

Cherry

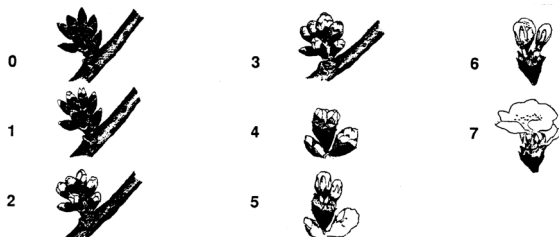
2013 Pest Management Guide for the Willamette Valley

EM 8329 · Revised February 2013

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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 variety, 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 LABEL BEFORE SPRAYING!** Some label directions indicate dilute applications only, such as the dimethoate labels for cherry fruit fly control.

Also:

1. Make sure any tank-mixes of pesticides are compatible. For example, the elevated pH of some boron spray solutions weakens many insecticides.
2. Use adjuvants and spreader stickers with caution.
3. Heavy, brief rain or extended rainfall (0.75 inch for more than 24 hours) can remove pesticides from fruit and foliage. Reapplication may be necessary (within label limits).

Important information

1. Be aware of worker protection standards (WPS). All new pesticide labels will provide orchard reentry intervals and personal protection equipment information.
2. Diazinon is now classified as a restricted-use pesticide due to bird toxicity. Maximum per-acre application rates have been reduced to 4 lb 50W, and the preharvest interval extended to 21 days.

Stages

Dormant Season (Stage 0)
 Dormant and Delayed Dormant (Stages 0–1)
 Popcorn Stage (Stages 2–5)
 Full Bloom (Stages 6–7)

Not shown

Petal Fall; Shuck Split; Two Weeks after Shuck Fall; Late Spring and Summer; Postharvest

Illustration courtesy of Washington State University Extension.

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.

Cherry 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. Copper-based products alone have not worked well under conditions favorable for bacterial canker development.

Dormant and Delayed Dormant (Stages 0–1—before buds open and before eggs hatch)		
Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Scale insects, mite eggs, aphids, eggs and larvae of certain leafrollers, peach twig borer, and bud moth		
<i>Note:</i> 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. Thorough coverage is essential. Dilute sprays recommended during this stage. Liquid formulations mix best with oil and water.		
horticultural mineral oil (HMO) + an insecticide registered for these pests, such as:		
Centaur 70WDG	34.5–46 oz	14-day PHI.
diazinon 50WP	4 lb	Do not exceed 1 dormant application per season.
Esteem 35WP	4–5 oz	Do not exceed 3 applications per year. 14-day PHI.
Lorsban 4E	4 pt	4-day reentry.
Supracide 2E	3–12 pt	Supracide may be used without oil for San Jose scale control. 2- to 14-day reentry.
Shothole borer (see footnote 4, page 10)		
<i>Note:</i> Make first application in late February or March when overwintering adults first emerge. Spot treat infestations within orchard. Apply to infested trunk and limbs until runoff.		
Lorsban 4E as above	4 pt	Do not use Lorsban on sweet cherries after budbreak. Use only on sour cherries. 4-day 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.

Popcorn Stage (Stages 2–5—blossom buds white just before opening)

