

Peach

2019 Pest Management Guide for Oregon

EM 8419 • Revised May 2019

Nik Wiman, Jay W. Pscheidt, and Ed Peachey

The chemicals, formulations, and rates listed for insect, mite, and disease control are among the best recommendations based on label directions, research, and orchard use experience. Only a thorough knowledge of the orchard, its cultivar, tree size and density, canopy characteristics, pest complex, and past pest problems will enable you to correctly select chemicals, rates, amount of water used per acre, and method of application for optimum pest control. Occasionally, different formulations of a product or like formulations containing a different amount of active ingredient also are registered and effective for use on the pests listed. These products also may be used; we do not intend to discriminate against them. You may wish to consult their labels and determine whether their use confers advantages over the products listed in this guide.

Always refer to the pesticide label for use instructions. It is the legal document regarding use patterns. Two questions frequently are asked about the chemical control of insects and diseases: “How much chemical do I use per acre?” and “What is the least amount of water I need per acre to apply in my concentrate sprayer?” Notice that the schedule below suggests an amount of formulated product (not active ingredient) to use per acre. This amount is based on a “typical” middle age and density orchard with moderate pest pressure. Common sense indicates that less material may be needed than that given for 1- to 4-year-old orchards. Conversely, more chemical (within label limits) may be required for large, mature trees experiencing heavy pest pressure from multiple pests.

Many insecticide labels today indicate the minimum amount of water needed per acre to apply concentrate sprays of insecticides, as well as how to calculate the amount of chemical needed per acre in a concentrate sprayer. **CHECK THE LABEL BEFORE SPRAYING!** Some label directions indicate dilute applications only.

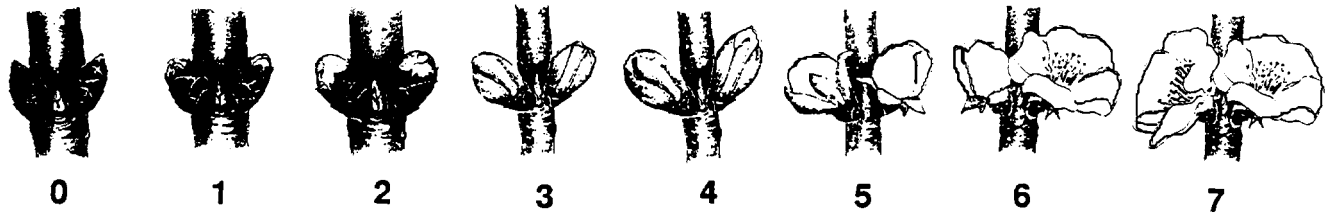
Also:

1. Don't mix boron sprays with pesticides. The elevated pH of the boron spray solution weakens many insecticides.
2. Make sure any tank-mixes of pesticides are compatible. For example, the elevated pH of some boron spray solutions weakens many insecticides.
3. Use adjuvants and spreader stickers with caution.

Important information

1. Be aware of worker protection standards. All new pesticide labels will provide orchard reentry intervals and personal protection equipment information.
2. *Orchard Pest Management, a Resource Book for the Pacific Northwest, 1993* (edited by Beers, Brunner, Willet, and Warner, published by the Good Fruit Grower, Yakima, WA) provides a comprehensive list of the tree fruit insect and mite pests of orchards. Life histories, damage, detection, monitoring, and management of the pests are covered. It is one of our primary sources of information in developing this pest management guide and the most complete reference on orchard use of the principles of integrated pest management.

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.



Stages

Dormant and Delayed Dormant (Stages 0, 1, and 2)
 Prebloom (Stage 3)
 Popcorn (Stages 4–5)
 Full Bloom (Stage 7)

Not shown

Petal Fall; Shuck Split to Shuck Fall; Summer;
 Preharvest; Postharvest

Illustration courtesy of Washington State University Extension.

Peach pest control recommendations

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

Dormant and Delayed Dormant (Stages 0, 1, and 2—just before buds open and before eggs hatch)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval
Cytospora canker	None		Remove and destroy dead cankered limbs.
Peach leaf curl and shothole			
<i>Note:</i> Apply first leaf curl spray when 50% of the leaves have fallen and again at delayed dormant in late February before floral buds begin to open. An additional spray may be needed during the dormant season for shothole control depending on material selected. The addition of a spreader sticker will increase the effectiveness of some leaf curl sprays. Even curl-resistant cultivars need protection during the first few years. East of the Cascades, in southern Oregon, and in low-rainfall areas, a delayed dormant application alone should be effective.			
bordeaux 12-12-100	copper sulfate + hydrated lime	—	—
Bravo Weather Stik	chlorothalonil	3–4 pt	Group M5 fungicide. Effective if used all dormant season long. Do not add a spreader sticker. 12-hour reentry.
Rex Lime Sulfur Solution	calcium polysulfide	6-10 gal/100 gal water	A very effective product for leaf curl only. 48-hour reentry.
Cuprofix or other copper-based products	copper sulfate	5–10 lb	Effective only on shothole if used during the dormant season. Group M1 fungicide. 48-hour reentry. Many other copper products are labeled, such as C-O-C-S, Copper-Count-N, and Nordox.
Echo 720	chlorothalonil	3–4 pt	Group M5 fungicide. Effective if used all dormant season long. Do not add a spreader sticker. 12-hour reentry.
Ferbam Granuflo	ferbam	4.5 lb	Group M3 fungicide. 24 hour reentry.
Nu-Cop 50DF	cupric hydroxide	8–16 lb	Effective only on shothole if used during the dormant season. Group M1 fungicide. 48-hour reentry. Many other copper products are labeled, such as C-O-C-S, Copper-Count-N, and Nordox.
Syllit FL	dodine	3 pt	Group U12 fungicide. 48-hour reentry.

Dormant and Delayed Dormant (Stages 0, 1, and 2—just before buds open and before eggs hatch) continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Dormant and Delayed Dormant (Stages 0, 1, and 2—just before buds open and before eggs hatch)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval
Peach leaf curl and shothole (continued)			
Lime Sulfur Ultra	calcium polysulfide	2-3 gal/100 gal water	A very effective product for leaf curl only. 48-hour reentry.
Ziram 76DF	ziram	6–8 lb	Group M3 fungicide. A very effective product for both leaf curl and shothole. 48-hour reentry.

