

# Managing diseases and insects in home orchards

J. W. Pscheidt, H. Stoven, A. Thompson, B. Edmunds, N. Wiman, and R. Hilton



In this guide, you can learn best pest management practices for your home orchards. Suggested materials and times of application should have activity on the indicated pest. There are many fungicides and insecticides that are effective for managing the diseases and insects listed on the label when used according to the label directions. For more information, see the PNW Pest Management Handbooks, at <https://pnwhandbooks.org>.

The best way to manage diseases and insects in your orchard is to combine methods. Along with using pesticides, there are cultural and biological practices also that can help prevent or manage diseases and insects (see page 4). Pesticide timing and thorough spray coverage are the keys to good pest management. For good coverage, wet the leaves, twigs, and branches thoroughly. (Note: This can be difficult with hand sprayers.) When you use wettable powders, be sure to shake or stir the spray mix often during application because the powders tend to settle at the bottom of the spray container after mixing.

To avoid excess chemical residues, be sure to use the correct rate and proper interval between the last spray and harvest, as shown on the label. Table 1 (page 2) lists the preharvest interval for all the recommended pesticides. Be sure to rinse fruit with clean water before eating.

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*Department of Botany and Plant Pathology:* Jay W. Pscheidt, Extension plant pathology specialist and professor of botany and plant pathology; *Department of Horticulture:* Heather Stoven, Extension community and small farms horticulturist and assistant professor, Yamhill County; Ashley Thompson, Extension horticulturist and assistant professor, Hood River and Wasco counties; Brooke Edmunds, Extension community horticulturist and assistant professor, Linn and Benton counties; Nik Wiman, Extension orchard specialist and assistant professor, North Willamette Research and Extension Center; Richard J. Hilton, agricultural entomologist and faculty research assistant, Southern Oregon Research and Extension Center; all of Oregon State University.

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**Table 1. Home garden/small orchard products.**


🌿 = allowable according to the National Organic Program

Common name	Some brand names	See specific tables for complete list of uses.	Preharvest interval: days to wait after spraying until harvest
Acetamiprid*	Ortho Max Flower Fruit & Vegetable Insect Killer	Codling moth, aphids, leafrollers, stink bugs	7
<i>Bacillus subtilis</i> 🌿	Bayer Advanced Natria Disease Control Serenade Garden Disease Control	Diseases	0
<i>Bacillus thuringiensis (Bt)</i> 🌿	Thuricide	Leafrollers	0
<i>Beauveria bassiana</i> 🌿	Naturalis-O	Aphids	Not specified
Bifenthrin*	Ortho Max Lawn & Garden Insect Killer (pears only)	Codling moth, stink bugs	14
botanical oils <sup>2</sup> 🌿	Organocide 3-in-1 Spray	Powdery mildew and some insects	Not specified
captan	Hi-Yield Captan Bonide Captan	Diseases	1
carbaryl*	Sevin	Many insects	3
chlorothalonil (Daconil)	Bonide Fung-onil GardenTech Daconil Ortho MAX Garden Disease Control	Diseases	Do not apply after shucksplit
combination sprays <sup>1</sup>	Home Orchard Spray Bonide Fruit Tree and Plant Guard	Diseases and insects	3–7 <sup>2</sup>
dormant oil <sup>3</sup> 🌿	Dormant oil	Winter diseases, insects, and mites	Use only during dormant season
Esfenvalerate*	Bug-B-Gone	Husk fly, codling moth, filbertworm	21 to 28 <sup>2</sup>
fixed copper 🌿	Monterey Liqui-Cop and many others	Diseases	Use only early in season or postharvest
gamma-cyhalothrin*	Spectracide Triazide Insect Killer	Many insects	14–21 <sup>2</sup>
horticultural mineral oils (HMO) <sup>2</sup> 🌿	Volck Oil Ferti-Lome Horticultural Spray Oil	Spring/summer diseases, insects, and mites	0
insecticidal soap <sup>3</sup> 🌿	Safer's Insecticidal Soap	Soft-bodied pests like mites and aphids. Also powdery mildew.	0
kaolin clay 🌿	Surround at Home	Pear psylla and suppression of stink bugs	Not specified
lambda-cyhalothrin*	Fruit Tree & Plant Guard	Many insects	14–21 <sup>2</sup>
malathion*	Malathion	Many insects	1–7 <sup>2</sup>
Myclobutanil <sup>4</sup>	Spectricide Immunox	Diseases	1 day stone fruits; 14 days apples
Neem <sup>3</sup> 🌿	Concern Garden Defense Natural Guard Neem	Many insects	Not specified
Permethrin*	Bonide Eight Insect Control	Many insects	1–14 <sup>1</sup>
potassium bicarbonate	Bi-Carb Old-fashioned Fungicide Organocide Organic Fungicide	Powdery mildew	Not specified
Propiconazole <sup>4</sup>	Bonide Infuse Systemic	Diseases	0
Pyrethrins*	Bonide Pyrethrin Garden Spray	Many insects	1