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Brown rot blossom blight (see footnote 3, page 10)		
Abound	12–15.5 fl oz	See footnote 6, page 11. Do not use with silicone-based surfactants. 4-hour reentry. 0-day PHI.
Adament 50WG	4–8 oz	Group 3 + 11 fungicide. 12-hour reentry. 1-day PHI.
Bravo Weather Stik	3–4.1 pt	Do not apply later than shuck split. 12-hour reentry.
Bumper 41.8EC	4 fl oz	12-hour reentry. 0-day PHI.
Cabrio EG	9.5 oz	12-hour reentry. 0-day PHI.
Captan 80WDG	1.9–2.5 lb	24-hour reentry.
CaptEvote 68WDG	3.75 lb	(Captan + Elevate.) Do not apply more than 2 consecutive applications. 24-hour reentry. 0-day PHI.
Elevate 50WDG	1–1.5 lb	12-hour reentry. 0-day PHI.
Elite 45 WP	4–8 oz	12-hour reentry. 0-day PHI.
Fontelis	14–20 fl oz	12-hour reentry. 0-day PHI.
Indar 2F	6 fl oz	12-hour reentry. 0-day PHI.
Luna Privilege	2.8 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Luna Sensation	5–5.6 fl oz	Group 7 + 11 fungicide. 12-hour reentry. 1-day PHI.
Merivon	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	8.6–17.2 oz	12-hour reentry. 0-day PHI.
Pristine	10.5–14.5 oz	Group 7 + 11 fungicide. 12-hour reentry. See footnote 6, page 11. 0-day PHI.
Procure	10–16 fl oz	12-hour reentry. 1-day PHI.
Quadris Top	12–14 fl oz	Group 3 + 11 fungicide. 12-hour reentry. 0-day PHI.
Quash	2.5–4 oz	12-hour reentry. 14-day PHI.
Quilt Xcel	14 fl oz	Group 3 + 11 fungicide. 12-hour reentry. See footnote 6, page 11. 0-day PHI.
Rally 40WSP	2.5–6 oz	24-hour reentry.
Rovral 4F	1–2 pt	Do not make more than 2 applications per season. Do not use past shuck split. See footnote 3, page 10. 24-hour reentry.
Tilt	4 fl oz	12-hour reentry. 0-day PHI.
TopGuard	14 fl oz	Group 3 fungicide. Do not use with surfactants. 12-hour reentry. 7-day PHI.
Topsin 4.5FL	20–30 oz	Tank-mix with another fungicide. 2-day reentry. 1-day PHI.
Ziram 76DF	5–6 lb	Do not apply after first cover. 48-hour reentry. 30-day PHI.

Aphids, bud moth, leafrollers

Note: Aphids usually are of concern only on young trees. If undesirable on mature trees, a spray 2 weeks after shuck fall is effective.

Actara	3–4 oz	14-day PHI.
Altacor	3–4 oz	For leafroller control. 7-day PHI.
diazinon 50WP	4 lb	Only 1 application per season. Allow 5 days before introducing bees.

Popcorn Stage 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 Stage (Stages 2–5—blossom buds white just before opening)

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Syneta beetle (see footnote 5, page 11)		
<i>Note:</i> A local problem in certain Valley orchards. Adults may emerge and require control between early popcorn and petal fall. Place a beating tray or sheet under limbs and shake or tap branches to find beetles. Most damage is seen on pinhead-size and smaller cherries. Insecticides should be applied no later than shuck fall if this prebloom application is not made.		
azinphos-methyl (Guthion Solupak)	1.5 lb	Wait at least 5 days before introducing bees. 15-day PHI.
Imidan 70WP	1.3 lb	Imidan is the material of choice. Early popcorn is the time to treat if weather allows. A water-soluble bag formulation (70WSP) also is available. OR-24c for sweet cherries. Federal label for tart cherries. Wait at least 5 days before introducing bees. 7-day PHI.

Full Bloom (Stages 6–7)

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Brown rot blossom blight (see footnote 3, page 10)		
See materials listed for Popcorn Stage.		

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.

Petal Fall (75% petal fall)

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Brown rot blossom blight (see footnote 3, page 10)		
See materials listed for Popcorn Stage.		
Leaf spot (see footnote 2, page 10)		
Adament 50WG	4–8 oz	Group 3 + 11 fungicide. 12-hour reentry. 1-day PHI.
Bravo Weather Stik	3–4.1 pt	Do not apply after shuck split. 12-hour reentry.
Captan 80WDG	1.9–2.5 lb	24-hour reentry.
Echo 720	3–4.1 pt	12-hour reentry.
Elite 45 WP	4–8 oz	12-hour reentry. 0-day PHI.
Gem 500SC	1.9–3.8 oz	12-hour reentry. 1-day PHI.
Indar 2F	6 fl oz	12-hour reentry. 0-day PHI.
Luna Privilege	2.8 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Luna Sensation	5–5.6 fl oz	Group 7 + 11 fungicide. 12-hour reentry. 1-day PHI.
Merivon	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	8.6–17.2 oz	12-hour reentry. 0-day PHI.
Pristine	10.5–14.5 oz	Group 7 + 11 fungicide. 12-hour reentry. See footnote 6, page 11. 0-day PHI.
Procure	10–16 fl oz	12-hour reentry. 1-day PHI.
Quilt Xcel	14 fl oz	Group 3 + 11 fungicide. 12-hour reentry. See footnote 6, page 11. 0-day PHI.
Rally 40WSP	2.5–6 oz	Has some curative (kickback) activity. 7-day PHI.
Rubigan 1EC	6–12 oz	Do not apply more than 48 oz/A per season. 0-day PHI.
Syllit FL	1–3 pt	48-hour reentry.
Tilt	4 fl oz	12-hour reentry. 0-day PHI.
TopGuard	14 fl oz	Group 3 fungicide. Do not use with surfactants. 12-hour reentry. 7-day PHI.
Ziram 76DF	6 lb	30-day PHI.