Scale, mite, and aphid eggs, peach twig borer

Dormant horticultural oil (superior) or horticultural mineral oil (HMO) + one of the following:	oil	4–6 gal	When using a WP formulation with oil, fill sprayer tank one-third full with water, turn on agitator, slowly add the WP, fill tank one-half full with more water, add oil. Keep agitator running, finish filling.
Altacor 35 WDG	chlorantraniliprole	3–4.5 oz	Group 28 insecticide. Use high rate for dormant and lower for delayed dormant. 4-hour reentry.
Assail 30 SG	acetemiprid	2.5–5.3	Group 4A insecticide. Targets aphids and peach twig borer at this timing. 12-hour reentry.
Esteem 35WP	pyriproxyfen	4–8 oz	Group 7C insecticide. Improves efficacy of oil treatments for scale. Limited to 3 applications per season.
Exirel 0.83SE	cyantraniliprole	10–20.5 oz	Group 28 insecticide. No more than 0.4 lb ai/A per season. Use high rate for dormant and lower for delayed dormant. 12-hour reentry.
Success 2L	spinosad	4–6 gal	Group 5 insecticide. Targets peach twig borer, low efficacy for piercing/sucking insects. Entrust is the OMRI formulation approved for organic use. Apply when overwintering larvae become active. 4-hour reentry.

Prebloom (prepink) (Stage 3)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval
--------------------------------------	-------------------------------	----------------------------------	----------------------------------

Shothole borer

Note: This pest has two and possibly three generations in the Willamette Valley.

No products are registered for control of this pest on peach.

Popcorn (Stages 4–5—just before petals begin to open)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
--------------------------------------	-------------------------------	----------------------------------	--

Peach twig borer, leafrollers, aphids, eyespotted bud moth, stinkbugs

Note: This is the most satisfactory time to apply green peach aphid-twig borer combination sprays. Avoid pyrethroids (group 3) at this timing as they may flare spider mites. Monitor peach twig borer with pheromone traps.

Peach twig borer, leafrollers, bud moth

Altacor 35 WDG	chlorantraniliprole	3–4.5 oz	Group 28 insecticide. Apply at maximum moth flight. 4-hour reentry. 10-day PHI.
<i>Bacillus thuringiensis</i> (B.t.)	bacterium	See label.	Group 11B2 insecticide. Generic. OMRI listed for organic use. Apply when temperatures exceed 60°F. Complete coverage and 2 to 3 sprays usually are required for satisfactory control. Follow the label rates for individual products. 0-day PHI.

Popcorn (Stages 4–5—just before petals begin to open) continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Popcorn (Stages 4–5—just before petals begin to open)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Peach twig borer, leafrollers, bud moths (continued)			
Delegate WG	spinetoram	4.5–7 oz	Group 5 insecticide. Apply no less than 1 week apart, maximum 4 times per season. 4-hour reentry. 7-day PHI.
Exirel 0.83SE	cyantraniliprole	10–20.5 oz	Group 28 insecticide. Apply at maximum moth flight. No more than 0.4 lb ai/A per season. 12-hour reentry. 3-day PHI.
Intrepid 2F	methoxyfenozide	8–16 oz	Group 18 insecticide. For peach twig borer, apply at start of egg hatch. Reapply after 14 days. No more than 64 oz per season. 4-hour reentry. 7-day PHI.
Nexter	pyridaben	10.67 oz	Group 21A miticide. Activity against aphids. Do not exceed 2 applications per year. Applications must be 30 days apart. Aerial application not allowed. 7-day PHI.
Thrips (see footnote 4, page 13)			
Brown rot blossom blight (see footnote 3, page 13)			
Abound	azoxystrobin	12–15.5 fl oz	Group 11 fungicide. See footnote 5, page 13. Do not use with silicone-based surfactants. 4-hour reentry. 0-day PHI.
Bravo Weather Stik	chlorothalonil	3–4 pt	Group M5 fungicide. Do not apply after shuck split. 12-hour reentry.
Captan 80WDG	captan	2.5–5 lb	Group M4 fungicide. 24-hour reentry. 0-day PHI.
Elevate 50WDG	fenhexamid	1–1.5 lb	Group 17 fungicide. 12-hour reentry. 0-day PHI.
Fontelis	penthiopyrad	14–20 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Indar 2F	fenbuconazole	6 fl oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.
Inspire Super	difenoconazole + cyprodinil	16–20 fl oz	Group 3 + 9 fungicide. 12-hour reentry. 2-day PHI.
Luna Sensation	fluopyram + trifloxystrobin	5–7.6 fl oz	See footnote 5, page 13. Group 7+11 fungicide. 12-hour reentry. 1-day PHI.
Merivon	fluxapyroxad + pyraclostrobin	4–6.7 fl oz	Group 7 + 11 fungicide. Do not use with EC or oil-based products. Only nonionic surfactants can be used within 14 days of harvest. 12-hour reentry. 0-day PHI.
Orius 20 AQ	tebuconazole	8.6–17.2 oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.
Pristine	pyraclostrobin + boscalid	10.5–14.5 oz	Group 7 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quadris Top	azoxystrobin + difenoconazole	12–14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quash	metconazole	2.5–4 oz	Group 3 fungicide. 12-hour reentry. 14-day PHI.
Quilt Xcel	azoxystrobin + propiconazole	14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Rovral and generics	iprodione	1.5–2 pt	Group 2 fungicide. See footnote 3, page 13. Do not apply after petal fall. 24-hour reentry.

Popcorn (Stages 4–5—just before petals begin to open) continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Popcorn (Stages 4–5—just before petals begin to open)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Brown rot blossom blight (see footnote 3, page 13) (continued)			
Scala SC	pyrimethanil	9–18 fl oz	Group 9 fungicide. Do not apply more than 3 applications alone. 2-day PHI.
Thiram Granuflo	thiram	3.5 lb	Group M3 fungicide. 24-hour reentry. 7-day PHI.
Tilt and generics	propiconazole	4 fl oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.
TopGuard	azoxystrobin	14 fl oz	Group 3 fungicide. 12-hour reentry. 7-day PHI.
Topsin 4.5FL	thiophanate-methyl	20–30 oz	Group 1 fungicide. Tank-mix with another fungicide. 2-day reentry. 1-day PHI.
Vanguard 75WG	cyprodinil	5 oz	Group 9 fungicide. Tank-mix with another fungicide. Do not apply more than 30 oz/A per season. Buffer to a pH of 5 to 7 if mixing with Rovral. 12-hour reentry.

Full Bloom (Stage 7)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Brown rot blossom blight			
See materials listed for Popcorn Stage.			