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**Table 1. Home garden/small orchard products (continued).**

 = allowable according to the National Organic Program

Common name	Some brand names	See specific tables for complete list of uses.	Preharvest interval: days to wait after spraying until harvest
Spinosad*	Bull's-Eye	Codling moth, leafminers, leafrollers and fruit flies.	7–14 <sup>2</sup>
Sulfur <sup>3</sup> 	Safer's Garden Fungicide Sulfur Sulfur Dust	Diseases and mites	1

<sup>1</sup> Contains fungicides and insecticides. See caution about bee kill under “Applying pesticides safely” (below).

<sup>2</sup> Check the manufacturer’s label for the proper interval for the fruit or nut tree you are spraying.

<sup>3</sup> Soaps and oils are not compatible with sulfurs. Mixing them together or using one right after the other can cause plant damage.

<sup>4</sup> Frequent use can cause disease resistance to the chemical.

\* These pesticides are highly toxic to bees. Apply them with caution.

## Importance of controlling diseases and insects in commercial fruit districts

Because of recent changes in pesticide registrations, home orchardists must be diligent with their pest control to prevent damage to nearby commercial orchards. If you grow fruit trees for fruit production, it is critical that you help prevent the spread of pests to commercial orchards. (See “Required pest control programs,” page 15). If you have fruit trees in your yard or landscape that are just for shade or beauty, you might consider replacing them with trees that do not attract pests that can damage commercial fruit trees. Contact your local Extension office for a list of some replacement trees.

## Applying pesticides safely

There are many organic and synthetic formulations of pesticides for home garden use. Many are variations with the same active ingredient. Look for pesticides you can use on a wide range of fruit, nuts, vegetables and ornamentals, so you can limit the number of pesticides you need to buy and store.

The pesticides listed in this publication were chosen for how effective, available and safe they are. Always apply pesticides according to the label instructions—this is very important. The label has valuable application information and safety precautions to protect you, others, and the environment. Before you buy or open the container, read the label. Read it again before you mix, store, or throw the product away.

Be cautious when you use products that contain a combination of more than one insecticide and fungicide, such as “home orchard sprays.” Some of these products call for applications during bloom to control fungal diseases. If you also apply an insecticide during bloom, you run the risk of killing bees that are critical for pollination. A better strategy, especially during the spring, is to use products that contain only a single type of pesticide, and apply them only when necessary. In general, be careful when applying pesticides that are toxic to bees. Do not apply insecticides that are toxic to bees during bloom or when bees are foraging nearby. This may be less convenient, but it can save you trouble in the long run.

Not every effective pesticide is included here; it is not possible to list them all. Some of these other pesticide products are packaged in larger quantities for

commercial growers, so they are not practical if your orchard has only a few trees. Check with your local Extension agent, Oregon State University Master Gardener™, or nursery professional for more information.

## Managing diseases and insects without using pesticides

There are many cultural and biological techniques you can use to manage or prevent disease and insect damage. Consult your local Extension agent, OSU Master Gardener, or nursery professional for more information.

- **Choose the proper cultivar for your climate and soil.** Apricots are not well adapted west of the Cascades: wet springs prevent apricot fruit set and cause disease.
- **Choose disease resistant cultivars.** For example, Liberty, Prima, Akane, and Chehalis apples are resistant to apple scab, while Granny Smith and Gala are not.
- **Water and fertilize the right way.** Overwatering can cause root rot, and overfertilizing can increase disease and insect problems. A soil test is a first step in managing soil fertility, and analysis of leaf tissue samples gives you valuable information about the nutrient status of your trees.
- **Proper pruning and fruit thinning.** Proper pruning and fruit thinning improve fruit quality, air circulation and pesticide spray coverage.
- **Good sanitation.** Remove and get rid of (burn, bury or send to landfill) diseased branches and leaves. Remove and destroy old fruit from the tree and the ground. Do not use diseased leaves as mulch. Mow and shred or remove old leaves beneath fruit trees.
- **Pest monitoring.** Know which pests are likely to attack your trees and when these pests might appear. Create a routine for inspecting your orchard. Pheromone and sticky traps are useful pest management tools. Contact your local Extension agent or nursery professional for more information.
- **Biorational pesticides.** Insecticidal soaps and oils are effective against a wide range of tree fruit pests. You can use microbial pesticides like *Bacillus thuringiensis* (*Bt*) to control certain caterpillars.
- **Biological control.** You can enhance control by the pests' natural enemies by limiting how many times you use pesticide sprays and by using selective pesticides when possible.
- **Exclusion.** In the home orchard, excluding certain pests can be a practical method. For example, bag individual apples in mesh baggies (fruit sox/orchard sox) to protect fruits from codling moth, apple maggot, and stink bugs. Another tactic is to cover entire trees in screen material to exclude pests.
- **Tolerance.** Some pests, such as leafrollers, are rarely a problem for the tree or the crop and they are heavily targeted by natural enemies. It's a good idea to tolerate the presence of some pests at non-damaging levels.