Aphids, bud moth, leafrollers

Note: If this petal fall spray is used, spray only after bloom and after bees have been removed from orchard.

diazinon 50WP	4 lb	Limited to 1 application per season. 21-day PHI.
Success 2L	4–8 oz	For leafroller control, not effective on aphids. 7-day PHI.

Syneta beetle

See materials listed for Popcorn Stage.

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Shuck Split

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Leaf spot		
Adament 50WG	4–8 oz	Group 3 + 11 fungicide. 12-hour reentry. 1-day PHI.
Bravo Weather Stik	3–4.1 pt	Do not apply after shuck split. 12-hour reentry.
Captan 80WDG	1.9–2.5 lb	24-hour reentry.
Echo 720	3–4.1 pt	12-hour reentry.
Elite 45 WP	4–8 oz	12-hour reentry. 0-day PHI.
Gem 500SC	1.9–3.8 oz	12-hour reentry. 1-day PHI.
Indar 2F	6 fl oz	12-hour reentry. 0-day PHI.
Luna Privilege	2.8 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Luna Sensation	5–5.6 fl oz	Group 7 + 11 fungicide. 12-hour reentry. 1-day PHI.
Merivon	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	8.6–17.2 oz	12-hour reentry. 0-day PHI.
Pristine	10.5–14.5 oz	Group 7 + 11 fungicide. 12-hour reentry. See footnote 6, page 11. 0-day PHI.
Procure	10–16 fl oz	12-hour reentry. 1-day PHI.
Quilt Xcel	14 fl oz	Group 3 + 11 fungicide. 12-hour reentry. See footnote 6, page 11. 0-day PHI.
Rally 40WSP	2.5–6 oz	Has some curative (kickback) activity. 7-day PHI.
Rubigan 1EC	6–12 oz	Do not apply more than 48 oz/A per season.
Syllit FL	1.5–3 pt	48-hour reentry. Use with another fungicide. 7-day PHI.
Tilt	4 fl oz	12-hour reentry. 0-day PHI.
TopGuard	14 fl oz	Group 3 fungicide. Do not use with surfactants. 12-hour reentry. 7-day PHI.
Ziram 76DF	5–6 lb	48-hour reentry. 30-day PHI.
Shothole (Coryneum blight) (see footnote 7, page 11)		
Captan 80WDG	1.9–2.5 lb	24-hour reentry.
Echo 720	3–4.1 pt	12-hour reentry.
Fontelis	14–20 fl oz	12-hour reentry. 0-day PHI.
Ziram 76DF	5–6 lb	48-hour reentry. 30-day PHI.
Powdery mildew		
<i>Note:</i> Can be a problem in some years in western Oregon. Materials used for brown rot and/or leaf spot can be effective on this disease as well.		

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.

Two Weeks after Shuck Fall

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
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Leaf spot

See materials listed for Shuck Split.

Aphids

Note: Aphids are of concern primarily in young orchards. Use this spray if the popcorn spray was not made and aphids are increasing.

Actara	3–4 oz	14-day PHI.
diazinon 50WP	2–4 lb	Limited to 1 application per season. 21-day PHI.

Late Spring and Summer

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
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Brown rot on fruit

Note: Apply materials prior to harvest before wet weather is expected. Pay close attention to preharvest spray restrictions.