Petal Fall

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Peach twig borer, leafrollers, oriental fruit moth, aphids			
<i>Note: Make Petal Fall spray if Popcorn spray missed or if orchard was heavily infested the previous season.</i>			
Assail 30SG	acetamiprid	2.5–8.0 oz	Group 4A insecticide. Use with horticultural oil is recommended. Do not use until after petal fall. 12-hour reentry. 7-day PHI.
Diazinon 50W	diazinon	1 lb/100 gal water	Group 1B insecticide. Restricted use. One dormant and one in-season application only. 4-day reentry. 21-day PHI.
Delegate WG	spinetoram	4.5–7 oz	Group 5 insecticide. Maximum of 4 applications per season. 4-hour reentry. 1-day PHI.
Imidan 70W	phosmet	2.125– 4.25 lb	Group 1B insecticide. 7-day reentry, but see additional restrictions for thinning and U-pick. 14-day PHI.
Peach twig borer, leafrollers, bud moth			
Altacor 35 WDG	chlorantraniliprole	3–4.5 oz	Group 28 insecticide. Use high rate for dormant and lower for delayed dormant. 4-hour reentry.
<i>Bacillus thuringiensis (B.t.)</i>	bacterium	See label.	Group 11B2 insecticide. Generic. OMRI listed for organic use. Apply when temperatures exceed 60°F. Bt products are stomach poisons. Complete coverage and 2 to 3 sprays usually are required for satisfactory control. 0-day PHI.

Petal Fall continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Petal Fall

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Peach twig borer, leafrollers, bud moth (continued)			
Delegate WG	spinetoram	4.5–7 oz	Group 5 insecticide. Maximum of 4 applications per season. 4-hour reentry. 1-day PHI.
Exirel 0.83SE	cyantraniliprole	10–20.5 oz	Group 28 insecticide. Apply at maximum moth flight. No more than 0.4 lb ai/A per season. 12-hour reentry. 3-day PHI.
Success 2L	spinosad	4–8 oz	Group 5 insecticide. Entrust is the OMRI formulation approved for organic use. 4-hour reentry. 1-day PHI.
Stink bugs, including brown marmorated stink bug (BMSB)			
<p><i>Note:</i> BMSB is an increasing problem in Oregon, and peaches are a preferred host for this pest. Early season feeding causes catfacing and other defects. Gummosis is a common symptom of fruit feeding. Populations tend to increase late season as harvest approaches, but BMSB also feed on vegetative growth early in the season and may build up in the orchard. Eggs and nymphs are found from May to September. There is considerable overlap between spotted wing drosophila materials and BMSB materials. Group 3 and Group 1 materials are most effective against stink bugs, but loss of biological control and secondary pest problems may result.</p> <p><i>See: Brown Marmorated Stink Bug (EM 9054), Monitoring for brown marmorated stink bug (EM 9138) available through the OSU Extension Publications Catalog (https://catalog.extension.oregonstate.edu/), and “EMERGING PEST: Brown Marmorated Stink Bug—A Pending Threat to Pacific Northwest Agriculture” in <i>PNW Insect Management Handbook</i>. Please report damaging populations to http://agsci.oregonstate.edu/bmsb.</i></p>			
Admire Pro	imidacloprid	1.2–2.4 oz	Group 4A insecticide. Can be applied as soil application through chemigation system, rates and restrictions differ for this application, see label. Generic labels available. 12-hour reentry. 7-day PHI.
Ambush 25W	permethrin	12.8–25.6 oz	Group 3A insecticide. Restricted use. Do not graze treated orchards. Extremely toxic to fish and aquatic habitat. Do not apply more than 1.6 lb ai/A per season. 24-hour reentry. 14-day PHI.
Baythroid XL	beta-cyfluthrin	2–2.4 oz	Group 3 insecticide. Restricted use. 12-hour reentry. 14-day PHI.
Belay	clothianidin	6 oz	Group 4A insecticide. No more than 0.2 lb AI per year. 12-hour reentry. 21-day PHI.
Cobalt	chlorpyrifos + lambda cyhalothrin	22–57 oz	Group 1B + 3A insecticide. Restricted use. Premix product, see label as both AIs have cumulative limits/season. 24-hour reentry. 14-day PHI.
Danitol	fenpropathrin	10.6–21.3 oz	Group 3 insecticide. Restricted use. No more than 2 applications recommended, no more than 0.8 lb AI allowed per season. 24-hour reentry. 3-day PHI.
Declare	gamma-cyhalothrin	1.02–2.05 oz	Group 3A insecticide. Restricted use. No more than 0.08 lb AI per year. 24-hour reentry. 14-day PHI.
Endigo ZC	lambda-cyhalothrin + thiamethoxam	5–6 oz	Group 3A + group 4A insecticide. Restricted use. Premix product, see label as both AIs have cumulative limits/season. 24-hour reentry. 14-day PHI.
Leverage 360	beta-cyfluthrin + imidacloprid	2.8 oz	Group 3A + 4A insecticide. Restricted use. Premix product, see label as both AIs have cumulative limits/season. 12-hour reentry. 14-day PHI.

Petal Fall continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Petal Fall

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Stink bugs, including brown marmorated stink bug (BMSB) (continued)			
Mustang Max	zeta-cypermethrin	3.2–4 oz	Group 3A insecticide. Applications must be 7 days apart. No more than 0.125 lb AI per season. 12-hour reentry. 7-day PHI.
Proaxis	gamma-cyhalothrin	2.56–5.12 oz	Group 3A insecticide. Restricted use. No more than 0.08 lb AI per year. 24-hour reentry. 14-day PHI.
Tombstone	cyfluthrin	2–2.4 oz	Group 3A insecticide. Restricted use. Maximum of 2.8 oz per season. 12-hour reentry. 14-day PHI.
Green peach aphid (Note: Do not use group 4 insecticides prior to petal fall to protect pollinators.)			
Actara	thiamethoxam	3–4 oz	Group 4A insecticide. No more than 11 oz/ac per season. See label; higher rates can provide some stink bug control. 12-hour reentry. 14-day PHI.
Assail 70WP	acetamiprid	1–2.3 oz	Group 4A insecticide. No more than 4 applications per season and do not apply more frequently than every 10 days. 12-hour reentry. 7-day PHI.
Admire Pro	imidacloprid	1.4–2.8 oz	Group 4A insecticide. No more than 8.4 oz per year. 7-day minimum interval between treatments. 12-hour reentry. 0-day PHI.
Closer SC	sulfoxaflor	1.5–2.75 oz	Group 4C insecticide, Some suppression of thrips. Use higher rate for heavy infestations. 12-hour-reentry. 7-day PHI.

Thrips (see footnote 4, page 13)**Brown rot blossom blight (for high rainfall areas)**

See materials listed for Popcorn Stage.

