

Growing Blackberries in Your Home Garden

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Photo: Amanda Vance

Dark, delicious blackberries have been gaining in popularity. Many Oregonians could pick their fill from vines growing along roads and trails. But those who grow blackberries in the home garden can enjoy a choice of cultivars, or varieties, with superior fruit. What's more, home gardeners can pick fruit from early summer all the way to the first frost.

Blackberries are in the caneberry group, which also includes raspberries and raspberry-blackberry hybrids. Caneberry plants produce fruit on hard, woody stems called canes.

Raspberries and blackberries both produce a fruit made up of many individual sections, or drupelets (Figure 1). Each drupelet encloses a seed. When you pick a raspberry, the fruit comes off the receptacle — the white central core that stays on the plant — and the berry is hollow inside. In blackberries, the receptacle stays attached to the fruit when you pick it. Blackberries are not hollow (Figure 1).

Raspberry-blackberry hybrids such as 'Boysen' and 'Logan', also known as "boysenberry" and "loganberry," are classified as blackberries.

Also available:

- [Growing Berries on the Oregon Coast: Raspberries and Blackberries, EM 9180](https://catalog.extension.oregonstate.edu/em9180) (<https://catalog.extension.oregonstate.edu/em9180>)
- [Growing Berries on the Oregon Coast: An Overview, EM 9177](https://catalog.extension.oregonstate.edu/em9177) (<https://catalog.extension.oregonstate.edu/em9177>)

You can find several blackberry species in the wild in Oregon. Only one, the western dewberry (*Rubus ursinus*) is native (Figure 2). Plants have a trailing growth habit with purplish-colored stems. There are separate male and female plants; females produce oblong fruit with small seeds and a wonderful aromatic flavor.

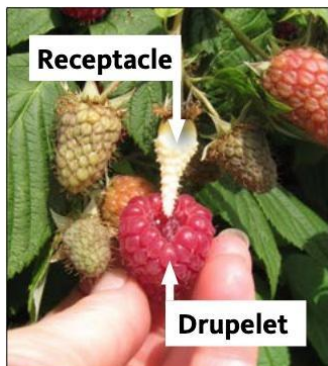


Figure 1A. The receptacle, or plug, stays on the plant when you pick a raspberry.

Credit: Bernadine Strik, © Oregon State University



Figure 1B. The receptacle of a black raspberry also stays on the plant when you pick it.

Credit: Bernadine Strik, © Oregon State University

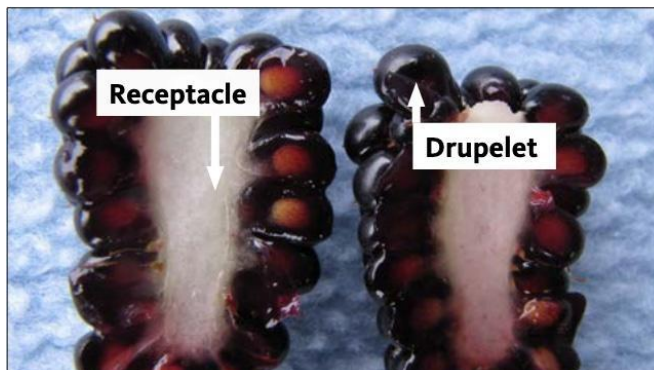


Figure 1C. In blackberry, the receptacle is part of the fruit.

Credit: Bernadine Strik, © Oregon State University

Two other species introduced from Europe in the late 1800s have become endemic and can be found in most areas of Oregon. The first species, *Rubus armeniacus*, has been given a cultivar name, ‘Himalaya’ (Figures 3A, 3B). This extremely vigorous blackberry spreads easily through seeds after passing through birds, and it has become a noxious weed. Its growth habit is similar to semierect types. The other introduced species, *Rubus laciniatus* (Figure 4), with the cultivar name ‘Evergreen’, was grown commercially for many years before it became endemic. This trailing blackberry has lacy leaves and produces small, sweet fruit in midsummer; cultivars are no longer available for home gardeners. The cultivars listed in Table 1 have excellent fruit quality.

Blackberries have a unique growth habit. The plants have a perennial root system and crown, or plant base, but the canes are biennial, dying after fruiting. Blackberry plants have a lifespan of 15 to more than 40 years, depending on the presence of pests or adverse environmental conditions.



Figure 2. Western dewberry (*Rubus ursinus*), a native plant.

Credit: Bernadine Strik, © Oregon State University



Figure 3A. Introduced, weedy 'Himalaya' blackberry (*Rubus armeniacus*) at bloom in western Oregon.

Credit: Bernadine Strik, © Oregon State University



Figure 3B. 'Himalaya' blackberry (*Rubus armeniacus*) fruiting.

Credit: Bernadine Strik, © Oregon State University



Figure 4. Introduced, weedy 'Evergreen' blackberry (*Rubus laciniatus*) in western Oregon.

Credit: Bernadine Strik, © Oregon State University

Blackberry types

Blackberry canes

The two names for a blackberry cane describe whether the cane is in its first or second year of growth:

- **Primocane:** First year of growth. Most cultivars produce no fruit on these canes.
- **Floricanes:** Second year of growth. These canes produce flowers and fruit and then die.

Fruiting habits

- **Floricanes-fruiting** (also called summer-bearing) blackberries produce vegetative canes, called primocanes, in the spring. Primocanes grow from buds on the crown and the roots, depending on the type (Figure 5). These primocanes grow throughout their first year and then go dormant in the fall. They overwinter and then produce flowers and fruit in their second year, at which point the canes are called floricanes. The floricanes die after fruiting. After the planting year, blackberry plants have both types of canes — primocanes and floricanes — at the same time (Figure 5).
- **Primocane-fruiting** (also called fall-fruiting or everbearing) blackberries have a similar cane development and lifecycle, except the tips of the primocanes (Figure 6A) or primocane branches (Figure 6B) flower and fruit in the late summer or fall of their first year of growth, depending on summer pruning (see “Pruning and training”). The portion of the primocane that fruited dies back in late fall or winter. Then the remaining cane base will overwinter and fruit as a floricanes in its second year. Floricanes die after fruiting. Everbearing blackberry plants can be pruned to produce one crop (primocane only) or two crops (early summer on floricanes and late-summer and fall on new primocanes).



Figure 6A. Bernadine Strik displays an unpruned primocane flowering at the tip in early September. This specimen is an everbearing erect blackberry.

Credit: Bernadine Strik, © Oregon State University



Figure 6B. Bernadine Strik displays the fruiting tips of branches on a pruned primocane of an everbearing erect blackberry in late September.

Credit: Bernadine Strik, © Oregon State University

Growth type

There are three main blackberry types suited to the home garden, depending on your region. They are differentiated by their cane growth habit — trailing, erect and semierect.