Abound	12–15.5 fl oz	See footnote 6, page 11. Do not use with silicone-based surfactants. 4-hour reentry. 0-day PHI.
Adament 50WG	4–8 oz	Group 3 + 11 fungicide. 12-hour reentry. 1-day PHI.
Bumper 41.8EC	4 fl oz	12-hour reentry. 0-day PHI.
Cabrio EG	9.5 oz	12-hour reentry. 0-day PHI.
Captan 80 WDG	2–2.5 lb	24-hour reentry.
CaptEvote 68WDG	3.75 lb	(Captan + Elevate.) Do not apply more than 2 consecutive applications. 24-hour reentry. 0-day PHI.
Elevate 50WDG	1–1.5 lb	12-hour reentry. 0-day PHI.
Elite 45 WP	4–8 oz	12-hour reentry. 0-day PHI.
Fontelis	14–20 fl oz	12-hour reentry. 0-day PHI.
Indar 2F	6 fl oz	12-hour reentry. 0-day PHI.
Luna Privilege	2.8 fl oz	Group 7 fungicide. 12-hour reentry. 0-day PHI.
Luna Sensation	5–5.6 fl oz	Group 7 + 11 fungicide. 12-hour reentry. 1-day PHI.
Merivon	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	8.6–17.2 oz	12-hour reentry. 0-day PHI.
Procure	10–16 fl oz	12-hour reentry. 1-day PHI.
Quadris Top	12–14 fl oz	Group 3 + 11 fungicide. 12-hour reentry. 0-day PHI.
Quash	2.5–4.0 oz	12-hour reentry. 14-day PHI.
Quilt Xcel	14 fl oz	Group 3 + 11 fungicide. 12-hour reentry. See footnote 6, page 11. 0-day PHI.
sulfur, wettable (92%)	5–10 lb	Phytotoxic when temperatures over 85°F. 24-hour reentry.
Tilt	4 fl oz	12-hour reentry. 0-day PHI.
TopGuard	14 fl oz	Group 3 fungicide. Do not use with surfactants. 12-hour reentry. 7-day PHI.
Topsin 4.5FL	20–30 fl oz	Tank-mix with another fungicide. See footnote 3, page 10. 2-day reentry. 1-day PHI.

Late Spring and 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—Late Spring and Summer

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Bacterial canker, cherry witches' broom		
none	—	Prune out cankers and dead limbs during dry weather.
Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Cherry fruit fly		
<i>Note:</i> First emergence can be in early May or as late as mid-June depending on location, elevation, weather, slope, and population pressure of an orchard. Growers should obtain emergence dates and base spray timing on local emergence information. SOUTH VALLEY: Douglas or Lane County Extension. MID-VALLEY: Lane County Extension. NORTH VALLEY: Yamhill County Extension. Many other insecticides are registered for cherry fruit fly control including azinphos-methyl (Guthion) and Asana.		
Actara	4.5–5.5 oz	7-day PHI.
Asana	4.8–14.5 fl oz	May aggravate spider mite problems. 14-day PHI.
Assail 70WP	2.3–3.4 oz	7-day PHI.
Delegate WG	4.5–7 oz	Apply no less than 1 week apart, maximum 4 times per season. 7-day PHI.
diazinon 50WP	4 lb	WPs may leave residues visible at harvest.
dimethoate 267	3–4 pt	21-day PHI.
dimethoate 400 or dimethoate 4E	2 pt 2 pt	Do not mix dimethoate with Syllit. Thorough coverage is important. Phytotoxicity can occur and varies from marginal leaf burn to defoliation. USE ONLY ONCE PER SEASON. 21-day PHI.
Entrust	1.25–2.5 oz	Organic formulation of spinosad. PHI varies, check the label.
Imidacloprid (generic formulations)	See labels.	7-day PHI.
Imidan	2.33–2.5 lb	Sour cherries only. 7-day PHI.
malathion	See labels.	Many formulations are available: WP, ULV, and EC. WPs may leave residues visible at harvest. 1- to 3-day PHI.
Sevin XLR Plus or Sevin 80WSP	2–3 qt 3 lb	3-day PHI.
spinosad bait (GF-120 NF)	20 oz	Apply every 7 days by air or all-terrain vehicle. Apply 0.8–1 gal/A with a D2 nozzle (without a core) attached to an ATV, at 6–7 mph.
Success 2L	4–8 oz	7-day PHI.
Voliam Flexi	6–7 oz	14-day PHI.
See also spotted wing drosophila on the next page.		

*Late Spring and 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—Late Spring and Summer