# FRUIT

## Apples

Time of application	Insect or disease	Materials or practices
Late winter (dormant)	Apple anthracnose and scab	Proper pruning to open tree canopy and improve air circulation. Remove and burn diseased branches and fallen leaves. Also remove from the orchard any mummified fruit left in the tree.
	Scale, aphids, and mite eggs	dormant oil
Prepink (before pink bloom shows)	• Scab only	captan or myclobutanil
Pink (just before blossoms open)	• Powdery mildew	<i>Bacillus subtilis</i> , myclobutanil, or oils (botanical or HMO)
	• Scab	captan or myclobutanil
Petal fall	• Powdery mildew	<i>Bacillus subtilis</i> , insecticidal soap, myclobutanil, oils (botanical or HMO), or potassium bicarbonate
	• Scab	captan or myclobutanil
	Aphids	– <i>Beauveria bassiana</i> , insecticidal soap, malathion, neem, permethrin, or pyrethrins –May require two sprays about 10 days apart.
Bloom through spring	Fire blight (not common in the Willamette Valley or Coast Range)	Remove and destroy infected branches. Make cuts 12 inches below infected branches. Disinfect pruning tools between cuts with shellac thinner (70% ethyl alcohol) or 10% bleach. Remove late blooms when noticed. Difficult to control. Antibiotics are labeled but difficult to use properly.
Summer to harvest	• Codling moth	–To be effective, you must maintain insecticide coverage whenever fruit and moths are present. You might need to make applications every 7 to 14 days, especially near commercial orchards. –Acetamiprid, carbaryl, esfenvalerate, gamma-cyhalothrin, lambda-cyhalothrin, malathion, pyrethrins, or spinosad. All are registered for home use. –Use pheromone traps to time the first spray accurately, or check with your local Extension office for information. Place traps in the upper third of the canopy ahead of bloom.



Photo: Jay W. Pscheidt, © Oregon State University

Figure 1. Apple scab is a common problem on apples grown west of the Cascades.



Photo: Nik Wiman, © Oregon State University

Figure 2. Codling moth is common wherever apples are grown.

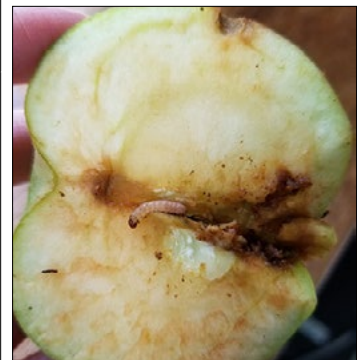


Photo: Heather Stoven, © Oregon State University

Figure 3. Codling moth is generally a problem near the core of the apple.

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## Apples (continued)

Time of application	Insect or disease	Materials or practices
Summer to harvest (continued)	• Apple maggot	–Carbaryl, malathion, pyrethrins, or spinosad –Where apple maggot occurs, treat from late July until harvest at 10- to 14-day intervals. Use sticky traps for monitoring and control.
	Spider mites	insecticidal soap, plant-derived oils, or sulfur
	San Jose and lecanium scale crawlers	HMO or other plant-derived oils, insecticidal soap, or neem
	Aphids	– <i>Beauveria bassiana</i> , insecticidal soap, malathion, neem, permethrin, or pyrethrins. –May require two sprays about 10 days apart.
	Brown marmorated stink bug	Carbaryl, gamma-cyhalothrin, lambda-cyhalothrin, permethrin, acetamiprid, kaolin (suppression), or malathion
Postharvest	Apple anthracnose	–Fixed copper before fall rains. –Remove and destroy cankered branches from the orchard and any rotted or mummified fruit from the tree.
Leaf fall	Scab	–Rake and dispose of leaves by burning, burying, or completely composting. –Do not use as a mulch near the orchard.

Commercial growers must control diseases and insect pests of apples. Most of the time, it is not practical for home fruit growers to try these control practices on large apple trees.

Note: Several Oregon counties have ordinances that require home fruit growers to use minimum spray programs to prevent disease and insect spread to commercial orchards. See “Required pest control programs” (page 15) for requirements in specific counties. Applications for pests indicated with a (•), if they are applied at the correct time, should meet the requirements of most counties. Check with your local Extension agent if you are not sure.