- **Trailing blackberry** cultivars produce primocanes that are not self-supporting. They trail along the ground unless they are trellised (Figure 5). Primocanes are produced only from buds on the crown and may grow more than 15 feet long, depending on the site and cultivar. Cultivars in this group include ‘Marion’ (also known as “marionberry”), ‘Hall’s Beauty’, ‘Columbia Star’, and the raspberry-blackberry hybrids ‘Boysen’ (“boysenberry”) and ‘Logan’ (“loganberry”) (see “Blackberry cultivars”). This type of blackberry has the earliest fruiting season (late June through early August in the Willamette Valley) and produces fruit with small seeds and excellent flavor and aroma. These cultivars are good for eating fresh and for freezing or jams; seeds do not need to be removed prior to making pies or jam. This type is the least winter cold hardy and heat tolerant (see “Common problems”) and is best adapted to the Willamette Valley and southwestern Oregon. It can be grown in some other regions with methods to improve cold hardiness (see “Pruning and training,” and “Common problems”).
- **Erect blackberry** cultivars include summer-bearing (such as ‘Navaho’) and primocane-fruiting or everbearing (such as ‘Prime-Ark Freedom’) (see “Blackberry cultivars”). This type produces stiff, erect canes that need pruning in summer (tipping primocanes) as well as winter. New primocanes are produced each year from the crown and buds on the roots (Figure 7), so these plants can spread. This type of blackberry fruits in midseason on the floricanes (early July through August in the Willamette Valley). Everbearing cultivars fruit on the primocanes from early September through fall frost. Fruit have a milder aroma and flavor and larger seeds than the trailing types; berries are glossy and firm. This type of blackberry, whether summer-bearing or everbearing, is the most winter cold hardy and can be grown in all regions of Oregon.
- **Semierect blackberry** cultivars produce vigorous, thick and arching primocanes from the crown of the plant (Figure 8). Like erect types, they benefit from summer pruning, to tip primocanes, and from winter pruning. All cultivars are summer-bearing (‘Triple Crown’, for example) and are the latest summer-bearing cultivars, fruiting from early August to September or October in the Willamette Valley. This type may be grown in most regions of Oregon, depending on hardiness zone and cultivar.

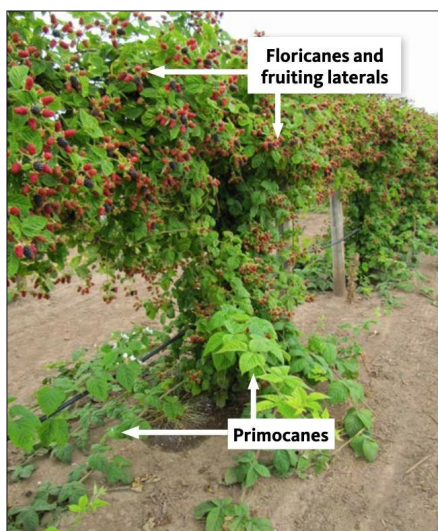


Figure 5. A trailing ‘Marion’ blackberry in early summer shows new primocane growth. Some fruit is starting to ripen on the fruiting laterals of the floricanes.

Credit: Bernadine Strik, © Oregon State University

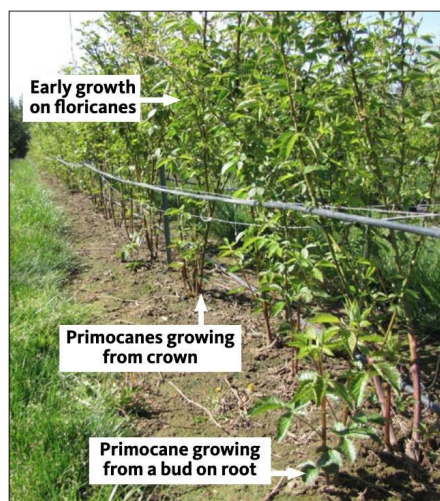


Figure 7. A summer-bearing erect blackberry in spring shows early growth of fruiting laterals on the floricanes and primocanes emerging from crowns and roots.

Credit: Bernadine Strik, © Oregon State University

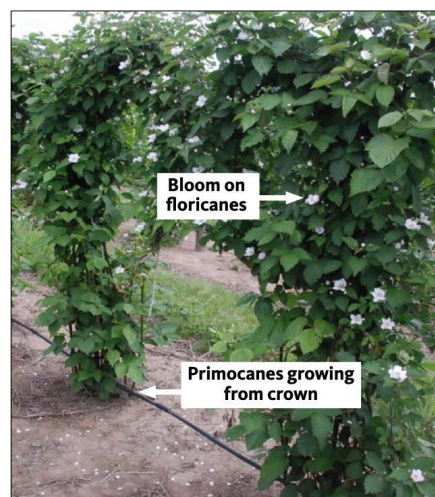


Figure 8. A summer-bearing semierect blackberry in spring shows bloom on floricanes and primocanes emerging from the crown. The primocanes will remain upright.

Credit: Bernadine Strik, © Oregon State University

Blackberry cultivars

It is important to choose a cultivar adapted to your region. Various types of blackberry differ in fruiting season and cultural requirements. Even cultivars within the same type (trailing, erect or semierect) differ in fruit quality and flavor, appearance, tolerance to pests, cold hardiness, and plant longevity.

Winter cold-hardy cultivars adapted to the colder regions of Oregon (such as zones 5 to 7), may not grow normally in regions of the Willamette Valley (zone 8) where winters are warmer and plants receive less winter chill. Also, cultivars adapted to the Willamette Valley (most of which is zone 8) may lack sufficient cold hardiness for central, eastern and southeastern Oregon (see “Common problems”). If you choose a summer-bearing cultivar or want to grow an everbearing cultivar for a double crop, then the cultivar must have sufficient cold hardiness on the overwintering cane to get a floricanne crop; this overwintering primocane is exposed to cold temperatures and potentially desiccating winds. In contrast, an everbearing cultivar may be grown for a primocane crop only (single crop) in any production region, because no overwintering cane is needed for this production method — only the crown overwinters in this system (see “Pruning and training”).

The raspberry-blackberry hybrids (‘Boysen’, ‘Logan’ and ‘Tayberry’) are trailing blackberries with less cold hardiness than either erect or semierect cultivars. If you live in an area that has borderline cold hardiness for any trailing cultivar (see below), or your yard is more exposed to cold winds in winter (such as at higher elevation or exposed sites in the Willamette Valley or southwestern Oregon), then choose a warmer or more protected site for consistent fruit production. Depending on your location or region, consider training methods that reduce the risk of winter cold injury, and use other means of protecting these cultivars as needed (see “Common problems”).

Table 1 lists cultivars noted for good flavor and pest resistance by type. The table lists a range in cold hardiness zones to help you determine regional adaptation if you are growing in an area with a borderline [USDA Cold Hardiness Zone](https://plants.ars.usda.gov/PHZMWeb/) (<https://plants.ars.usda.gov/PHZMWeb/>). Be aware that cold hardiness zones vary within any one region. You may be in zone 5 because your home is at a higher elevation, while the majority of the region is in zone 6. See [Blackberry Cultivars for Oregon](https://catalog.extension.oregonstate.edu/ec1617/) (<https://catalog.extension.oregonstate.edu/ec1617/>), EC 1617, or [Selecting Berry Crop Varieties for Central Oregon](https://catalog.extension.oregonstate.edu/ec1621/) (<https://catalog.extension.oregonstate.edu/ec1621/>), EC 1621. You can find descriptions of newer cultivars online through various nurseries. Make note of the cold hardiness zone, because this may limit production in your region.

Whichever types and cultivars you choose, buy only certified, disease-free plants from a reputable nursery. It can be tempting to start your new planting by digging up “suckers” — primocanes that developed from buds on the roots — from your old patch or that of a neighbor. That route is easy and free. But it could also introduce pest-infested soil and virus-infected plants to your new planting. Also, many cultivars are patented and may only legally be propagated by licensed nurseries. Many of the cultivars in Table 1 (and more) are available through local retail and mail-order nurseries. Plants often sell out quickly, so order well in advance of spring planting.