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Spotted wing drosophila		
<i>Note:</i> Begin monitoring just before fruit starts to change to its ripening color. See footnote 8, page 11. Insecticides recommended for management of spotted wing drosophila are based on preliminary information and may change after additional research is conducted.		
Baythroid	2.4–2.8 oz	7-day PHI.
Danitol 2.4 EC	10.66–21.33 oz	3-day PHI.
Delegate WG	4.5–7 oz	Apply no less than 1 week apart, maximum 4 times per season. 7-day PHI.
diazinon 50WP	4 lb	WPs may leave residues visible at harvest.
dimethoate 267	3–4 pt	21-day PHI.
dimethoate 400 or dimethoate 4E	2 pt 2 pt	Do not mix dimethoate with Syllit. Thorough coverage is important. Phytotoxicity can occur and varies from marginal leaf burn to defoliation. USE ONLY ONCE PER SEASON. 21-day PHI.
Entrust	1.25–2.5 oz	Organic formulation of spinosad. PHI varies, check the label.
malathion	See labels.	Many formulations are available: WP, ULV, and EC. WPs may leave residues visible at harvest. 1- to 3-day PHI.
Sevin XLR Plus or Sevin 80WSP	2–3 qt 3 lb	3-day PHI.
Success 2L	4–8 oz	14-day PHI.
Shothole borer (see footnote 4, page 10)		
<i>Note:</i> Spot-treat as needed. See Delayed Dormant Stage.		
Pear slugs		
<i>Note:</i> Usually controlled with insecticides applied for control of other pests. Pear slugs should be controlled on young trees during “establishment years.”		
Fruit cracking		
hydrated lime	20–25 lb	Thorough coverage of fruit is essential. Will reduce, not eliminate, cracking.

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Postharvest

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Shothole borer (see footnote 4, page 10)		
Spider mites		
<i>Note:</i> Spider mites seldom are a problem on cherries in the Willamette Valley except on young trees.		
Acramite 50WS	0.75–1 lb	Use only once per season. 3-day PHI.
Apollo 50SC	4–8 oz	Do not use more than once per season. 21-day PHI.
Envidor 2SC	16–18 oz	7-day PHI.
Omite 30W	6 lb	Postharvest use only.
Onager 1EC	24 oz	Postharvest use only.
Savey DF	3–6 oz	Does not control rust mites. 28-day PHI.
Vendex 50WP	1.5–2 lb	14-day PHI if used preharvest.
Increased fruit set		
Solubor or Borosol	5–8 lb 2–4 qt	Late September or early October use with 60 gal or more of water. Don't mix boron sprays with pesticides. The elevated pH of the boron spray solution weakens many insecticides. Use this rate for foliar application.

Dormant Season (October and January—Stage 0)

Pest or disease/ Material	Amount of product per acre	Comments/Reentry interval/Preharvest interval (PHI)
Shothole		
<i>Note:</i> Use of copper may increase bacterial canker in some orchards. If you use these products, apply the first spray in October before the fall rains and again in early January. Do not graze sheep in orchards sprayed with coppers. Toxic amounts of copper can build up in orchard soils after decades of use.		
bordeaux 12-12-100	See footnote 1, page 10.	—

Footnotes

1. Bacteria resistant to copper products have been detected in many Willamette Valley crops. Some growers report control of bacterial canker by the application of bordeaux 12-12-100 in October and January; others report little or no control. Some research trials have shown that copper products can significantly **increase** this disease. If you choose to use copper-based products, thoroughly spray the trunks and lower scaffolds as well as the upper branches. Bordeaux 12-12-100 means 12 lb of copper sulfate plus 12 lb of hydrated lime in 100 gal of water. In any bordeaux formula, the ingredients always are listed in the same order—copper sulfate, hydrated lime, then gallons of water.
2. Young trees not being sprayed for brown rot may need an application of fungicide during bloom for adequate control of cherry leaf spot. This is more of a problem in high rainfall areas.
3. Fungal pathogens have shown resistance to several fungicides when one is used exclusively. Alternate or tank-mix with fungicides with different modes of action. Fungicides from different groups have different modes of action. Some products may already be a mix of two different fungicides. One or two applications during bloom may adequately control brown rot when products with systemic (translaminar) activity are used.
4. Shothole borer can have three generations in Valley orchards. Look for new adults and/or sawdust pushed from emergence holes in late winter, June/July, and again in September/October. This pest prefers young and/or stressed trees. Control is difficult and consists of spot-treating infested trunks and limbs with a delayed dormant dilute Lorsban spray when adults are emerging and reinvading. Do not use Lorsban on sweet cherry foliage.

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.