## Pears

Time of application	Insect or disease	Materials or practices
Late winter (dormant)	Scab and other diseases	Prune properly to open trees and improve air circulation. Remove and burn diseased branches and fallen leaves. Also remove any mummified fruit left in the tree.
	Pseudomonas blight	fixed copper before buds open
	Scale, aphid, pear psylla, blister mites, and mite eggs	sulfur with dormant oil
Prepink (before pink bloom shows)	• Scab	Bonide Fruit Tree and Plant Guard
	• Pear psylla	insecticidal soap, kaolin, or neem <sup>1</sup>
Pink (just before blossoms open)	• Scab and powdery mildew	Bonide Fruit Tree and Plant Guard
Petal fall	• Scab and powdery mildew	Bonide Fruit Tree and Plant Guard
	Aphids	–insecticidal soap or neem <sup>1</sup> –May require two sprays about 10 days apart.
Spring (especially after main bloom)	Fire blight (not common in the Willamette Valley or Coast Range)	Remove and destroy infected branches. Make cuts 12 inches below infected branches. Disinfect pruning tools between cuts with shellac thinner (70% ethyl alcohol) or 10% bleach. Remove late blooms when noticed. Difficult to control. Antibiotics are labeled but difficult to use properly.
Summer to harvest	Pseudomonas blight (for Asian pears)	Summer pruning helps reduce branch dieback caused by this disease.



Photo: Jay W. Pscheidt, © Oregon State University

Figure 4. Codling moth entrance hole in fruit.

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## Pears (continued)

Time of application	Insect or disease	Materials or practices
	• Codling moth	<p>–To be effective, you must maintain insecticide coverage whenever fruit and moths are present. You might need to make applications every 7 to 14 days, especially near commercial orchards.</p> <p>–Acetamiprid, bifenthrin, carbaryl, esfenvalerate, gamma-cyhalothrin, insecticidal soap, lambda-cyhalothrin, malathion, permethrin, pyrethins, or spinosad. All are registered for home use.</p> <p>–Use pheromone traps to time the first spray accurately, or check with your local Extension office for information. Place traps in the upper third of the canopy ahead of bloom.</p>
	Spider mites	HMO or sulfur
	San Jose scale crawlers	HMO or other plant-derived oils, insecticidal soap, or neem <sup>1</sup>
	Brown marmorated stink bug	Carbaryl, gamma-cyhalothrin, lambda-cyhalothrin, permethrin, bifenthrin, acetamiprid, kaolin (suppression), or malathion
	Pear psylla	esfenvalerate, insecticidal soap, kaolin, or neem <sup>1</sup>
	Aphids	insecticidal soap, kaolin, or neem <sup>1</sup>
Postharvest (in fall after all fruit is harvested)	Blister mites and pear rust mites	sulfur with oil
Leaf fall	Scab	<p>–Rake and dispose of leaves by burning, burying, or completely composting.</p> <p>–Do not use as a mulch near the orchard.</p>

<sup>1</sup>Do not use neem products on Comice pears or related cultivars. They can injure buds, leaves and fruits.

Commercial growers must control diseases and insect pests of pears. Most of the time, it is not practical for home fruit growers to try these control practices on large pear trees.

Note: Several Oregon counties have ordinances that require home fruit growers to use minimum spray programs to prevent disease and insect spread to commercial orchards. See “Required pest control programs” (page 15) for requirements in specific counties. Applications for pests indicated with a (•), if applied at the correct time, should meet the requirements of most counties. Check with your local Extension agent if you are not sure.



## Peaches and Nectarines

Time of application	Insect or disease	Materials or practices
Winter dormant	Cytospora canker and Pseudomonas	Can cause branch dieback. Remove and burn infected wood.
Dormant (two sprays: Dec. 15 and before Jan. 15)	• Leaf curl and shothole <sup>2</sup>	chlorothalonil or fixed copper
Late February	Aphid and mite eggs, and scale	–dormant oil –For best results, do not combine with leaf curl spray.
	Leaf curl <sup>2</sup>	chlorothalonil
Bloom stages	Brown rot blossom blight	–captan, chlorothalonil, or propiconazole –Spray once per week, from first showing pink through petal fall.
Prepink and petal fall	Leafrollers and peach twig borer	<i>Bacillus thuringiensis</i> (Bt), carbaryl, esfenvalerate, neem, or spinosad
1 week after blossom petals fall and/or at shucksplit <sup>1</sup>	Shothole	captan or chlorothalonil
Early June	• Peach twig borer and oriental fruit moth	–esfenvalerate, gamma-cyhalothrin, permethrin, or pyrethrins <b>–Do not use permethrin on nectarines.</b> –Use pheromone traps to time sprays.
Summer spray (early July and again 3 weeks later)	Peachtree borer	–carbaryl, gamma-cyhalothrin, lambda-cyhalothrin, malathion, or pyrethrins <b>–Do not use carbaryl, malathion, or pyrethrins on nectarines.</b> Spray trunk and lower limbs thoroughly. Do not spray fruit. –Use pheromone traps to time sprays. –Young trees are especially susceptible to injury from peachtree borers.
Fruit set to harvest	Brown rot	Regularly remove and destroy any fallen or rotted fruit prior to harvest.
	Brown marmorated stink bug	Carbaryl, gamma-cyhalothrin, lambda-cyhalothrin, permethrin, acetamiprid, kaolin (suppression), or malathion
14 to 21 days before picking	Western spotted cucumber beetle	carbaryl (western Oregon only)
	Brown rot	captan, propiconazole, or sulfur
	Earwigs	–carbaryl. (Note: Spinosad is effective on this pest when used for other insects.) –Spray trunk and base of tree thoroughly.