Because blackberry cultivars do not need cross-pollination to produce fruit, you only need to choose one cultivar. However, growing more than one type or cultivar will allow you to compare them, have sufficient fruit for freezing or jam, and to have fresh fruit for an extended period.

Table 1. Blackberry cultivars

Cultivar	Zones	Thorns	Flavor	Notes
Trailing - Summer bearing; one crop per season on floricanes				
'Marion'	Zones 6-9	Thorny	Excellent	
'Columbia Star'	Zone 5 or 6-9	Thornless	Very good	
'Hall's Beauty'	Zones 6-9	Thornless	Good	Maroon-colored fruit
'Columbia Giant'	Zones 6-9	Thornless	Mild	
'Boysen'	Zones 6-9	Thornless clones may revert to thorny canes over time	Excellent	Raspberry-blackberry hybrid; maroon fruit
'Logan'	Zones 6-9	Some thornless clones available		Raspberry-blackberry hybrid; dark red fruit; plants susceptible to cane disease
Erect summer-bearing - One crop per season on floricanes				
'Navaho'	Zone 5 or 6-9	Thornless	Excellent	
'Ouachita'	Zone 5 or 6-9	Thornless	Good	
'Caddo'	Zones 5-9	Thornless	Good	
'Kiowa'	Zones 6-9	Thornless	Good	
Erect everbearing - May produce two crops per season - first on floricanes, second on primocanes. Most cold-hardy				
'Prime-Ark® Freedom'	Zones 5-9	Thornless	Fair to good	
'Black Gem'	Zones 5-8	Thornless		
Semierect - Summer-bearing; one crop per season on floricanes				
'Triple Crown'	Zones 5 or 6-9	Thornless	Excellent	
'Galaxy'	Zones 5-9	Thornless	Good	
'Eclipse'	Zones 5-9	Thornless	Good	
'Twilight'	Zones 5-9	Thornless	Excellent	



'Marion'

Credit: Bernadine Strik, © Oregon State University



'Columbia Star'

'Columbia Star'
Credit: Bernadine Strik, © Oregon State University



'Hall's Beauty'

'Hall's Beauty'
Credit: Bernadine Strik, © Oregon State University



'Columbia Giant'

'Columbia Giant'
Credit: Bernadine Strik, © Oregon State University



'Boysen'

'Boysen'
Credit: Bernadine Strik, © Oregon State University



'Logan'

'Logan'
Credit: Bernadine Strik, © Oregon State University



'Navaho'

'Navaho'
Credit: Bernadine Strik, © Oregon State University



'Prime-Ark® Freedom'

'Prime-Ark® Freedom'
Credit: Bernadine Strik, © Oregon State University



'Triple Crown'

'Triple Crown'
Credit: Bernadine Strik, © Oregon State University



'Eclipse'

'Eclipse'
Credit: Chad Finn



'Twilight'

'Twilight'
Credit: Bernadine Strik, © Oregon State University

Site selection

Blackberry plantings are productive from 15 to more than 40 years, depending on type, soil and pest pressure. Carefully select a site for optimal planting life. Ideal environmental conditions for blackberries are full sun exposure and fertile, well-drained, sandy loam or clay loam soils with moderate water-holding capacity. In Central Oregon, amend native soil with compost to increase its water-holding capacity. Blackberry plants are tolerant of wet, heavy soils and usually don't need to be planted in raised beds. While plants can tolerate partial shade, yield and fruit quality may be lower. If possible, avoid spots in your yard exposed to high winds, which may increase risk of winter cold injury to primocanes in susceptible cultivars (see "Common problems").

It is important to eliminate perennial weeds before planting because they are hard to control after planting. Don't let annual or perennial weeds go to seed, and ensure that any amendments you apply, such as composted yard debris or manures, are free of weed seeds.

Soil nutrient testing and modification

You can grow blackberries in raised beds or containers with a good potting mix (see “Container plantings”). But if you are going to plant blackberries in your garden soil, it is a good idea to take a soil sample and have it tested prior to planting. Collect soil samples up to a year or more in advance. This will provide adequate time to amend the soil, if necessary. Take soil samples from the top 12 to 18 inches of soil where the roots will grow.

Blackberries require a soil pH of 5.6–6.5. If your soil test indicates that your soil pH is too low (too acidic) or too high (too basic) for blackberry production, you can amend the soil to improve the pH. A typical soil analysis will also include phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg) and sodium (Na). In addition, it is beneficial to test for organic matter and boron (B), especially in the Willamette Valley, where B deficiency is common in blackberries. Nitrogen (N) levels in soil are not useful because N is not added prior to planting. Instead, supply N with fertilizer after planting. The table below shows recommended nutrient ranges in soil for blackberry.

Table 2. Recommended soil nutrient range for blackberries:

- Phosphorus (P) - Bray 1 testing: Deficient at < 20–40
- Phosphorus (P) - Olsen testing: Deficient at < 10
- Potassium (K): Deficient at < 150–350
- Calcium (Ca): Deficient at < 1,000
- Magnesium (Mg): Deficient at < 120
- Boron (B): Deficient at < 0.5–1.0

For more information, see:

- [A Guide to Collecting Soil Samples for Farms and Gardens](https://catalog.extension.oregonstate.edu/ec628) (<https://catalog.extension.oregonstate.edu/ec628>), EC 628
- [Analytical Laboratories Serving Oregon](https://catalog.extension.oregonstate.edu/em8677) (<https://catalog.extension.oregonstate.edu/em8677>), EM 8677
- [Soil Test Interpretation Guide](https://catalog.extension.oregonstate.edu/ec1478) (<https://catalog.extension.oregonstate.edu/ec1478>), EC 1478

Soil that is not ideal for blackberries (soil with the wrong pH, poor rooting depth or low organic matter) can usually be improved by increasing organic matter content, building raised beds, modifying soil pH to the ideal range through amendment with lime or sulfur, and modifying soil nutrient levels, if needed.

Soil pH

In the Willamette Valley and some regions of southern Oregon, a test known as the Shoemaker-McLean-Pratt, or SMP, buffer test is helpful for determining how much lime to apply if the soil pH is below the ideal range for blackberries. You can ask for this to be included on your soil nutrient analysis. In central, eastern and southeastern Oregon, soils tend to be neutral to more alkaline, so this additional buffer test is probably not necessary. Ideally, test the soil a year before you plant to give yourself enough time to modify the soil pH, if required. If the soil pH is too high (above 6.5), add elemental sulfur to acidify the soil; the rate depends on soil type and the current pH of the soil. In sandy soils, apply approximately 1 to 3 pounds per 100 square feet; in clayey soils, apply approximately 5 to 6 pounds per 100 square feet. For more information, see [Acidifying Soil for Blueberries and Ornamental Plants in the Yard and Garden](https://catalog.extension.oregonstate.edu/ec1560), (<https://catalog.extension.oregonstate.edu/ec1560>) EC 1560, and [Acidifying Soil in Landscapes and Gardens East of the Cascades](https://catalog.extension.oregonstate.edu/ec1585), (<https://catalog.extension.oregonstate.edu/ec1585>) EC 1585.