5. Syneta beetle is a small, pale leaf- and fruit-feeding beetle that causes fruit scarring shortly after pollination through the time cherries are pinhead size. It is a localized problem in the Valley and within orchard blocks. Adults begin emerging and feeding in orchards before bloom or as late as early fruit set. First emergence has been as early as April 6 or as late as early May depending upon elevation and slope of individual blocks. Beetles may be present for 4–6 weeks in an orchard. Best time for control is PREBLOOM (popcorn) if beetles are present. Imidan (OR-24c) is the favored insecticide. Guthion (azinphos-methyl) also will give good control at this time *if* beetles are present. However, do not introduce bees for 5 days post spray of either insecticide because of possible residues and associated bee kills. **DO NOT APPLY THESE INSECTICIDES TO TREES IN BLOOM!** Both ground emergence cages and “tap trays” for pear psylla monitoring are used to determine presence of Syneta.
6. Alternate group 11 fungicides with a fungicide that has a different mode of action. Do not use more than two sequential applications. Sprayers used for Abound should **not be used on apples** such as Gala, Cox’s Orange Pippin, and McIntosh. Even a small amount of drift can severely impact these apple trees.
7. Good information on the control of shothole in sweet cherry is lacking. Much of our information is derived for the same disease on peaches or almonds. Other materials also may be effective. Applications past shuck split may be needed in years when heavy spring rains continue past bloom.
8. Monitor for spotted wing drosophila (SWD) with clear, quart-sized plastic deli cups with lids. Drill or puncture about 10 3/16-inch holes near the rim of the cup for fly entry. Bait traps with pure apple cider vinegar plus a drop of unscented liquid soap. Hang the trap in a shady, cool location within the tree canopy. Just before fruit starts to change to its ripening color, place as many traps as you will be able to maintain. Check traps weekly. Various kinds of flies will be captured in this nonspecific trap, so learn to identify SWD and have positive catches confirmed by your local Extension office. Treatment thresholds have not been established, but preventive measures should be taken when the first SWD is captured and fruit starts to ripen. Monitoring guidelines are based on the data currently available and designed for ease of grower adoption and use. During past growing seasons, SWD were captured in mid-May in the Mid-Columbia area and earlier west of the Cascades. Watch the SWD website for regional detections of SWD at: <http://spottedwing.com>

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.

For more information about fungicides registered for use on cherries and their specific modes of action, consult OSU Extension publication EM 8951, *How to Reduce the Risk of Pesticide Resistance in Cherry Pests in Oregon*.

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 for Control of Cherry Diseases*

Fungicide	Fungicide group #	Properties**	Brown rot (blossom blight)	Brown rot (fruit rot)	Cherry leaf spot	Powdery mildew	Shothole
Abound	11	B, F, Ls, P	Good***	Good	Good	Excellent***	Fair–Good
Botran	14	F, P	Fair	Fair	??	Not effective	??
Bravo	M5	B, F, P	Good–Fair	Not registered	Excellent	Not effective	Good
Bumper/Orbit/Tilt	3	B-N, C, F, Ls, P	Good–Excellent***	Good–Excellent***	??	Fair–Good***	Slight
Cabrio	11	B, F, Ls, P	Good***	Good	Fair–Good	Excellent***	??
Captan	M4	B, F, P	Good	Good	Good	Not effective	Good–Excellent
Copper-based products	M1	B, Bact, F, P	Slight	Not registered	Good	Slight	Good
Echo 720	M5	B, F, P	Good–Fair	Not registered	Excellent	Not effective	Good
Elevate	17	F, N, P	Good–Excellent***	Good–Excellent***	??	Not effective	??
Elite	3	B-N, C, F, Ls, P	Good–Excellent***	Good–Excellent***	Good	Fair–Good***	??
Fontelis	7	B, F, P	Good–Excellent***	Good–Excellent***	??	Good–Excellent***	Good
Gem	11	B, F, Ls, P	Good***	Fair–Good***	??	Excellent***	??
Indar	3	B-N, C, F, Ls, P	Excellent***	Excellent***	Good–Excellent	Slight***	??
HMO	Not classified	E, F, I, P	??	??	??	Good–Excellent	??
Kaligreem	Not classified	E, B-N	??	??	??	Poor	??
Luna Privilege	7	F, P	Good–Excellent***	Good–Excellent***	??	Good–Excellent***	??
Orius	3	B-N, C, F, Ls, P	Good–Excellent***	Good–Excellent***	Good***	Excellent***	??
Oxidate	Not classified	D	??	??	??	??	None
Procure	3	B-N, C, F, Ls, P	Good***	??	Fair***	Good***	??
Quash	3	B-N, C, F, Ls, P	Good–Excellent***	Good***	??	Good***	??
Quintec	13	N, F, P	None	None	None	Excellent	None
Rally	3	B-N, C, F, Ls, P	Good–Fair***	Good–Fair***	Excellent***	Fair–Good***	Slight
Rovral	2	B-N, F, Ls, P	Good***	Not registered	Slight	Not effective	Fair–Good
Rubigan	3	B-N, C, F, Ls, P	Not registered	Good	Excellent	Good–Fair	??
Sulfur	M2	F, I, P, V	Fair	Fair	Fair	Good	Not effective
Syllit	M7	B, F, P	??	Slight	Good	Not effective	??
TopGuard	3	B-N, C, F, Ls, P	Good–Excellent***	Good***	Excellent***	Good–Excellent***	??
Topsin	1	B, C, F, Ls	Good***	Good***	??	Good***	Not effective
Ziram	M3	B, F, P	Slight	Slight	Fair	Not effective	Good–Excellent
Combination products							
Adament	3 + 11	B-N, C, F, Ls, P	??	??	Excellent	Excellent	??
CaptEstate	M4 + 17	B, F, P	Good	Good	Good	Not effective	Good
Luna Sensation	7 + 11	B-N, F, Ls, P	Good–Excellent***	Good–Excellent***	Good	Excellent***	??
Merivon	7 + 11	B-N, F, Ls, P	Good–Excellent***	Good–Excellent***	Good	Excellent***	??
Pristine	7 + 11	B-N, F, Ls, P	Good	Good	Good	Excellent**	??
Quadris Top	3 + 11	B-N, C, F, Ls, P	??	??	Excellent	Excellent	??
Quilt Xcel	11 + 3	B-N, C, F, Ls, P	Excellent	Excellent	??	Excellent***	Fair–Good