Shuck Split to Shuck Fall

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Shothole (Coryneum blight)			
Abound	azoxystrobin	12–15.5 fl oz	Group 11 fungicide. See footnote 5, page 13. Do not use with silicone-based surfactants. 4-hour reentry. 0-day PHI.
Bravo Weather Stik	chlorothalonil	3–4 pt	Group M5 fungicide. Do not apply past shuck split. 12-hour reentry.
Captan 80WDG	captan	5 lb	Group M4 fungicide. 24-hour reentry.
Echo 720	chlorothalonil	3–4 pt	Group M5 fungicide. Do not apply past shuck split. 12-hour reentry.
Fontelis	penthiopyrad	14–20 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Gem 500SC	trifloxystrobin	2.9–3.8 oz	Group 11 fungicide. 12-hour reentry. 1-day PHI.
Inspire Super	difenoconazole + cyprodinil	16–20 fl oz	Group 3 + 9 fungicide. 12-hour reentry. 2-day PHI.
Pristine	pyraclostrobin + boscalid	10.5–14.5 oz	Group 7 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.

Shuck Split to Shuck Fall continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Shuck Split to Shuck Fall

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Shothole (Coryneum blight)(continued)			
QuadrisTop	azoxystrobin + difenoconazole	12–14 fl oz	Group 3 + 11 fungicide. 12-hour reentry. 0-day PHI.
Quilt Xcel	azoxystrobin + propiconazole	14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Syllit FL	dodine	3 pt	Group U12 fungicide. Do not apply after petal fall. 48-hour reentry.
Ziram 76DF	ziram	6 lb	Group M3 fungicide. 48-hour reentry. 30-day PHI.
Powdery mildew			
Abound	azoxystrobin	12–15.5 fl oz	Group 11 fungicide. See footnote 5, page 13. Do not use with silicone-based surfactants. 4-hour reentry. 0-day PHI.
Cosavet	sulfur	10–20 lb	80% sulfur. Group M2 fungicide. 24-hour reentry. OMRI listed for organic use.
Fontelis	penthiopyrad	14–20 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Gem 500SC	trifloxystrobin	1.9–3.8 oz	Group 11 fungicide. 12-hour reentry. 1-day PHI.
Indar 2F	fenbuconazole	6 fl oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.
Inspire Super	difenoconazole + cyprodinil	16–20 fl oz	Group 3 + 9 fungicide. 12-hour reentry. 2-day PHI.
Sulfur DF	sulfur	10–30 lb	Micronated sulfur, several brands. Group M2 fungicide. 24-hour reentry.
Luna Sensation	fluopyram + trifloxystrobin	5–7.6 fl oz	Group 7+11 fungicide. See footnote 5, page 13. 12-hour reentry. 1-day PHI.
Merivon	fluxapyroxad + pyraclostrobin	4–6.7 fl oz	Group 7 + 11 fungicide. Do not use with EC or oil-based products. Only nonionic surfactants can be used within 14 days of harvest. 12-hour reentry. 0-day PHI.
Oso SC	polyoxin D zinc salt	3.75–13 fl oz	Group 19 fungicide. 4-hour reentry. 0-day PHI.
Ph-D WDG	polyoxin D zinc salt	6.2 oz	Group 19 fungicide. 4-hour reentry. 0-day PHI.
Pristine	pyraclostrobin + boscalid	10.5–14.5 oz	Group 7 + 11 fungicide. Do not use with an HMO. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quadris Top	azoxystrobin + difenoconazole	12–14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quash	metconazole	3.5–4 oz	Group 3 fungicide. 12-hour reentry. 14-day PHI.
Quilt Xcel	azoxystrobin + propiconazole	14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quintec	quinoxifen	7 fl oz	Group 13 fungicide. 12-hour reentry. See footnote 7, page 13. 7-day PHI.
Rally 40WSP	myclobutanil	2.5–6 oz	Group 3 fungicide. 24-hour reentry. 0-day PHI.
Tilt and generics	propiconazole	4 fl oz	Group 3 fungicide. 12-hour reentry.
TopGuard	azoxystrobin	14 fl oz	Group 3 fungicide. 12-hour reentry. 7-day PHI.

Shuck Split to Shuck Fall continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Shuck Split to Shuck Fall

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Powdery mildew (continued)			
Unicorn DF	tebuconazole + sulfur	2–3 lb	Group 3 + M2 fungicide. 24-hour reentry.
Vivando	metrafenone	15.4 fl oz	Group U8 fungicide. Do not use with horticultural oils. 12-hour reentry. 7-day PHI.

Summer**Powdery mildew (if found before pit hardening; see footnote 6, page 13)**

Fontelis	penthiopyrad	14–20 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Indar 2F	fenbuconazole	6 fl oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.
Inspire Super	difenoconazole + cyprodinil	16–20 fl oz	Group 3 + 9 fungicide. 12-hour reentry. 2-day PHI.
JMS Stylet oil	horticultural mineral oil	1–2 gal/100 gal water	Need good coverage when trees are dry. 4-hour reentry. OMRI listed for organic use.
Luna Sensation	fluopyram + trifloxystrobin	5–7.6 fl oz	Group 7+11 fungicide. See footnote 5, page 13. 12-hour reentry. 1-day PHI.
Merivon	fluxapyroxad + pyraclostrobin	4–6.7 fl oz	Group 7 + 11 fungicide. Do not use with EC or oil-based products. Only nonionic surfactants can be used within 14 days of harvest. 12-hour reentry. 0-day PHI.
Oso SC	polyoxin D	3.75–13 fl oz	Group 19 fungicide. 4-hour reentry. 0-day PHI.
Ph-D WDG	polyoxin D	6.2 oz	Group 19 fungicide. 4-hour reentry. 0-day PHI.
Pristine	pyraclostrobin + boscalid	10.5–14.5 oz	Group 7 + 11 fungicide. Do not use with an HMO. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quadris Top	azoxystrobin + difenoconazole	12–14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quash	metconazole	3.5–4 oz	12-hour reentry. 14-day PHI.
Quilt Xcel	azoxystrobin + propiconazole	14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quintec	quinoxifen	7 fl oz	Group 13 fungicide. 12-hour reentry. See footnote 7, page 13. 7-day PHI.
Rally 40WSP	myclobutanil	2.5–6 oz	Group 3 fungicide. 24-hour reentry. 0-day PHI.
Tilt and generics	propiconazole	4 oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.
TopGuard	azoxystrobin	14 fl oz	Group 3 fungicide. 12-hour reentry. 7-day PHI.
Unicorn DF	tebuconazole + sulfur	2–3 lb	Group 3 + M2 fungicide. 24-hour reentry. 0-day PHI.
Vivando	metrafenone	15.4 fl oz	Group U8 fungicide. Do not use with horticultural oils. 12-hour reentry. 7-day PHI.