In general, if your soil pH is too low (below 5.6) for blackberry production, incorporate finely ground limestone at a rate of approximately 5–10 pounds per 100 square feet. You can also use high-pH composts to add organic matter and increase soil pH. However, avoid composts with a high salt content (electrical conductivity or EC), such as fresh animal manures. Incorporate amendments into the soil about a year prior to planting, as it takes time for the soil pH to adjust after the addition of lime. See [Applying Lime to Raise Soil pH for Crop Production \(Western Oregon\)](https://catalog.extension.oregonstate.edu/em9057), (<https://catalog.extension.oregonstate.edu/em9057>) EM 9057, and [Eastern Oregon Liming Guide](https://catalog.extension.oregonstate.edu/em9060), (<https://catalog.extension.oregonstate.edu/em9060>) EM 9060.

Organic matter

Blackberry plants tend to grow better with a soil organic matter higher than 3%. You can increase soil organic matter content by amending it with fine, aged woodchips or sawdust, bark, well-composted manures or plant-based composts. Manure or composts are the best options for amending native soil in Central Oregon. It is important that whatever material you apply is free of pest insects and weed seeds. Apply organic matter at a rate of 1–2 inches deep for each area planted. All of these organic materials differ in nutrient content, pH, salt content (EC), and carbon to nitrogen ratio (C:N), which affect the rate of decomposition. For more information, see [Improving Garden Soils with Organic Matter](https://catalog.extension.oregonstate.edu/ec1561) (<https://catalog.extension.oregonstate.edu/ec1561>), EC 1561.

Incorporate the organic material into the soil by digging or tilling. Mixing the amendment in well ensures uniformity of soil properties. If you apply large amounts of fresh organic material with a high C:N, such as sawdust, aid decomposition by applying approximately 3 ounces of N per 100 square feet (see calculation below). In areas with little summer rain, irrigate the intended planting area to ensure amendments such as lime or sulfur and organic materials react well with the soil.

Planting

Blackberry plants are sold as either bare-root plants (a short cane section with roots attached, Figure 9) or as potted plants (Figure 10). Plant blackberries as early as you can work the soil in spring. If they can't be planted immediately, heel in bare root plants by covering the roots with moist soil or sawdust.



Figure 9. Blackberry bare-root nursery plants.

Credit: Bernadine Strik, © Oregon State University



Figure 10. Semierect blackberry nursery plants.

Credit: Neil Bell, © Oregon State University

When planting, dig a shallow hole large enough to accommodate the roots. For bare-root plants, planting methods depend on the type of blackberry:

- **For trailing and semierect cultivars**, make a planting hole large enough to accommodate the root ball width and depth (when holding the cane section in your hand). Fill the planting hole with soil while holding the cane section. Set the plant so that the roots attached to the cane fall from 1 to 2 inches below the soil surface.
- **For erect summer-bearing or everbearing cultivars**, make the planting hole more shallow so that the roots are spread out more. Cover the roots with soil so that the highest point of attachment of roots to cane is 1 to 2 inches below the soil.

For potted plants of any type, dig a hole large enough to accommodate the size of the root ball. Remove the pot, run your gloved hand to rough up the roots on the exterior of the root ball, and set the plant so that the pot's container mix is level with the soil. Fill the planting hole with soil and firm the soil to remove air pockets.

Water thoroughly after planting and cut the canes of newly planted bare-root plants to 6 inches, if they are longer. Water young plants frequently, regardless of whether they came in a pot or as bare-root plants, to ensure the roots do not dry out.

Plant spacing

The plants of trailing and semierect blackberry cultivars should be grown as individuals because they do not produce new primocanes from the roots. Space trailing plants 3 to 5 feet apart in the row and semierect plants about 5 feet apart. Rows should be 10 feet (trailing types) to 12 feet (semierect types) apart.

Since erect blackberry cultivars produce primocanes from buds on their roots as well as the crown, plants are most commonly grown in a hedgerow (Figure 11). A hedgerow refers to maintaining the row to about 12 inches wide by removing any primocanes that emerge outside this width by pruning, hoeing or rototilling. Over time, individual plants become less evident in a hedgerow planting. Space summer-bearing and everbearing plants 2.5 to 3 feet apart in the row, with 10 feet between rows. Keep any primocanes that emerge in the row area between plants. Remove any primocanes that emerge outside this in-row area as they start to grow, as described above. If you allow wider hedgerows, management tasks such as weeding, pruning and harvest become more difficult and disease potential increases due to the dense canopy.

Container plantings

When soil in the garden is not well suited for blackberry production (even after you make all possible amendments) or space in the yard is limited, you can grow blackberry plants in containers on a deck or in constructed raised beds (Figures 12 and 34). Choose a site that has good sun exposure.

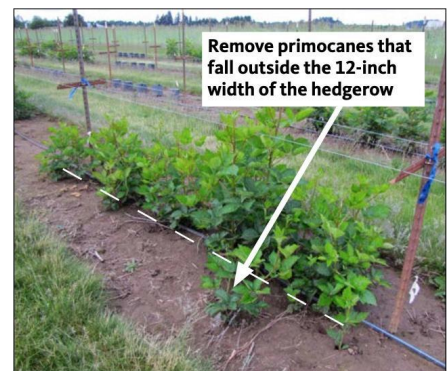


Figure 11. Everbearing erect blackberry planting in spring showing primocane growth in a single crop pruning system. Maintain row width to about 12 inches by pruning out any canes outside the row during the growing season.

Credit: Bernadine Strik, © Oregon State University



Figure 12. Berries grown in raised beds in the Willamette Valley.

Credit: Bernadine Strik, © Oregon State University

The best blackberries for container production are everbearing, primocane-fruited erect cultivars pruned to produce two crops per season (see “Pruning and training”). However, trailing cultivars may also be grown in containers or raised beds using similar methods described for field plantings. Semierect blackberry cultivars are generally too vigorous to grow easily in containers, but may be grown in larger raised beds.

Since blackberry plants are relatively deep rooted, they require a deep pot or raised bed (a minimum of 2 feet deep). A 20- to 30-gallon container works well, but careful pruning is needed to ensure the plant doesn’t get too large for the container. In a raised bed, blackberry plants should be established using the plant spacings recommended below. For more information on building raised beds, see [Raised Bed Gardening](https://catalog.extension.oregonstate.edu/FS270), (<https://catalog.extension.oregonstate.edu/FS270>)FS 270.

The potting mix and the container must drain well. Make sure that water will drain into the soil below a constructed raised bed. A recommended soil mixture is one part perlite or pumice, one part finely ground bark, and two parts garden or potting soil; yard centers may sell a similar mix in bulk. If desired, mix slow-release or sulfur-coated fertilizer into the potting mix at a rate of 8 cups per cubic yard of potting mix. Follow the planting, fertilizing and pruning recommendations described here.

Mulching

A mulch can help control annual weeds, conserve soil moisture, and, depending on the type of mulch, provide a source of nutrients. Be careful to not bury the crown with an organic mulch, as this can promote rot. Deep straw should not be used as a mulch during the growing season because it can lead to increased vole or rodent activity, which can damage the plants. If you are growing in an area where the soil can freeze and thaw during winter, leading to heaving, apply a mulch around the crown to help protect plants from winter cold injury.

Trailing and semierect blackberry plants may be grown with a weed mat mulch (a porous polypropylene groundcover) to aid in weed control, because these types only produce primocanes from the crown (Figure 13). When using plastic or weed mat mulch, irrigate plants under the mulch with a drip or soaker hose.



Figure 13. Trailing blackberry being grown with a weed mat for weed control in the Willamette Valley.

