agent for suggested timing.
	San Jose scale, mite eggs, aphid eggs	Superior spray oil 5 T + diazinon 16.75% EC 3 T.
	Fire blight	Not common in the Willamette Valley. Control by removing and destroying infected branches. Make cuts 12 inches below infected branches. Disinfect pruning tools between cuts with shellac thinner (70% ethyl alcohol) or 10% Clorox.
Prepink (before pink bloom shows)	Scab only	Lime sulfur as label directs or benomyl 1 T or captan 5% 9.5 oz.
Pink (just before blossoms open)	Scab, mildew	Lime sulfur as label directs or benomyl 1 T.
Petal fall	Scab, mildew	Lime sulfur as label directs or benomyl 1 T.
	Mites	Wettable sulfur 6 T.
	Aphids	Diazinon 16.75% EC 3 T. May require two sprays, about 10 days apart.
Summer	Apple maggot, codling moth, ^d spider mites, pear psylla, ^c aphids, scab, mildew	Diazinon 16.75% EC 3 T + wettable sulfur 6 T or diazinon 16.75% EC 3 T + benomyl 1 T.
	Codling moth, ^d apple maggot	Imidan 12.5% WP 9 T or diazinon 16.75% EC 3 T or methoxychlor 12% EC as manufacturer directs. Apply at least 4 sprays of diazinon for codling moth control, beginning at 17 to 21 days after full bloom; apply every 14 days.
	San Jose scale crawlers and mites	Diazinon 16.75% EC 3 T. Sprays usually applied in late June.
	Pear psylla (pear only) ^c	Thiodan 9.15% EC 6 T.
Late summer (mid-August)	Aphids, mites, codling moth, ^d apple maggot	Diazinon 16.75% EC 3 T.
Postharvest (pears only, in fall after all fruit is harvested)	Blister mites, pear rust mites	Thiodan 9.15% EC 6T.

Peaches^c

Winter dormant	Cytospora canker and Pseudomonas	These can cause branch diebacks. Remove and destroy infected wood.
Dormant (two sprays: Dec. 15 and before Jan. 15)	Leaf curl, coryneum blight	Lime sulfur as label directs or fixed copper spray as label directs.
Late February	Aphid and mite eggs, scale, peach twig borer	Superior spray oil 15T + diazinon 16.75% EC 3T. For best results, do not combine with leafcurl and blight spray.
Bloom stage (spray once per week, from first showing pink through petal fall)	Brown rot blossom blight	Captan 5% 9.5 oz or wettable sulfur 90% 7.5 T or benomyl 1½ T or Daconil 2787 2¼T. ^f
1 week after blossom petals fall and/or at shucksplit.	Coryneum blight	Wettable sulfur 90% 7.5 T or Daconil 2787 2¼T. ^f
Early June	Peach twig borer	Thiodan 9.15% EC 6 T.
Summer spray (early July and again 3 weeks later)	Peach tree borer (young trees are especially susceptible to injury)	Thiodan 9.15% EC 6 T. Spray trunk and lower limbs, allowing solution to puddle around bases of trees. Do not spray fruit.
14 to 21 days before picking	Western spotted cucumber beetles (western Oregon only)	Methoxychlor as label directs or Sevin 4 T.
	Brown rot	Wettable sulfur 90% 7.5 T or benomyl 1 T.
	Earwigs	Sevin spray 4 T. Spray trunk and base of tree thoroughly.
After picking (before fall rains)	Coryneum blight	Fixed copper as label directs. ^b