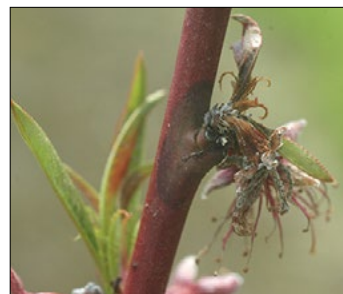


Photo: Jay W. Pscheidt, © Oregon State University

Figure 5. Brown rot blossom blight is a fungal disease of peach. The disease moves from the flower into the shoots.



Photo: Jay W. Pscheidt, © Oregon State University

Figure 6. Peach leaf curl is easy to recognize but hard to manage.

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## Peaches and Nectarines (continued)

Time of application	Insect or disease	Materials or practices
	Spotted wing drosophila	–carbaryl, esfenvalerate, malathion, pyrethrins, or spinosad. –You might need to repeat applications at frequent intervals. Fruit becomes susceptible to attack around the time of color change to light tan. Peach and nectarine may be attacked if fruit is allowed to tree ripen.
Autumn or early winter when leaves begin to fall	• Shothole and leaf curl <sup>2</sup>	chlorothalonil
Anytime before budbreak	Brown rot	Remove and destroy any rotted or mummified fruit remaining in or around the tree.

<sup>1</sup> Shucksplit is when small, young fruit shed the papery sheath covering them shortly after bloom.

<sup>2</sup> Choose one timing for leaf curl and shothole in arid areas. Use all timings in the Willamette Valley.

Commercial growers must control diseases and insect pests of peaches and nectarines. Most of the time, it is not practical for home fruit growers to try these control practices on large peach or nectarine trees.

Note: Several Oregon counties have ordinances that require home fruit growers to use minimum spray programs to prevent disease and insect spread to commercial orchards. See “Required pest control programs” (page 15) for requirements in specific counties. Applications for pests indicated with a (•), if they are applied at the correct time, should meet the requirements of most counties. Check with your local Extension agent if you are not sure.

## Apricots

Time of application	Insect or disease	Materials or practices
Late winter (dormant)	Scale and mite eggs	dormant oil
Bloom stages (first showing pink to petal fall)	Brown rot	captan, chlorothalonil, or propiconazole
Shucksplit <sup>1</sup>	• Coryneum blight (shothole)	–captan or myclobutanil – Fungicide needed only if rain is expected within 2 weeks.
Summer spray	Peachtree borer	–gamma-cyhalothrin or lambda-cyhalothrin – Spray trunk and lower limbs thoroughly. Do not spray fruit. Use pheromone traps to properly time sprays.
2 weeks preharvest	Brown rot	–captan or propiconazole – Fungicide needed only if rain is forecast.

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## Apricots (continued)

Time of application	Insect or disease	Materials or practices
	Spotted wing drosophila	–carbaryl, esfenvalerate, malathion, pyrethrins, or spinosad – You might need to repeat applications at frequent intervals. Apricot may be attacked if fruit is allowed to tree-ripen.
Fall (before rains begin)	• Coryneum blight (shothole)	chlorothalonil or fixed copper
	Brown rot	Remove and destroy any rotted or mummified fruit in or around the trees.

<sup>1</sup>Shucksplit is when small, young fruit shed the papery sheath covering them shortly after bloom.

Do not use sulfur products on apricots. They can injure buds, leaves and fruit.

Commercial growers must control diseases and insect pests of apricots. Most of the time, it is not practical for home fruit growers to try these control practices on large apricot trees.

Note: Several Oregon counties have ordinances that require home fruit growers to use minimum spray programs to prevent disease and insect spread to commercial orchards. See “Required pest control programs” (page 15) for requirements in specific counties. Applications for pests indicated with a (•), if applied at the correct time, should meet the requirements of most counties. Check with your local Extension agent if you are not sure.