Credit: Bernadine Strik, © Oregon State University

Irrigation

Blackberries need adequate water to thrive, either from irrigation or rainfall. Fruit is made up of mostly water, so sufficient irrigation during fruit production is essential for the best yields and fruit quality. Newly set plants do not have well-developed root systems, so plants can be easily stressed. Irrigate several times a week or as needed so that the root zone and soil are thoroughly wetted but standing water does not accumulate. Established blackberry plants typically require from 1 to 1.5 inches of water per week during the growing season, depending on plant vigor, stage

of growth, soil type and weather. Monitor your irrigation carefully, whether applied by hand, sprinklers or drip systems, to ensure you are adequately watering. With each irrigation, wet the soil to a depth of 0.5 to 1 foot. The rooting area should be wet enough that the soil does not fully dry out between irrigation cycles. Sandy soils require more frequent watering than heavier soils. You can dig down into the soil to check if the soil is wet — but not too wet — between irrigations and is wet down to about 1 foot.

Drip irrigation is ideal for blackberry production because it can reduce weed problems, conserve water and reduce diseases that are sometimes caused by overhead sprinklers wetting the canopy. Irrigate with a single line of drip irrigation per row with half-gallon emitters spaced every 18 inches. You may also use a soaker hose, provided you monitor soil moisture to ensure the proper amount of water is being applied.

Trellising

Blackberries require trellising to support the canes, keep fruit off the ground and protect canes from wind damage. The exception is ornamental, dwarf, everbearing, erect cultivars; these also produce much lower yields (see “Harvest”). The best trellis to use depends on the type of blackberry.

Trailing types

Trailing blackberry cultivars must have a trellis because their canes are not self-supporting. You only need a simple two-wire trellis (Figure 14). Set treated wooden or metal posts at each end of the row (3 to 4 inches in diameter and 6 feet above ground). Set metal T-style posts every 15 to 20 feet in the row. Run one high-tensile wire (generally 12-gauge) at the top of the posts (almost 6 feet high) and a second wire 4.5 feet above the ground. Install wire-tighteners for each wire at one end of the row and an anchor at each end (Figure 15). You may also choose to add additional wires (at 3 feet above ground, for example) if you want to spread the primocanes out more when training (see “Pruning and training”).



Figure 14. This trailing blackberry, shown in spring, is trained to a two-wire trellis.

Credit: Bernadine Strik, © Oregon State University



Figure 15. You can use an anchor for an end post to keep the post from bending or breaking.

Credit: Bernadine Strik, © Oregon State University

Erect types

Erect cultivars, whether summer-bearing or ever-bearing, benefit from a T-trellis (Figures 11 and 16). You can use a simple “T” trellis made using rebar with about a 1.5-foot-wide cross piece with twine or wire strung down each side of the row to support the canes. However, it is often simpler and more effective to construct a trellis with wooden or metal end posts that are well anchored (especially for longer rows). You can purchase pieces that can be attached to metal T-posts at many farm supply stores. These are attached using U-bolts and have slots for wires. Run a wire down each side of the T-bar and add wire tighteners.



Figure 16. Use a T-trellis for summer-bearing and everbearing erect blackberries. These everbearing erect blackberries are fruiting in late September in the Willamette Valley.

Credit: Bernadine Strik, © Oregon State University

Semierect types

This type of blackberry is more vigorous than the others and benefits from a more robust trellis, especially when grown in the Willamette Valley. If you have planted a row of semierect cultivars, use a “double T” trellis (Figure 17). Install wooden posts as described above for trailing types, but place these more robust posts in the row. Attach wooden 2x4s or metal cross pieces (see erect types above) to form the cross arms. Install one 4-foot-wide cross arm at the top of the post and one 2- to 3-foot-wide cross arm 2 feet below it. Use two high-tensile wires along the outside of the row on each cross arm so that you have four wires extending between the posts. If you only have one or two plants, you can trellis and train these more like what is described for trailing types.



Figure 17. A double T-trellis supports Semierect blackberry at the Marion County Master Gardener’s demonstration garden in Salem, Oregon.

Credit: Bernadine Strik, © Oregon State University

Nutrient management

Healthy blackberry plants with sufficient fertilizer nutrients have dark green leaves. Pale green or yellow leaves indicate a problem with nutrients, insects or disease. In particular, plants deficient in nitrogen will have older leaves that are pale green or yellow compared to younger leaves.

Your blackberry plants need fertilizer in the planting and establishment years. There are many types of solid (granular) and liquid inorganic and organic fertilizers available. Most all-purpose garden fertilizers or organic products contain P (phosphate) and K (potash) as well as nitrogen (N). Some, such as feather meal, also contain Ca (Calcium). Fertilizer sources range considerably in their nutrient content. For example, common inorganic fertilizers available for the home garden include 16-16-16 (16% each of N, phosphate and potash), 20-20-20, and various slow-release sulfur-coated urea products. Organic sources include cattle (0.6-0.4-0.5) and horse (0.7-0.25-0.6) manure, yard-debris compost (1-0.2-0.6), cottonseed meal (6-7-2), feather meal (12-0-0), bone meal (2-15-0) and fish emulsion (3-1-1). Avoid using fresh manure products after planting, as they may pose a food safety risk.

The main nutrient needed by blackberry plants after planting in all home garden soils is N. To ensure the maximum availability of N to the plants, match the application method to the type of fertilizer you are using. Inorganic granular fertilizers are often applied in equal portions throughout spring and summer to maximize the efficiency of plant uptake and minimize the risk of salt stress to the blackberry plants. Granular organic fertilizers such as feather, soybean or cottonseed meals require longer periods of time for N to be available. Therefore, it's best to apply granular organic fertilizers about a month before inorganic fertilizers would be applied. In general, liquid fertilizers are available relatively quickly to plants but may also move out of the root zone quickly. So, for liquid fertilizers, divide the total amount of N into smaller, more frequent applications, such as weekly (see below).

Fertilizer recommendations for N are given in weight of actual N per length of row for the year. How much fertilizer to apply depends on the percentage of N in the product. To calculate how much N to apply during the year, divide the amount of N you need by the percentage of N in the fertilizer (Figure 18). For example, if the recommendation is to apply 2 ounces of N and you are using 16-16-16 fertilizer (16% each of N, phosphate and potash), the calculation would be 2 ounces \div 0.16 (decimal equivalent of 16%), or 12.5 ounces of the fertilizer product. In another example, if you wanted to use soybean meal (6-2-1), you would need about 33 ounces, or 2.1 pounds of product (2 ounces \div 0.06).

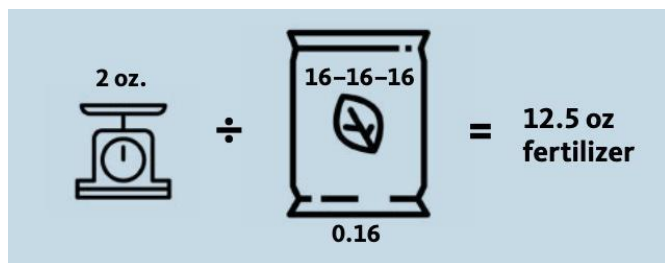


Figure 18. Calculating fertilizer applications. To calculate how much N to apply, divide the amount of N needed by the percentage of N in your fertilizer.

Photo: Scale by Ralph Schmitzer/Noun Project; Fertilizer bag by ic2icon/Noun Project



Figure 19. These plants in their first year have been fertilized using an inorganic granular product.