Cherries

Late winter (dormant)	Aphid and mite eggs, scale	Superior spray oil 15 T + diazinon 16.75% 3 T.
Winter dormant	Cytospora canker and Pseudomonas	Can cause branch diebacks. Remove and destroy infected wood.
Bloom stage (first showing pink to petal fall). Spray once per week during bloom.	Brown rot blossom blight	Captan 5% 9.5 oz or wettable sulfur 90% 7.5 T or benomyl 1½ T or Daconil 2787 2¼ T. ^f
Petal fall stage (spray after bloom to prevent accidental poisoning of bees during the pollination period)	Aphids, leafrollers	Diazinon spray 16.75% 3 T or Sevin spray 22.5% 4 T (Sevin is not effective on aphids).
	Cherry leaf spot and brown rot	Captan 5% 9.5 oz or Daconil 2787 2¼ T. ^f
Shucksplit	Cherry leaf spot and brown rot	Captan 5% 9.5 oz or Daconil 2787 2¼ T. ^f
Early summer (when fruit flies emerge, about Memorial Day)	Cherry fruit fly	Malathion + methoxychlor (= Fruit and Berry Insect Spray) 6 T or Sevin 22.5% 4 T or diazinon 16.75% 3 T. Apply every 7 to 10 days until harvest.
Summer sprays (if pests appear)	Aphids, mites, pear slugs	Diazinon 16.75% EC 3 T.
2 to 3 weeks before harvest (if rain is likely)	Brown rot	Wettable sulfur 90% 7.5 T or benomyl 1 T.

Prunes and plums^e

Late winter (dormant)	Aphid and mite eggs, scale, peach twig borers	Superior spray oil 15 T + diazinon 16.75% 3 T.
	Cytospora canker and Pseudomonas	Can cause branch diebacks. Remove and destroy infected wood.
Bloom stage (first showing pink to petal fall). Spray once per week.	Brown rot blossom blight	Captan 5% 9.5 oz or wettable sulfur 90% 7.5 T or Daconil 2787 2¼ T. ^f
Petal fall stage	Aphids, leafrollers, peach twig borers	Diazinon 16.75 % EC 3 T. Spray after bloom to prevent accidental poisoning of bees during the pollination period.
	Cherry leaf spot and brown rot	Captan 5% 9.5 oz or Daconil 2787 2¼ T. ^f
Summer spray (early June and 3 weeks later)	Peach tree borer	Thiodan 9.15 % EC 6 T. Spray trunks and lower limbs, allowing solution to puddle around bases of trees. Do not spray fruit.
Shucksplit	Cherry leaf spot and brown rot	Captan 5% 9.5 oz or Daconil 2787 2¼ T. ^f

Filberts (hazelnuts)*

Late winter	Eastern filbert blight	Very difficult to control; it poses a threat to the commercial filbert industry. Remove the tree or severely prune it back to the trunk. If infections develop the next year, remove the entire tree.
Spring (about May 1)	Leafrollers	Sevin spray 22.5 % 4 T.
Summer (about July 1 and 3 weeks later)	Filbert worm	Sevin spray 22.5 % 4 T.
August or September (before fall rains)	Bacterial blight	Fixed copper as labels direct. ^b (Only a problem on trees less than 5 years old.)

Walnuts*

Early prebloom	Bacterial blight	Fixed copper as label directs. ^b
Late prebloom	Bacterial blight	Fixed copper as label directs. ^b
Early postbloom	Bacterial blight	Fixed copper as label directs. ^b
Mid-July to Mid-August	Walnut husk flies	Malathion as label directs.

^a Always consult individual product labels for proper rates, intervals between last spray and harvest, compatibility of spray tank mixtures, and cautions for use on certain fruit varieties that may be susceptible to foliage or fruit burn.

^b Fixed copper = tribasic copper or copper hydroxide or copper salts of fatty and rosin acids.

^c Pear psylla attack only pears. They cause fruit and leaves to be sticky from the honeydew they secrete.

^d Codling moth is the adult stage of the insect that causes wormy apples and pears. The larvae have brown heads, and legs are visible. The apple maggot is a white, headless, and legless grub.

^e Flowering fruit trees are often attacked by many of the same insects and diseases that damage fruiting varieties. Apply control measures for flowering stone fruit trees as shown for fruiting trees.

^f Daconil 2787 may cause allergic reaction (skin rash) to some individuals. Never apply to fruit after shucksplit.

^{*} Commercial growers *must* control diseases and insect pests of filberts and walnuts. In most instances, it's impractical for the home owner to attempt these control practices on large walnut tress.