Cucumber beetle

Sevin XLR Plus	Carbaryl	2–3 qt	Group 1A insecticide. No more than 15 qt per season. 12-hour reentry. 14-day PHI.
----------------	----------	--------	--

Shothole borer

Note: Emergence in March to September, with three generations per year. No products are registered for control of this pest on peach.

Summer continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Summer

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Spider mites			
M-Pede	potassium salts of fatty acids	1–2% solution	Unclassified action group. OMRI listed for organic use. Not recommended on yellow-skin nectarines. 12-hour reentry. 0-day PHI.
Spider mites, peach silver mite			
Acramite 50WS	bifenazate	0.75–1 lb	Unclassified action group. 12-hour reentry. 3-day PHI.
Apollo 50SC	clofentezine	2–8 fl oz	Make only one application. Active against mite eggs only, can be combined with an adulticide. Do not make aerial applications. 12-hour reentry. 21-day PHI.
Envidor	spirodiclofen	16–18 oz	Group 23 miticide. Make only one application. Do not make aerial applications. 12-hour reentry. 7-day PHI.
Nexter	pyridaben	5.2–10.67 oz	Group 21 miticide. Do not make aerial applications. 12-hour reentry. 7-day PHI.
Savey 50DF	hexythiazox	3–6 fl oz	Group 10 miticide. Will not control adults. Apply only once per season. 12-hour reentry. 28-day PHI.
Vendex 50WP	fenbutatin-oxide	1–2 lb	Group 12B miticide. Restricted use. Do not use more than twice per season or more than 1.5 lb ai/A per year. Apply when mites appear. 48-hour reentry. 14-day PHI.
Peach twig borer, oriental fruit moth			
<i>Note:</i> Apply twig borer and fruit moth sprays in early June or time sprays with pheromone traps. Apply cover spray about 14 days after pheromone traps average two moths per trap for first adult generation (May–June) or five moths per trap for second adult generation (July–August).			
Spotted wing drosophila			
<i>Note:</i> Begin monitoring just before fruit starts to change to its ripening color.			
Asana XL	esfenvalerate	4.8–14.5 oz	Group 3A insecticide. Restricted use. No more than 0.375 lb ai per season. 12-hour reentry. 14-day PHI.
Danitol 2.4EC	fenpropathrin	10–21 oz	Group 3A insecticide. Restricted use. Apply by ground. No more than 2.66 pt per season. Do not apply as a ULV spray. 24-hour reentry. 3-day PHI.
Delegate WG	spinetoram	4.5–7 oz	Group 5 insecticide. Apply sprays no less than 1 week apart, maximum 4 times per season. 4-hour reentry. 1-day PHI.
Diazinon 50W	diazinon	1 lb/100 gal water	Group 1B insecticide. Restricted use. One dormant and one in-season application only. 4-day reentry. 21-day PHI.
Exirel	cyantraniliprole	13.5–20.5 oz	Group 28 insecticide. 12-hour reentry. 3-day PHI.
Imidan 70W	phosmet	2.125–4.25 lb	Group 1B insecticide. 7-day reentry, but see additional restrictions for thinning and U-pick. 14-day PHI.
Malathion	malathion	See labels.	Group 1B insecticide. Many formulations are available: WP, ULV, and EC. WPs may leave residues visible at harvest. Fyfanon ULV is produced by Cheminova. 24-hour reentry. 7-day PHI.

Summer continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Summer

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Spotted wing drosophila (continued)			
Mustang Max	zeta-cypermethrin	3.2–4 oz	Group 3A insecticide. Applications must be 7 days apart. No more than 0.125 lb AI per season. 12-hour reentry. 7-day PHI.
Sevin XLR Plus or Sevin 80WSP	carbaryl	2–3 qt	Group 1A insecticide. No more than 15 qt per season. 12-hour reentry. 14-day PHI.
Success 2L	spinosad	4–8 oz	Group 5 insecticide. Entrust is the OMRI formulation approved for organic use. Apply when overwintering larvae become active. 4-hour reentry. 1-day PHI.
Warrior II	lambda-cyhalothrin	1.28–2.56 oz	Group 3A insecticide. No more than 0.2 ai per year. 24-hour reentry. 14-day PHI.

Earwigs

Sevin XLR Plus or Sevin 80WSP	carbaryl	2–3 qt 3 lb	Group 1A insecticide. No more than 15 qt per season. 12-hour reentry. 14-day PHI.
----------------------------------	----------	----------------	--

San Jose scale, Lecanium scale crawlers (mid-June to early July)

Assail 30SG	acetamiprid	5.3–8.0 oz	Group 4A insecticide. Use with horticultural oil is recommended. 12-hour reentry. 7-day PHI.
Closer SC	sulfoxaflor	5.75 oz	Group 4C insecticide. 12-hour-reentry. 7-day PHI.
Diazinon 50W	diazinon	1 lb/100 gal water	Group 1B insecticide. Restricted use. One dormant and one in-season application only. This spray is effective only on the crawler stages of scales. 4-day reentry. 21-day PHI.
Esteem 35WP	pyriproxyfen	4–8 oz	Group 7C insecticide. Limited to 3 applications per season. 12-hour reentry. 4-day PHI.

Peach tree borer

Note: Timing usually is first or second week in July, and again 3 weeks later in August. If pheromone traps are used, place in orchard in June. Position traps about 2–3 feet from ground surface. Make first application 2 weeks after first consistent trap catches. Asana, Pounce, Ambush (all restricted use) also are registered for peach tree borers. Preharvest intervals are 14 days.

Lorsban 4E	chlorpyrifos	—	Group 1B insecticide. Restricted use. Mix 3 qt/100 gal of water and apply once per season as coarse low-pressure spray to trunks and lower crotches of peach trees. 14-day PHI.
------------	--------------	---	--

Preharvest

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Brown rot fruit rot (if rain is forecasted)			
Abound	azoxystrobin	12–15.5 fl oz	Group 11 fungicide. See footnote 5, page 13. Do not use with silicone-based surfactants. 4-hour reentry. 0-day PHI.
Captec 4L	captan	4 qt	Group M4 fungicide. 24-hour reentry. 0-day PHI.
Fontelis	penthiopyrad	14–20 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Indar 2F	fenbuconazole	6 fl oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.