Credit: Bernadine Strik, © Oregon State University

New plantings

When fertilizing new plantings, divide the total required N into three equal portions, the first starting two weeks after planting, the next one month later, and the last one a month after that. When using organic fertilizer sources, apply the product relatively earlier as described above. Make inorganic fertilizer applications more frequently on sandy soil, dividing the total rate into more split applications, or use slow-release products, such as many organic sources of fertilizer (see above).

In the planting year, fertilize trailing and semierect blackberries with 1 to 1.4 ounces N per plant, depending on soil type and plant vigor. Fertilize erect blackberries with 2 ounces N per 10 feet of row. Divide these total rates as described above.

Adjust fertilizer amount or rate and timing, depending on how well plants are growing and your growing region. Broadcast granular fertilizer over the soil surface, spreading it evenly in an area a little wider than the row width (Figure 19). Irrigate after you fertilize.

In raised beds, use a similar rate and timing of applications. Common slow-release garden fertilizers and soluble products (those added to water) list recommended rates on their product labels that should work well for blackberry. Fish fertilizer is salty and will injure plants unless the product is diluted 1:10 (1 part fish to 10 parts water) prior to using.

Established plantings

For each year after the planting year, fertilize summer-bearing trailing, erect and semierect blackberries with 1.5 ounces of N per plant or 3 ounces of N per 10 feet of row per year. Fertilize everbearing erect blackberries with 3 ounces N per 10 feet of row.

Divide the fertilizer into two applications, applying the first in late March to early April. (This is based on the approximate timing of when primocanes start to grow in the Willamette Valley; adjust the timing for other growing regions.) Make the other application about six weeks to two months later (in late May to early June, for example). Make fertilizer applications more frequently on sandy soil, dividing the total rate into more split applications, and apply organic sources of fertilizer earlier, as described above. Semierect and everbearing blackberries may require an additional 0.5 ounce of N per plant or 1 ounce of N per 10 feet of row in six weeks to two months (mid- to late July in the Willamette Valley, for example) to ensure there is adequate fertilizer N available for the later fruiting period.

Broadcast granular fertilizer products over the soil surface in the row area (about 2 to 3 feet wide, centered on the row). Irrigate immediately after fertilization.

A well-managed plant should have healthy green leaves with good primocane growth (a good number per plant and a normal length for the cultivar and the growing region). Pale green or yellow primocane leaves, particularly toward the base of the cane, could indicate N deficiency.

Monitor soil pH every few years. Add lime in fall to increase soil pH in the Willamette Valley and southwestern Oregon. Add elemental sulfur in central or eastern Oregon to decrease soil pH and maintain it within the desired range for blackberries.

Harvest

Pick blackberry fruit by gently holding the berry and moving it up or down, rather than pulling on it. Ripe blackberry fruit will separate easily from the stem when using a gentle breaking motion (Figure 20). The fruit of most cultivars changes from a full shiny black to a dull black when fully ripe. Choose these dull-black fruit when picking (Figure 21). Shiny black fruit are high in acid with comparatively less flavor and sweetness than dull black fruit.

In general, pick blackberries every four to seven days, depending on the cultivar and the weather. Wash your hands before picking into clean containers. Pick regularly. This not only helps ensure you collect berries at their optimal ripeness but also reduces insect pests and diseases that are more prevalent on overripe fruit (see “Common problems”). Check plants more frequently in warmer or rainy weather. If an extended period of rain is forecast, pick any berries that are not quite fully black; rain may dilute flavor and lead to fruit rot. Try to avoid picking when fruit is wet from dew, fog or rain, and don’t wash it before storage. Wet fruit will decay faster. Refrigerate fruit immediately to keep it fresh longer.

Everbearing erect cultivars are the only type that produces in the planting year, producing a small crop, depending on initial plant size. All types will produce a “baby” crop the next year, and the third year they will be in mature or full production.

Expected mature blackberry yields are 10 to 13 pounds per plant for trailing cultivars (Figure 22) and 25 to 35 pounds per plant for semierect cultivars. Erect types will yield 18 to 28 pounds per 10 feet of row. Yield depends on cultivar, planting health and production region, which affects primocane growth or vigor and risk of winter cold injury.

You’ll know it’s time to prepare for a new planting when:

- A planting becomes less vigorous (when it produces fewer or weaker new primocanes).
- Fruit size is less than typical for the cultivar.
- Your plants have disease or pest problems that may not be controlled.

Remove plants in late summer or fall. Purchase new, certified disease-free plants. Since there are very few soilborne pest problems in blackberry, it is usually not necessary to rotate plantings. However, be aware of pest problems and rotate the planting if needed (see “Common problems”).



Figure 20. Pick ripe blackberry fruit with a gentle breaking motion.

Credit: Bernadine Strik, © Oregon State University



Figure 21. Ripe blackberries are dull black in color.

Credit: Bernadine Strik, © Oregon State University



Figure 22. ‘Marion’ trailing blackberry at the beginning of the fruiting season.

Credit: Bernadine Strik, © Oregon State University

Pruning and training

For detailed explanations and video demonstrations of pruning and training methods from planting through maturity in each type of blackberry, see the online course [Pruning and Training Blackberries](https://workspace.oregonstate.edu/course/pruning-blackberries). (<https://workspace.oregonstate.edu/course/pruning-blackberries>)

Trailing blackberries

In the planting year of trailing blackberries, train the primocanes to the trellis as they grow in most regions of the Willamette Valley (Figure 23). Bundle them together and use twine to attach them straight up to the top wire; wrap them around the two wires, spreading out the canes, if they grow taller. These primocanes will overwinter and produce fruit as floricanes next year. In colder or more exposed yards, you can leave the primocanes in a bundle on the soil surface through the winter — the canes will be less exposed to the elements on the soil surface. Then train them onto the trellis wires in late winter, before bud break.

In all subsequent years, plants will have fruiting canes (floricanes) trained on the trellis that flower and fruit in the spring and summer, and new primocanes will begin growing from the crown of the plant (Figure 5). In most trailing cultivars, the primocanes will “flop” over once they are about 3 feet long and will continue to grow along the ground through the season. Train these primocanes in a bundle underneath the canopy of the floricanes so they are out of the way and are less likely to be damaged as they grow (Figure 13). Use wire hoops, stakes or tie tape to keep the primocanes in a bundle. Training will be easier if all of the primocanes from each plant are trained in the same direction so they are less tangled with those from the adjacent plants; this is less important for thornless cultivars. In some cultivars, primocanes will grow 15 to 20 feet long in the Willamette Valley.



Figure 23. In the planting year, train trailing blackberry as the primocanes grow.

Credit: Bernadine Strik, © Oregon State University

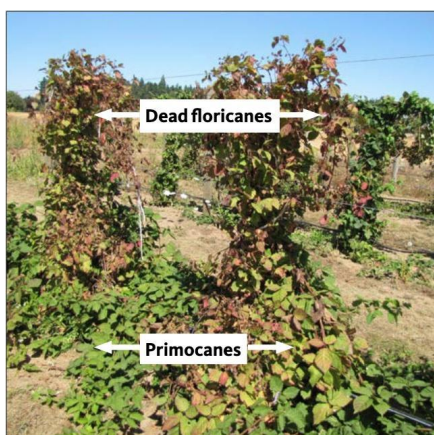


Figure 24. After harvest is complete, remove the dead floricanes, which are visible on this trailing blackberry.