*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.

**Properties: B = broad spectrum of activity; Bact = bactericidal; B-N = broad to narrow spectrum of activity; C = curative; D = Disinfectant; E = eradicant; F = fungicidal; Fs = fungistatic; I = insecticidal; Ls = locally systemic; N = narrow spectrum of activity; P = protectant; V = vapor active; ?? = Unknown.

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

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Table 2. Quick Reference Guide for 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. It has a 365-day preharvest interval.
- 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 persist in soil and are soil active (Herbicides in <i>bold, italic</i> type are recommended for new plantings.)													
<i>napropamide</i> (3)	<i>Devrinol</i>												5 lb ai/A (50 lb/A Devrinol 10-G)
<i>oryzalin</i> (3)	<i>Surflan</i>												2–6 lb ai/A (2–6 qt/A Surflan AS)
<i>pendimethalin</i> (3)	<i>Prowl</i>												Prowl H2O: 1.9–6 lb ai/A (2–6.3 qt/A) depending on desired length of weed control and crop
<i>pronamide</i> (3)	<i>Kerb</i>												1–4 lb ai/A (2–8 lb/A). Rate depends on species present and soil texture.
<i>trifluralin</i> (3)	<i>Treflan</i>												0.5–1 lb ai/A (1–2 pt/A Treflan 4EC)
terbacil (5)	Sinbar					NB	NB	NB				NB	0.4–0.8 lb ai/A (0.5–1 lb/A), newly established; 2–4 lb/A Sinbar, bearing, depending on soil type
simazine (5)	Princep												See product labels for rates. Princep Caliber 90 is a Special Local Needs label (OR-080038) for sweet cherries only.
diuron (7)	Karmex												See label for crop-specific application rates.
norflurazon (12)	Solicam												1.97–7.8 lb ai/A (2.5–10 lb/A Solicam)
dichlobenil (20)	Casoron												4–6 lb ai/A (100–150 lb/A Casoron). Apply in cold, wet weather.
<i>isoxaben</i> (21)	<i>Trellis</i>				NB	NB	NB	NB	NB	NB	NB	NB	0.5–1 lb ai/A (0.66–1.33 lb/A product)
indaziflam (29)	Alion												0.065–0.085 lb ai/A (5–6.5 oz/A product) depending on soil texture
trifluralin (3) + isoxaben (21) + oxyfluorfen (14)	Showcase	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	5.5–5 lb ai/A (100–200 lb/A Showcase)