Preharvest continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

CONTINUED—Preharvest

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Brown rot fruit rot (if rain is forecasted) (continued)			
Inspire Super	difenoconazole + cyprodinil	16–20 fl oz	Group 3 + 9 fungicide. 12-hour reentry. 2-day PHI.
Luna Sensation	fluopyram + trifloxystrobin	5–7.6 fl oz	Group 7+11 fungicide. See footnote 5, page 13. 12-hour reentry. 1-day PHI.
Merivon	fluxapyroxad + pyraclostrobin	4–6.7 fl oz	Group 7 + 11 fungicide. Do not use with EC or oil-based products. Only nonionic surfactants can be used within 14 days of harvest. 12-hour reentry. 0-day PHI.
Orius 20 AQ	tebuconazole	8.6–17.2 oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.
Pristine	pyraclostrobin + boscalid	10.5–14.5 oz	Group 7 + 11 fungicide. Do not use with an HMO. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quadris Top	azoxystrobin + difenoconazole	12–14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 12-hour reentry. 0-day PHI.
Quash	metconazole	2.5–4 oz	Group 3 fungicide. 12-hour reentry. 14-day PHI.
Quilt Xcel	azoxystrobin + propiconazole	14 fl oz	Group 3 + 11 fungicide. See footnote 5, page 13. 24-hour reentry. 0-day PHI.
Scala SC	pyrimethanil	9–18 fl oz	Group 9 fungicide. Do not apply more than 3 applications alone. 2-day PHI.
Tilt and generics	propiconazole	4 oz	Group 3 fungicide. 12-hour reentry. 0-day PHI.
TopGuard	azoxystrobin	14 fl oz	Group 3 fungicide. 12-hour reentry. 7-day PHI.
Topsin 4.5FL	thiophanate-methyl	20–30 oz	Group 1 fungicide. 2-day reentry. Tank-mix with another fungicide. 1-day PHI.

Postharvest (September–October)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Cytospora canker	None		Paint trunks with whitewash to help prevent winter injury.
Peach leaf curl and shothole			
<i>Note: Apply first leaf curl spray when 50% of the leaves have fallen and again at delayed dormant in late February before floral buds begin to open. An additional spray may be needed during the dormant season for shothole control depending on material selected. The addition of a spreader sticker will increase the effectiveness of some of these leaf curl sprays. Even curl-resistant cultivars need protection during the first few years.</i>			
bordeaux 12-12-100	copper sulfate + hydrated lime	—	—
Bravo Weather Stik	chlorothalonil	3–4 pt	Group M5 fungicide. Effective if used all dormant season long. Do not add a spreader sticker. 12-hour reentry.
Rex Lime Sulfur Solution	calcium polysulfide	6–8 gal/100 gal water	Is a very effective product for leaf curl only. 48-hour reentry.
Cuprofix or other copper- based products	copper sulfate	5–10 lb	Effective only on shothole if used during the dormant season. Group M1 fungicide. 48-hour reentry. Many other copper products are labeled, such as C-O-C-S, Copper-Count-N, and Nordox.
Echo 720	chlorothalonil	3–4 pt	Group M5 fungicide. Effective if used all dormant season long. Do not add a spreader sticker. 12-hour reentry.
Ferbam Granuflo	ferbam	4.5 lb	Group M3 fungicide. 24 hour reentry.

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

Postharvest (September–October)

Pest or disease/ Material	Active ingredient (AI)	Application rate/acre	Comments/Reentry interval/Preharvest interval (PHI)
Peach leaf curl and shothole (continued)			
Nu-Cop 50DF or other copper-based products	cupric hydroxide	8–16 lb	Effective only on shothole if used during the dormant season. Group M1 fungicide. 48-hour reentry. Many other copper products are labeled, such as C-O-C-S, Copper-Count-N, and Nordox.
Syllit FL	dodine	3 pt	Group U12 fungicide. 48-hour reentry.
Lime Sulfur Ultra	calcium polysulfide	2–3 gal/100 gal water	A very effective product for leaf curl only. 48-hour reentry.
Ziram 76DF	ziram	6–8 lb	A very effective product for both leaf curl and shothole. Group M3 fungicide. 48-hour reentry.

Shothole borer (third generation)

No products are registered for control of this pest on peach.

Footnotes

1. Bordeaux mixture may be combined with horticultural mineral oil for both peach leaf curl and Lecanium scale control. No sticker is needed with this combination.
2. Bordeaux 12-12-100 means 12 pounds of copper sulfate plus 12 pounds of hydrated lime in 100 gallons of water. In any bordeaux formula, the ingredients always are listed in the same order—copper sulfate, hydrated lime, then gallons of water.
3. Fungal pathogens have shown resistance to many fungicides when one is used exclusively. Alternate or tank-mix fungicides with different modes of action. Fungicides from different FRAC groups have different modes of action. Some products may already contain two different fungicides.
4. Surface scarring on stone fruits can be the result of many factors. Certain insects such as thrips deform and bronze flower buds and blossoms. Thrips can scar fruit by feeding on or laying eggs in the fruit. Most significant damage usually occurs during and shortly after pollination. Lygus and stink bugs also damage stone fruit at this time. Buds are injured, flowers can be sterile, and fruit may be dimpled, distorted, and “pock-marked.”

Damage from the above pests is sporadic and occurs only occasionally in some Valley orchards. Sometimes only portions of orchards or border rows are damaged. Best timing to prevent thrip damage also coincides with pollination periods. Even though some varieties may be wind pollinated, bees can

boost yield, often are present, and must be protected. Prebloom and petal fall sprays of spinosad (Success) should be applied in the evening after bee activity.

Be sure fruit scarring is the result of insects before applying these sprays.

5. Do not use group 11 fungicides for more than two consecutive applications before switching to another fungicide in a different family or FRAC group with a different mode of action. Sprayers used for Abound or Topguard EQ should **not be used on apples** such as Gala, Cox’s Orange Pippin, and McIntosh.
6. Powdery mildew may be a problem in some years. Nearby roses are an alternate host for this fungus. Scout for first occurrence. Chemical control is not needed after pit hardening. A similar disease called rusty spot comes from local apple trees with powdery mildew.
7. A surfactant is not required when using Quintec alone, but a nonionic surfactant is preferred if needed for tank-mixes.

Follow the “Rules” for fungicide stewardship:

Rotate or mix fungicides of different chemical groups.
Use labeled rates.
Limit total number of applications.
Educate yourself about fungicide activity, mode of action, and class—as well as resistance management practices.
Start a fungicide program with multisite mode of action materials.