## Cherries

Time of application	Insect or disease	Materials or practices
Late winter (dormant)	Aphid and mite eggs, scale, and leafrollers	dormant oil
Bloom stages (first showing pink to petal fall)	Brown rot blossom blight	–captan, chlorothalonil, or propiconazole – Spray once or twice during early bloom.
Petal-fall stage	Black cherry aphid	<i>Beauveria bassiana</i> , esfenvalerate, insecticidal soap, malathion, pyrethrins, or neem
	Leafrollers	– <i>Bacillus thuringiensis</i> (Bt), carbaryl, malathion, or spinosad – Spray after bloom to prevent accidental poisoning of bees during the pollination period.
	Cherry leaf spot and brown rot	captan, chlorothalonil, myclobutanil, or propiconazole
Shucksplit <sup>1</sup>	Cherry leaf spot and brown rot	captan, chlorothalonil, myclobutanil, or propiconazole
	Powdery mildew (a problem east of the Cascades)	<i>Bacillus subtilis</i> , myclobutanil, oils (botanical or HMO), potassium bicarbonate, propiconazole, or sulfur

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Photo: Jay W. Pscheidt, © Oregon State University

Figure 7. Brown rot fruit rot of cherry.

## Cherries (continued)

Time of application	Insect or disease	Materials or practices
Early summer when fruit flies emerge (about Memorial Day)	• Cherry fruit fly	– carbaryl, esfenvalerate, malathion, pyrethrins, or spinosad – Applications may need to be repeated at 7- to 14-day intervals. Use traps to properly time treatments.
	Spotted wing drosophila	– carbaryl, esfenvalerate, malathion, pyrethrins, or spinosad – Applications may need to be repeated at frequent intervals. Fruit becomes susceptible to attack around the time of color change to light tan.
	Powdery mildew (a problem east of the Cascades)	<i>Bacillus subtilis</i> , myclobutanil, oils (botanical or HMO), potassium bicarbonate, propiconazole, or sulfur
Summer (if pests appear)	Spider mites	insecticidal soap
	Aphids	<i>Beauveria bassiana</i> , esfenvalerate, insecticidal soap, malathion, or neem
1 to 2 weeks before harvest (only if rain is likely)	Brown rot fruit rot	propiconazole or sulfur
After harvest during dry weather	Bacterial canker and Cytospora canker	Can cause branch dieback. Remove and destroy infected wood.
Leaf fall	Leaf spot	Rake and destroy fallen leaves. Do not use as a mulch near the orchard.
	Brown rot	Remove and destroy any mummified fruit in or around trees.

<sup>1</sup>Shucksplit is when small, young fruit shed the papery sheath covering them shortly after bloom.

In general, brown rot and cherry leaf spot are a problem for cherries grown west of the Cascades, while powdery mildew is a problem east of the Cascades. Bacterial canker is a problem throughout Oregon and the PNW.

Commercial growers must control diseases and insect pests of cherries. Most of the time, it is not practical for home fruit growers to try these control practices on large cherry trees.

Note: Several Oregon counties have ordinances that require home fruit growers to use minimum spray programs to prevent disease and insect spread to commercial orchards. See “Required pest control programs” (page 15) for requirements in specific counties. Applications for pests indicated with a (•), if applied at the correct time, should meet the requirements of most counties. Check with your local Extension agent if you are not sure.

## Prunes and Plums

Time of application	Insect or disease	Materials or practices
Late winter (dormant)	Aphid and mite eggs, and scale	dormant oil
	Cytospora canker and Pseudomonas	Can cause branch dieback. Remove and destroy infected wood.
Bloom stages (first showing pink to petal fall)	Brown rot blossom blight	– captan, chlorothalonil, or propiconazole – Spray once or twice during bloom.
Petal-fall stage	Aphids	<i>Beauveria bassiana</i> , esfenvaterate, insecticidal soap, or neem
	Leafrollers	– esfenvaterate or spinosad – Spray after bloom to prevent accidental poisoning of bees during the pollination period.
	Leaf spots and brown rot	captan, chlorothalonil, myclobutanil, or propiconazole
Shucksplit <sup>1</sup>	Leaf spots and brown rot	captan, chlorothalonil, myclobutanil, or propiconazole
Summer spray (early July and 3 weeks later)	Peachtree borer	– gamma-cyhalothrin or lambda-cyhalothrin – Spray trunk and lower limbs thoroughly. Do not spray fruit. Use pheromone traps to properly time sprays.
Preharvest	Brown rot	captan, propiconazole, or sulfur if rain is forecast within 1 to 2 weeks of harvest
	Spotted wing drosophila	– carbaryl, esfenvaterate, pyrethrins, or spinosad – May attack if fruit is allowed to tree-ripen. – You might need to repeat applications at frequent intervals.
Leaf fall	Brown rot	Remove and destroy any rotted or mummified fruit left in or around trees.

<sup>1</sup>Shucksplit is when small, young fruit shed the papery sheath covering them shortly after bloom.

Commercial growers must control diseases and insect pests of prunes and plums. Most of the time, it is not practical for home fruit growers to try these control practices on large prune or plum trees.

Note: Several Oregon counties have ordinances that require home fruit growers to use minimum spray programs to prevent disease and insect spread to commercial orchards. See “Required pest control programs” (page 15) for requirements in specific counties. Check with your local Extension agent if you are not sure.