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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 persist in soil and have both soil and foliar activity													
penoxsulam (2)	Pindar GT												
rimsulfuron (2)	Matrix												0.063 lb ai/A (4 oz/A Matrix FNV per year)
flumioxazin (14)	Chateau												0.188–0.38 lb ai/A (6–12 oz/A Chateau WDG). Slight differences in rates and uses in SW and WDG labels.
oxyflurofen (14)	Goal												1.25–2 lb ai/A (5–8 pt/A Goal 2XL)
saflufenacil (14)	Treevix												0.045 lb ai/A (1 oz/A Treevix)
Postemergence contact and translocated herbicides													
sethoxydim (1)	Poast										NB	NB	Grass suppression in row middles. 0.28–0.47 lb ai/A (1.5–2.5 pt/A product)
clethodim (1)	Select Max		NB	NB	NB	NB	NB	NB		NB		NB	0.06–0.125 lb ai/A (6–8 oz/A Select)
fluazifop (1)	Fusilade DX		NB	NB	NB	NB							0.25–0.375 lb ai/A (16–24 oz/A Fusilade DX). Refer to specific grassy weeds listed on label.
halosulfuron (2)	Sandea												Apples: 0.035–0.094 lb ai/A (0.75–2 oz/A) Nut crops: 0.031–0.063 lb ai/A (2/3–1 1/3 oz/A)
2,4-D (4)	2,4-D												Green sucker control in hazelnuts. 0.7–0.95 lb ai/A (1.5–2 pt/A Saber)
clopyralid (4)	Stinger												0.12–0.25 lb ae/A (0.33–0.66 pt/A Stinger)
glyphosate (9)	Roundup												General weed control and grass suppression in row middles. Read label carefully for crops listed and geographic location.
glufosinate (10)	Rely												Sucker control. 0.75–1.5 lb ai/A (3–6 qt/A Rely)
carfentrazone (14)	Aim												Green sucker control in hazelnuts. 0.031 lb ai/A (2 fl oz/A Aim EC)
pyraflufen (14)	Vennue												0.7–4 fl oz product/A (0.001–0.006 lb ai/A)
diquat (22)	Reglone		NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	
paraquat (22)	Gramoxone												Green sucker control in hazelnuts. 0.625–1 lb cation/A (2.5–4 pt/A Gramoxone; 1.7–2.7 pt/A Firestorm)
acetic acid	WeedPharm												

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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/>)
- Eastern filbert blight help page—all the information you need for this disease (<http://oregonstate.edu/dept/botany/epp/EFB/>)
- Codling moth development information (<http://ippc2.orst.edu/cgi-bin/ddmodel.pl?clm>)
- Apple scab infection season information (<http://ippc2.orst.edu/cgi-bin/ddmodel.pl?spp=asc>)
- Pear scab infection season information (<http://ippc2.orst.edu/cgi-bin/ddmodel.pl?spp=asp>)
- Pear scab infection period information for the Hood River Valley (<http://ippc2.orst.edu/hr/>)
- Fire blight risk information (<http://ippc2.orst.edu/cgi-bin/ddmodel.pl?fbl>)
Directions for the use of each model are available at each site.
- 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>)

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.

Basic Elements of Safe Pesticide Use

- Always read the label with care. This is the first step in selecting the right material for the job. Never rely on your memory. Before opening the container, pay strict attention to warnings and cautions printed on the label.
- Keep all pesticide and spray materials out of the reach of children, pets, and irresponsible persons. Storage outside of the home, away from food and feed, and under lock and key is the safest method.
- Store only in the original container and keep tightly closed.
- NEVER smoke, eat, or drink while applying pesticides.
- Avoid inhalation or direct contact. Always wear protective clothing and safety devices as recommended on the label.
- Avoid spills. If spills occur, take immediate action to remove contaminated clothing and wash thoroughly.
- After each application, bathe and change to clean clothing. Wash clothing after each use. Always use fresh clothing when starting new application.
- Avoid contamination of fish ponds and water supplies. Cover feed and water containers when treating around livestock or pet areas.
- Keep separate equipment for use with hormone-type herbicides to avoid accidental injury to susceptible plants. Also avoid applications under wind conditions that could create drift to nontarget areas.
- Rinse empty containers three times before disposing of them. Add the rinse to the spray tank and dispose of containers according to local regulations to avoid hazard to humans, animals, and the environment.
- Follow label directions for mixing and application to keep residues within the limits prescribed by law.
- Plan ahead. Discuss with your physician the materials you will be using during the season so that he or she can be prepared to provide the appropriate treatment in case of accidental exposure. If symptoms of illness occur, call the physician or get the patient to a hospital immediately. Always provide the medical personnel with as much information as possible.
- 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.

Prepared by Jeff Olsen, Extension horticulturist, Yamhill County; Jay W. Pscheidt, Extension plant pathology specialist; and Ed Peachey, assistant professor of weed science, Department of Horticulture; all of Oregon State University. The information in this pest management guide is valid for 2013. 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.

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