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

Table 1. Effectiveness of fungicides and bactericides for peach disease management*

Fungicide	Fungicide group #	Brown rot (blossom blight)	Brown rot (fruit rot)	Peach leaf curl	Powdery mildew	Shothole
Abound	11	(Fair to) Good**	(Fair to) Good**	??	Good-Excellent**	Fair-Good
Botran	14	Fair	Fair	Slight	Not effective	??
Bravo	M5	Fair-Good	Not registered	Good	Not registered	Good
Captan (Captac)	M4	Good	Fair-Good	Slight	Not effective	Fair-Good
Copper-based products	M1	Slight	Not registered	Fair-Good	Slight	Good
Echo	M5	Fair-Good	Not registered	Good	Not registered	Good
Elevate	17	Good-Excellent	Good-Excellent	??	Not effective	??
Ferbam	M3	Fair	Not registered	Good	Not registered	Good
Fontelis	7	Good-Excellent**	Good-Excellent**	??	Good-Excellent**	Good
Gem	11	Good**	Fair-Good**	??	Good-Excellent**	??
Indar	3	Excellent**	Excellent**	Fair	Good**	??
JMS Stylet oil	Not classified	??	??	??	Good	??
Lime sulfur	M2	Not recommended	Not recommended	Excellent	Not recommended	Slight
Orius	3	Good	Good	Fair	Good**	??
Oso	19	??	??	??	?? (Fair-Good)	??
PhD	19	??	??	??	?? (Fair-Good)	??
Quash	3	Good-Excellent**	Good-Excellent**	??	Good**	??
Quintec	13	None	None	None	Excellent**	None
Rally	3	Good**	Good**	??	Good**	Slight
Rovral	2	Good**	Not registered	Slight	Not effective	Fair-Good
Scala	9	Good	Good	??	None	??
Sulfur	M2	Fair	Fair (good)	Slight	Good	Not effective
Syllit	M7	??	Not registered	??	Not registered	??
Thiram	M3	Good	Good	Good	Not effective	??
Tilt and generics	3	Good-Excellent**	Good-Excellent**	Slight	Good-Excellent**	Slight
TopGuard	3	Good**	Good**	??	Good-Excellent**	??
Topsin	1	Good**	Good**	Not effective	Good**	Not effective
Vanguard	9	Good**	Not registered	??	Not effective	Fair
Vivando	U8	Not effective	Not effective	??	Fair to Good	Not effective
Ziram	M3	Fair	Not registered	Excellent	Not effective	Good-Excellent
Combination products						
Inspire Super	3 + 9	Good	Good	??	Good**	??
Luna Sensation	7+11	Good-Excellent**	Good-Excellent**	??	Excellent**	??
Merivon	7 + 11	Good	Good	??	Excellent	??
Pristine	7 + 11	Good	Good	??	Good-Excellent**	??
QuadrisTop	3+11	??	??	??	Excellent**	??
Quilt Xcel	3 + 11	Good-Excellent	Good-Excellent	Slight	Excellent**	Fair-Good
Unicorn	3 + M2	Fair-Good	Fair-Good	Fair	Excellent	??

*These ratings are relative rankings based on labeled application rates, good spray coverage, and proper spray timing. Actual levels of disease control will be influenced by these factors in addition to cultivar susceptibility, disease pressure, and weather conditions.

**Resistant pathogens will lower the effectiveness of these fungicides.

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

**Table 2. Quick reference guide
to herbicides labeled for use in fruit and nut crops**

- Shaded boxes indicate the herbicide is labeled for use in that crop.
- Nonbearing (NB) indicates the herbicide is labeled only for crops that will not be harvested for 1 year (365-day preharvest interval).
- Herbicides in **bold, italic** type are recommended for new plantings.
- For more complete information, please refer to the *PNW Weed Management Handbook*: <http://pnwhandbooks.org/weed/>.

Ingredient common name (herbicide mode of action)	Product name example	Nuts			Pome fruits		Stone fruits						Rates
		Chestnut	Hazelnut	Walnut	Apple	Pear	Apricot	Cherry	Nectarine	Peach	Plum	Prune	
Applications that are soil active (herbicides in italics and bold are recommended for new plantings)													
dichlobenil (20)	Casoron												4 to 6 lb ai/a (100 to 150 lb/a Casoron); apply in cold, wet weather.
diuron (7)	Karmex												1.6 to 3.2 lb ai/a (2 to 4 lb/a Karmex 80DF)
<i>isoxaben</i> (21)	Trellis SC				NB	NB	NB	NB	NB	NB	NB	NB	0.5 to 1 lb ai/a (0.66 to 1.33 lb/a product)
indaziflam (29)	Alion												0.046 to 0.085 lb ai/a (3.5 to 6.5 oz/a product) depending on soil texture.
<i>mesotrione</i> (27)	Broadworks												0.093 to 0.187 lb ai/a (3 to 6 fl oz/a product)
<i>napropamide</i> (3)	Devrinol												4 lb ai/a (8 lb/a)
norflurazon (12)	Solicam												1.95 to 3.98 lb ai/a (2.5 to 5 lb/a Solicam)
<i>oryzalin</i> (3)	Surflan												2 to 6 lb ai/a (2 to 6 quarts/a Surflan)
<i>pendimethalin</i> (3)	Prowl												Prowl H ₂ O: 1.9 to 6 lb ai/a (2 to 6.3 quarts/a) depending on desired length of control and crop.
<i>pronamide</i> (3)	Kerb												1 to 4 lb ai/a (2 to 8 lb/a) depending on species present and soil texture.
simazine (5)	Princep												See product label for rates. Princep Caliber 90 is a Special Local Needs label (OR-080038) for sweet cherries only.
sulfentrazone (14)	Zeus XC/ Petra 4SC												0.125 to 0.375 lb ai/a (4 to 12 oz/a) depending on soil classification; established 3 years.
terbacil (5)	Sinbar WDG						NB	NB					0.4 to 0.8 lb ai/a (0.5 to 1 lb/a), newly established; 2 to 4 lb/a Sinbar, bearing, depending on soil type.
<i>trifluralin</i> (3)	Treflan 4L/EC												0.5 to 1 lb ai/a (1 to 2 pints/a Treflan 4L)
trifluralin (3)+ <i>isoxaben</i> (21)+ oxyfluorfen (14)	Showcase	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	2.5 to 5 lb ai/a (100 to 200 lb/a Showcase)
Applications that are soil and foliar active													
flazasulfuron (2)	Mission												0.033 to 0.045 lb ai/a (2.14 to 2.85 oz/a)
flumioxazin (14)	Chateau SW/ WDG												0.188 to 0.38 lb ai/a (6 to 12 oz/a Chateau WDG). Do not apply within 300 yards nondormant pears.
oxyfluorfen (14)	Goal 2XL												1.25 to 2 lb ai/a (5 to 8 pints/a Goal 2XL)
oxyfluorfen (14) + penoxsulam (2)	Pindar GT												1.47 lb ai/a oxyfluorfen + 0.015 lbs ai/a penoxsulam (1.5 to 3 pints/a)