Controlling Diseases and Insects in Home Orchards

G.C. Fisher, J.W. Pscheidt, and J.D. DeAngelis

The spray schedule on the other side was prepared for the home gardener. It doesn't meet the exacting requirements of the commercial fruit grower. We've kept the number of recommended materials and the times of application to a minimum.

Many commercial formulations of fungicides and insecticides are available. If you use them as manufacturers recommend, they're usually effective in controlling the insects and diseases listed on the label.

To get good pest control, thorough spray coverage of trees is necessary. It's hard to get complete coverage with hand equipment, but it can be done. Good coverage means thoroughly wetting the leaves, twigs, and branches. When you mix the wettable powders (WP's) with water, they tend to settle out. Shake or stir the spray mixture frequently while you're applying it.

Mature fruit will not have excess chemical residues if you use the recommended rates and observe the proper interval between the last spray and harvest, as indicated on the manufacturer's label. Table 1 lists the intervals for all the pesticides we recommend. Wash all fruits before eating.

You can use pesticides safely

We selected the pesticides listed in this publication on the basis of their effectiveness, availability, and safety. These pesticides are among the less hazardous to the user. You can use them all safely if you observe commonsense precautions.

Follow the manufacturer's instructions and precautions when you use their pesticide. *This is very important—always apply pesticides according to label instructions.*

Revised by Glenn C. Fisher, Extension entomologist; Jay W. Pscheidt, Extension plant pathologist, and Jack D. DeAngelis, Extension entomologist, Oregon State University.

Table 1. —Harvest restrictions

Formulation	Days to wait after spraying until picking
Benomyl	1
Captan	1
Fixed copper	Use only early in season or postharvest.
Daconil 2787	Do not apply after shucksplit.
Diazinon	10 to 20 ^a
Imidan	7 to 14 ^a
Kelthane	7 to 14 ^a
Lime sulfur	Use only early in season or postharvest.
Malathion	1 to 7 ^a
Methoxychlor	7 to 21 ^a
Sevin	1
Thiodan	7 to 30 ^a
Wettable sulfur	1

^a For the fruit or nut tree you're spraying, check the manufacturer's label instructions about the proper interval between last spray and harvest.

There are many commercial formulations of insecticides and fungicides available for home garden use. Quite a few are variations of formulation or concentrations of the same active ingredient. Pick those insecticides and fungicides that have broad labels and provide for use on a number of your garden fruit, vegetable, and ornamental plants.

Other effective insecticides and fungicides are available, but space prevents listing them. Check with your county Extension agent or home garden supply salesperson for additional information on products. Occasionally, alternate pesticides are available, but they may be packaged in large sizes for the commercial grower—sizes that may not be practical if you have only a few trees.



Follow these safety rules—strictly—when you use pesticides:

- When you mix and use pesticides, avoid getting them on your skin. Wash your hands after spraying.
- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.
- Store pesticides in a safe place, out of reach of children.
- Properly dispose of empty containers.
- Do not keep pesticides in beverage bottles or other containers that you have previously used for food or drink.

Controlling diseases nonchemically

There are a number of nonchemical methods that you can use for disease control. Selective pruning will help improve air circulation and help reduce the amount of time that foliage is wet from rain or snow.

Good sanitation is essential. Remove and destroy all dead and dying plant debris in and around the trees, including branches, leaves, and mummified fruit.

Plant disease-resistant varieties or learn about the relative susceptibility of the varieties you already have.

Controlling moss and lichen

These plants are not parasitic to fruit and nut trees. Regular pruning and the dormant chemical sprays you use for disease and insect control will reduce the amount of moss and lichen in trees.

Gumming on cherries, peaches, plums, and prunes

The disease bacterial canker can cause cankers on the branches and trunk. If the cankers girdle the branch or trunk, death of the affected part occurs. Gumming is frequently associated with the cankers. A copper spray (follow manufacturer's directions) applied in September-October will sometimes reduce infections. In addition, prune out dead limbs.

Gumming may also result from injuries to the tree—mechanical injury, low temperature injury, insect damage, or fungus or bacterial diseases.



Trade-name products are mentioned as illustrations only. This mention does not mean that the Oregon State University Extension Service either endorses these products or intends to discriminate against products not mentioned.

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