# NUTS

## Walnuts

Time of application	Insect or disease	Materials or practices
Early prebloom	Bacterial blight	fixed copper
Late prebloom	Bacterial blight	fixed copper
Early postbloom	Bacterial blight	fixed copper
Mid-July to mid-August	Walnut husk flies	– esfenvalerate, gamma-cyhalothrin, pyrethrins, or spinosad – Use yellow sticky traps to time spray applications.

Commercial growers must control diseases and insect pests of walnuts. Most of the time, it is not practical for home fruit growers to try these control practices on large walnut trees.

Note: Several Oregon counties have ordinances that require home fruit growers to use minimum spray programs to prevent disease and insect spread to commercial orchards. See “Required pest control programs” (page 15) for requirements in specific counties. Check with your local Extension agent if you are not sure.



Photo: Jay W. Pscheidt, © Oregon State University

Figure 8. Husk fly damage is a common problem with backyard-grown walnuts.

## Hazelnuts (Filberts)

Time of application	Insect or disease	Materials or practices
Dormant period	Eastern filbert blight	Remove and destroy cankers before budbreak.
Budbreak (and every 2 weeks for four sprays)	Eastern filbert blight	chlorothalonil (pre-harvest interval is 120 days)
Spring (about May 1)	Leafrollers	<i>Bacillus thuringiensis</i> (Bt), carbaryl, esfenvalerate, neem, or spinosad
	Aphids	<i>Beauveria bassiana</i> , insecticidal soap, or neem
Summer (about July 1 and 3 weeks later)	Filbertworm	–carbaryl, esfenvalerate, gamma-cyhalothrin, pyrethrins, or spinosad – Use pheromone traps to properly time sprays.
	Aphids	<i>Beauveria bassiana</i> , insecticidal soap, or neem
August or September (before fall rains)	Bacterial blight	–fixed copper – Generally only a problem on trees less than 5 years old.

Commercial growers must control diseases and insect pests of hazelnuts. Most of the time, it is not practical for home fruit growers to try these control practices on large hazelnut trees.

Note: Several Oregon counties have ordinances that require home fruit growers to use minimum spray programs to prevent disease and insect spread to commercial orchards. See “Required pest control programs” (page 15) for requirements in specific counties. Check with your local Extension agent if you are not sure.

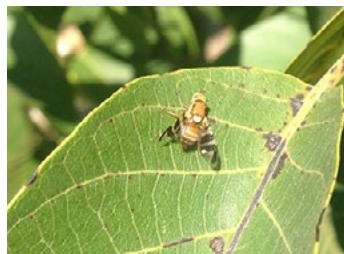


Photo: Nik Wiman, © Oregon State University

Figure 9. Adult walnut husk fly.



Photo: Jay W. Pscheidt, © Oregon State University

Figure 10. Eastern filbert blight is a problem on older varieties planted and grown before 2009.

## Moss and lichen

Moss and lichen do not damage fruit and nut trees. Regular pruning and using the dormant chemical sprays (copper fungicides or lime sulfur) for disease and insect control will reduce the amount of moss and lichen in trees.

## Pesticide safety tips

Most accidents occur during mixing. Wear rubber gloves and protect your eyes from spilling or splashing chemicals. Avoid getting pesticides on your skin and wash your hands when you finish. While spraying, wear a long-sleeve shirt, full-length pants, unlined rubber gloves, and goggles or some type of eye protection. Wash all clothes after spraying. See [Using Pesticides Safely](#) (EC 1497).

Never eat or smoke when using pesticides. Do not blow your nose during spraying, and keep your fingers away from mouth and nose.

Check your sprayer for leaking hoses, leaking connections, and plugged or worn nozzles. Clean filters to prevent accidents.

Mix the pesticide at the recommended rate on the label. Mix only the volume needed to complete the task.

**Don't exceed the label rate.** Putting more pesticide into the environment than you need for good control is wasteful and dangerous.

When you finish, clean your sprayer immediately and dispose of the rinse water properly as indicated on the label.

Apply pesticides at the right time and under the right weather conditions. Never apply pesticides when winds will cause the chemical to drift off the target area or when temperatures exceed 85°F. Be careful not to let pesticides contaminate neighboring ponds or streams. You are liable for any off-site damage that may result from your misuse of pesticides.

Store pesticides in a safe, secure place, out of the reach of children and in their original container. Never keep pesticides in beverage bottles or other previously used food or drink containers. Properly dispose of empty glass, metal, and plastic pesticide containers, after first rinsing them three times with plenty of water.