Table continues on next page

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

Ingredient common name (herbicide mode of action)	Product name example	Nuts			Pome fruits		Stone fruits						Rates
		Chestnut	Hazelnut	Walnut	Apple	Pear	Apricot	Cherry	Nectarine	Peach	Plum	Prune	
CONTNUED—Applications that are soil and foliar active													
rimsulfuron (2)	Matrix												0.063 lb ai/a (4 oz/a Matrix FNV per year)
saflufenacil (14)	Treevix												0.045 lb ai/a (1 oz/a)
Postemergence contact and translocated herbicides													
2,4-D (4)	Saber												Green sucker control in hazelnuts: 0.7 to 0.95 lb ai/a (1.5 to 2 pints/a Saber)
ammonium nonanoate	Axxe												6 to 15% v/v; OMRI certified
ammoniated soap of fatty acids	Final-San-O												14 to 26 fl oz/gal. Apply prior to planting or non-cropped areas.
caprylic acid + capric acid	Suppress												6 to 9% v/v; OMRI listed
carfentrazone (14)	Aim EC												Green sucker control in hazelnuts: 0.031 lb ai/a (2 fl oz/a Aim EC)
clethodim (1)	Select Max		NB	NB	NB	NB	NB	NB		NB	NB	NB	0.06 to 0.125 lb ai/a (6 to 8 oz/a Select Max)
clopyralid (4)	Stinger												Apples: 0.094 to 0.25 lb ae/a (0.25 to 0.66 pints/a Stinger) Others: 0.12 to 0.25 lb ae/a (0.33 to 0.66 pints/a Stinger)
diquat (22)	Reglone		NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	0.375 to 0.5 lb ai/a (1.5 to 2 pints/a)
fluazifop (1)	Fusilade DX		NB	NB	NB	NB							0.25 to 0.375 lb ai/a (16 to 24 oz/a Fusilade DX). Refer to specific grassy weeds listed on label.
glufosinate (10)	Rely 280												0.88 to 1.5 lb ai/a (1.5 to 2.5 quarts/a Rely 280); sucker control: 1.75 quarts/a. Do not make spot spray applications to suckers.
glyphosate (9)	Roundup												General weed control and grass suppression in row middles; read label carefully for crops listed and geographic location.
halosulfuron (2)	Sandea												Pome Fruit: 0.035 to 0.094 lb ai/a (0.75 to 2 oz/a); Nut crops: 0.031 to 0.063 lb ai/a (2/3 to 1 1/3 oz/a)
paraquat (22)	Gramoxone SL 2.0												Green sucker control in hazelnuts: 0.625 to 1 lb cation/a (2.5 to 4 pints/a Gramoxone 2.0 SL; 1.7 to 2.7 pints/a Firestorm)
pyraflufen (14)	Venue												0.001 to 0.005 lb ai/a (0.7 to 4 fl oz/a product). Green sucker control in hazelnuts: 3 to 4 fl oz/a.
sethoxydim (1)	Poast										NB	NB	Grass suppression in row middles: 0.28 to 0.47 lb ai/a (1.5 to 2.5 pints/a product)

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.

OSU internet resources for plant protection

Information regarding plant protection is available from several sources at OSU. The following listings are excellent examples:

- OSU Integrated Plant Protection Center. Online weather data and degree day information for insect pests and diseases (<http://uspest.org/wea/>)
- Pacific Northwest Plant Disease Management Handbook (<http://pnwhandbooks.org/plantdisease>)
- Pacific Northwest Insect Management Handbook (<http://pnwhandbooks.org/insect>)
- Pacific Northwest Weed Management Handbook (<http://pnwhandbooks.org/weed>)

Using pesticides safely

Always read the label

The single most important approach to pesticide safety is to read the pesticide label before each use and then follow the directions. If still in doubt after reading the label, contact a person qualified to help evaluate the hazard of the chemical and its use. Qualified people include Extension specialists, county educators, pesticide product representatives, and retailers.

Pesticides are toxic and should be handled with care—but can be used safely if you follow recommended precautions. Follow all label requirements; strongly consider any recommendations for additional personal protective clothing and equipment. In addition to reading and following the label, other major factors in the safe and effective use of pesticides are the pesticide applicator's qualifications, common sense, and positive attitude. Always take all safety precautions when using pesticides.

Oregon Poison Center

The Oregon Health & Science University
3181 S.W. Sam Jackson Park Road
Portland, OR 97239
Phone: 1-800-222-1222

If a person has collapsed or is not breathing, dial 911.

In case of accidents involving pesticides, see your doctor at once. It will help your doctor to know exactly which pesticide is involved. The label on the container gives this information. Take to the physician the pesticide label or information from the label, such as the product name, registration number of the U.S. Environmental Protection Agency, common name and percentage of active ingredient, and first aid instructions. If the label cannot be removed, take along the pesticide container (if not contaminated), but do not take it into the hospital or doctor's office.

Pesticide safety checklist

- Use pesticides only when necessary and as part of an Integrated Pest Management program.
- Always read the label and follow the instructions.
- Do not allow children to play around sprayers or mixing, storage, and disposal areas.
- Wear appropriate protective clothing and equipment.
- Never eat, drink, or smoke while handling pesticides.
- Avoid drift into non-target areas and pesticide runoff into streams, rivers, lakes, irrigation ponds and canals.
- Avoid spilling materials on skin or clothing.
- Have access to clean water, soap, and first aid supplies.
- Keep pesticides in a dry and locked storage area away from food and feed.
- Triple rinse or pressure rinse empty containers and dispose or recycle in accordance with state and local regulations.
- Stay out of recently sprayed areas until the spray has dried, and observe the restricted entry intervals specified on the pesticide label.
- Follow the pre-harvest interval on the pesticide label before harvesting crops or gardens and before allowing livestock to graze fields.

Prepared by by Nik G. Wiman, Extension orchard specialist and assistant professor, Department of Horticulture, North Willamette Research and Extension Center; Jay W. Pscheidt, Extension plant pathology specialist and professor, Department of Botany and Plant Pathology; and Marcelo Moretti, assistant professor of weed science, Department of Horticulture; all of Oregon State University. The information in this pest management guide is valid for 2019. Trade-name products and services are mentioned as illustrations only. This does not mean that the Oregon State University Extension Service either endorses these products and services or intends to discriminate against products and services not mentioned. Due to constantly changing laws and regulations, the Oregon State University Extension Service can assume no liability for the suggested use of chemicals contained in this guide. Pesticides should be applied according to the label directions on the pesticide container.

© 2019 Oregon State University. This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials without discrimination based on age, color, disability, gender identity or expression, genetic information, marital status, national origin, race, religion, sex, sexual orientation, or veteran's status. Oregon State University Extension Service is an Equal Opportunity Employer.

Revised May 2019.

Use only one material except where a combination is indicated. Follow label precautions when tank-mixing oils, fungicides, and insecticides. Materials are not listed in order of preference.