Credit: Bernadine Strik, © Oregon State University



Figure 25. Train primocanes of trailing blackberry in late August, dividing canes into two bundles and wrapping them on the trellis wires.

Credit: Bernadine Strik, © Oregon State University

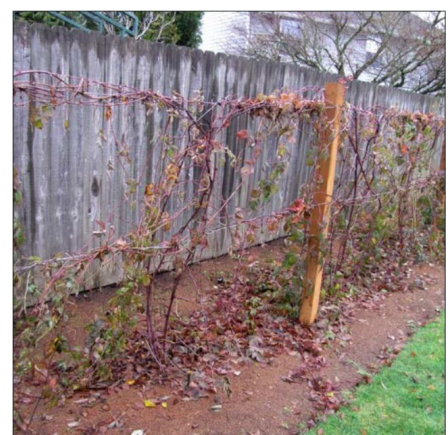


Figure 26. 'Boysen' trailing blackberry in the Willamette Valley, shown after training in late autumn.

Photo: Neil Bell, © Oregon State University

After fruit harvest, remove the dying floricanes (Figure 24) by pruning them at their base at the crown; this is called “caning out.” Cane out immediately after harvest (generally by the end of August in the Willamette Valley). Cut the dead floricanes at their base, taking care to not cut any of the green primocanes. Also cut the dead floricanes in various places on the training wires to ease removal and pull them from the trellis. Then train the primocanes onto the trellis. Train by dividing the primocanes from each plant into two bundles (Figure 25). Loop half the canes in one direction from the upper to lower trellis wires, bringing them back towards the plant with one or two twists; loop the other half in the opposite direction. It is nearly impossible to train the long primocanes without damaging or kinking some canes during the process; however, taking care during training will improve yield. Secure the canes to the trellis using bailer’s twine or ties, if needed (Figure 25). You may also spread out canes more on multiple wires and tie canes individually; this promotes good bud break and yield (Figure 26). Remove canes that are too short. There will be additional growth on these primocanes from training in August to frost in fall. Tuck or tie these to the trellis in early to late November, when plants are dormant.

In colder, higher elevation sites or in areas with high wind, it may help to leave the canes on the ground (Figure 27) and train them in late February (Figure 28), well before bud break. This way, canes are not exposed to colder temperatures or high winds during winter, which can injure them (see “Common problems”).



Figure 27. Trailing blackberry primocanes left on the soil to reduce risk of winter cold injury. Canes will be trained in late February.

Credit: Bernadine Strik, © Oregon State University



Figure 28. Trailing blackberry after training in late winter.

Credit: Bernadine Strik, © Oregon State University

Summer-bearing erect and semierect blackberries

For floricane-fruiting (summer-bearing) erect and semierect blackberries, canes may trail along the ground in the first year after planting. Don’t worry; this is normal, and the canes will become stiffer as the plants age. Once plants are in their second growing season, prune primocanes and floricanes as described below. The primocanes of erect and semierect blackberries require pruning during the growing season; this is called tipping. Tipping erect and semierect blackberry primocanes during the growing season increases yield four- to fivefold and makes the plants easier to manage. Tip the primocanes in late spring or early summer by removing the top 3–6 inches (Figure 29A). Top them to a height of about 3 feet (erect) to 4.5 feet (semierect). You will need to go over the planting multiple times throughout early summer to catch all of the primocanes. The tipped primocanes will produce branches (Figure 29B).



Figure 29A. Tipping of primocanes in erect and semierect blackberries leads.

Credit: Bernadine Strik, © Oregon State University



Figure 29B. Tipping of primocanes leads to branching on primocanes.

Credit: Bernadine Strik, © Oregon State University



Figure 30. Semierect blackberry before primocane pruning in winter.

Credit: Bernadine Strik, © Oregon State University

Erect blackberry cultivars will send up primocanes (suckers) from buds on their roots. Remove any suckers that are outside the 12-inch-wide hedgerow by pruning, hoeing or rototilling (Figure 11). Remove suckers frequently during the season as needed. Tuck the remaining primocanes between the trellis wires.

Floricanes may be removed after fruit harvest in late summer (in erect cultivars) or in winter (both types). Pruning in winter involves caning out the dead floricanes (if you didn't do so in summer), and pruning and training the primocanes. Remove dead floricanes by pruning them at their base. On the remaining primocanes (Figure 30), remove any damaged or diseased wood, and shorten the lateral branches on the primocanes to a length of 1.5 to 2.5 feet (erect cultivars, Figure 31) or 2.5 to 4 feet (semierect). Longer primocane branches may be trained if the trellis can support it (Figure 32).

If needed, tie canes or branches to trellis wires to minimize wind damage and to support these canes when they fruit next season. In the Willamette Valley and southwestern Oregon, prune any time from December through February. In colder production regions such as central, eastern, and southeastern Oregon, prune as late as possible in winter (such as early March) to reduce risk of winter cold injury and remove any cold-damaged tissue (see "Common problems").



Figure 31. Erect, summer-bearing blackberry after primocane pruning in winter.

Credit: Bernadine Strik, © Oregon State University



Figure 32. Erect, summer-bearing blackberry with little pruning of primocane branches. The plants are shown in early spring after bud break on floricanes.

Credit: Bernadine Strik, © Oregon State University

Everbearing erect blackberries

If you have the space, it is best to grow everbearing, erect blackberry cultivars only for the primocane crop (“single crop”) and to grow other types for the floricanes or summer crop. Producing a floricanes crop (“double crop”) on everbearing cultivars reduces and delays the primocane crop, making it too late to harvest much of the fruit before fall rains or frost. However, if space is tight or you are growing them in a container, double cropping will produce fruit over a longer period of time. Each strategy calls for different pruning methods.

Single crop

You can grow everbearing erect blackberries for only a primocane or late-season crop. This is common when you have the space to grow both summer-bearing and everbearing blackberries. You will get a higher yield on the floricanes of summer-bearing cultivars, which is an advantage if you like to make jam or freeze fruit.

If you are growing everbearing blackberries for a single crop, cut all the canes to just above ground level in late winter (March). Primocanes will emerge in the spring (Figure 33). Tip the primocanes in late spring or early summer by removing the top 6–12 inches. Top them to a height of about 3 feet (Figures 34A and 34B). You will need to go over the planting multiple times throughout early summer to catch all of the primocanes at the right stage. The tipped primocanes will produce branches that will flower and fruit starting in late summer (Figure 34B). Fruit production will end when killing frosts occur. Prune again in late winter by cutting all canes back to just above the ground.

During the growing season, keep the hedgerow about 12 inches wide by removing suckers outside this width and tucking the remaining primocanes between the trellis wires (Figures 11 and 16).



Figure 33. Erect, everbearing blackberry pruned for a single crop. Old canes were cut to stubs in late winter. The photo shows early primocane growth in spring.

Credit: Bernadine Strik, © Oregon State University



Figure 34A. Erect, everbearing blackberry growing in a container in the first growing season.

Credit: Bernadine Strik, © Oregon State University



Figure 34B. The primocane is tipped to about 3 feet high, so that branches are produced.

Credit: Bernadine Strik, © Oregon State University

Double crop

If you are growing your everbearing blackberries for a double crop (floricane and primocane crop), you will need to prune out the dying or dead floricanes after harvest. Cane out immediately after harvest only if there are cane diseases evident on the dying floricanes (see “Common problems”). Otherwise, leave caning out until winter so you minimize the risk of damaging any primocanes that may be flowering.