Accidents can happen. **You can reach the Poison Center at 1-800-222-1222.**

## Required pest control programs

Several Oregon counties have ordinances that require home fruit growers to rigorously control pests to prevent disease and insect spread to commercial orchards. Doing that often involves a more exacting control program than those outlined in this publication. Contact your local Extension office for details if you live in any of the following counties:

- Hood River
- Jackson
- Josephine
- Lane
- Linn
- Marion
- Polk
- Sherman
- Union
- Wasco
- Yamhill
- Umatilla

## For more information

*Pacific Northwest Weed Management Handbook*

*Pacific Northwest Insect Management Handbook*

*Pacific Northwest Plant Disease Management Handbook*

<https://pnwhandbooks.org/>

For sale in book format at <https://catalog.extension.oregonstate.edu/>

Stop BMSB: Management of brown marmorated stink bug in U.S. specialty crops

<https://www.stopbmsb.org/>

IPM Pest and Plant Disease Models and Forecasting

<http://uspest.org/wea/>

*Using Pesticides Safely* (EC 1497)

<https://catalog.extension.oregonstate.edu/ec1497>

How to Reduce Bee Poisoning from Pesticides (PNW 591)

<https://catalog.extension.oregonstate.edu/pnw591>

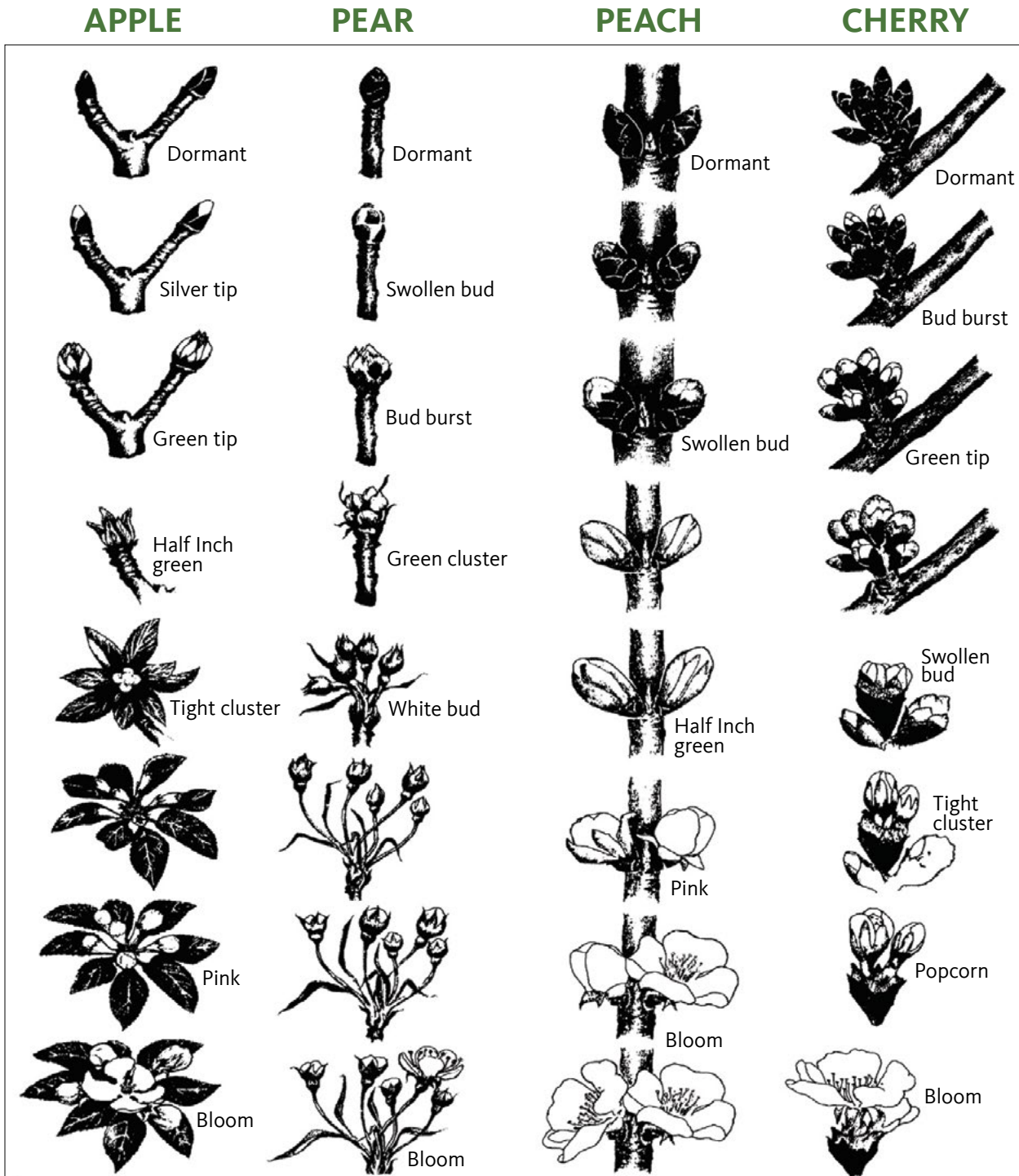


Figure 11. Growth stages of various tree fruits.

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