During the growing season, tip the primocanes as described above for a single crop and maintain the hedgerow to a width of about 12 inches. Tuck the remaining primocanes between the trellis wires as they grow.

Pruning in winter involves caning out the dead floricanes, if you didn’t do so in summer, and pruning the primocanes. In the Willamette Valley, prune anytime from December through February. However, in colder production regions such as central, eastern, and southeastern Oregon, prune as late as possible in winter (early March) to reduce the risk of winter cold injury and to remove any cold-damaged tissue (see “Common problems”).

Cane out any dead floricanes by cutting them at their base; these canes will be shorter than the primocanes and will be dead from their tip to their base, with dead fruiting laterals evident. On the remaining primocanes, remove the dead tips on the branches and any unbranched primocanes; these portions of the canes fruited in late summer to fall. Cut off the dead tip by pruning a couple of nodes below the dead portion (Figures 35A–C). Do this for all canes in the row. The crop in early summer will be produced on these floricanes. The late-summer-to-fall crop will be produced on the top portion, or branches, of new primocanes that emerge.



Figure 35A. Erect, everbearing blackberry growing in a container for a double crop before pruning the primocane.

Credit: Bernadine Strik, © Oregon State University



Figure 35B. Removing dead branch tips from erect, everbearing blackberry growing in a container for a double crop.

Credit: Bernadine Strik, © Oregon State University



Figure 35C. Erect, everbearing blackberry growing in a container for a double crop after pruning.

Credit: Bernadine Strik, © Oregon State University

Pruning in containers

If you are growing summer-bearing or everbearing blackberries in a constructed raised bed, prune your planting as described above.

When growing an everbearing erect blackberry plant in a container (Figure 36), prune in winter as described above. Also thin the primocanes during the growing season, in addition to tipping them as described above. Wait until the earliest primocanes are about 2 feet tall. Thin the primocanes to keep no more than four new primocanes per 20- to 30-gallon container; remove primocanes that are thinner or shorter than average and those at the outside edge of the container.

Common problems

Weather-related problems

Blackberry plants adapted to your region are cold hardy but may still be susceptible to frost damage to growing plant parts in late fall or late winter to early spring. In some winters, cold damage may occur when plants are not growing or are dormant.

Winter cold injury

The temperature at which blackberry canes or buds are damaged depends on the time of the year, the weather preceding the freeze, the type and the cultivar. When cold damage is severe, no fruit will be produced. Minimize risk by choosing types and cultivars that are adapted to your hardiness zone (see “Blackberry cultivars”). Trailing cultivars are the least cold hardy and cannot be grown in central, eastern or southeastern Oregon without cultural practices to protect primocanes over winter.

In the Willamette Valley and warmer regions within southeastern Oregon, it is usually not necessary to protect trailing blackberry plants from cold temperatures. However, you may need to take action when unusually cold temperatures are forecasted and plants are not fully dormant. This could occur in late fall (for example, a chill of 20 °F in November), in midwinter (15 °F in December/early January), or after a particularly warm period in late winter (20 °F). In these instances, you can protect primocanes on the trellis with a row cover (Figure 37), also called a floating row cover, frost cloth or spun-bound cover. Place the row cover over the trained canes in midafternoon, leaving it on until after the cold spell has passed. If you live in a colder region in the Willamette Valley or at high elevation, training primocanes in late winter should provide sufficient cold protection (see “Pruning and training”).

You can grow trailing cultivars outside the Willamette Valley and colder areas of southern Oregon with some considerations for winter protection. Train primocanes only in late winter (see “Pruning and training”). In areas with little winter rainfall, you can mulch canes with straw. Remove the straw after risk of severe cold has passed and buds



Figure 36. Erect, everbearing blackberry growing in a container in the first growing season.

Credit: Bernadine Strik, © Oregon State University



Figure 37. A rowcover protects trailing blackberry from a forecasted cold spell in late winter.

Credit: Bernadine Strik, © Oregon State University

are starting to break in late winter or spring. In areas with winter rainfall, use row covers to cover primocanes as needed when it gets cold (see above). In some regions, you may need to mulch the crown with straw.

Erect and semierect cultivars do not need any form of cold protection in most regions of Oregon; some cane damage may occur in particularly cold winters.

Cold damage to canes in all blackberry types is most common at the tip of the cane — the portion that grew and matured last — prior to winter (Figure 38). Damage to blackberry buds may occur anywhere on the cane. On cold-damaged canes, fruiting laterals will either not grow (Figure 38) or they will start to grow and will then collapse because the cane cannot support their further growth. Cold damage on canes may be reflected in damage to the cane (Figure 39) or to the buds. If buds on primocanes are killed by winter cold, bud break will be sporadic in the spring, leading to a reduced number of fruiting laterals on the floricanes in spring and lower yield.

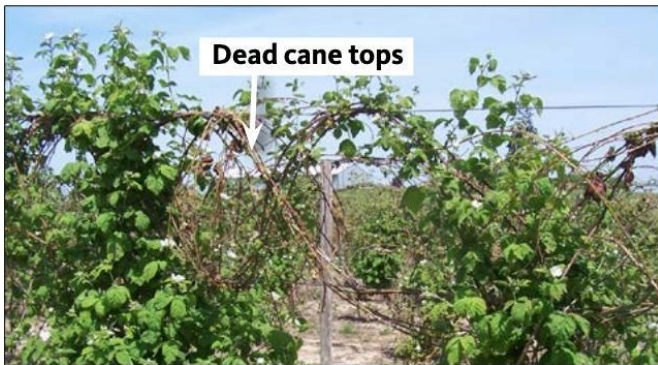


Figure 38. Winter cold injury to top cane sections of trailing blackberry.

Credit: Bernadine Strik, © Oregon State University



Figure 39A. Cane sliced to show healthy cane and bud.

Credit: Bernadine Strik, © Oregon State University



Figure 39B. Cane sliced to show cold-damaged cane.

Credit: Bernadine Strik, © Oregon State University

Frost injury

Frost will injure open flowers at 30 °F. While frost injury to flowers on the floricanes is not common in the Willamette Valley, it may occur in other production regions. In central and eastern Oregon, frost can occur any time during the growing season, which may injure flowers and reduce yield. You can use frost cloth or row cover in spring to try to reduce frost injury. Frost in fall will curtail fruiting on the primocane in everbearing cultivars in all production regions.

Poor pollination

On rare occasions, rain or cool weather during bloom can reduce fruit set by limiting pollination directly or indirectly through reduced bee activity. But this is not common in blackberry. Blackberry flowers produce a lot of nectar and are attractive to all pollinators (Figure 40).



Figure 40A. Pollinators in blackberry include a honey bee on a flower. ‘Marion’ blackberry in the Willamette Valley.

Credit: Bernadine Strik, © Oregon State University



Figure 40. Pollinators in blackberry include a painted lady butterfly. ‘Marion’ blackberry in the Willamette Valley.

Credit: Bernadine Strik, © Oregon State University

Sun damage to fruit

Intense heat, particularly with low humidity, may lead to ultraviolet damage to blackberry fruit. Sections of the berry exposed to the sun bleach white (Figure 41) and become dry or dark red and soft (called “jamming”). Cultivars differ in sensitivity. In hotter regions, use shade cloth to protect developing fruit.



Figure 41. Symptoms of UV and sunburn damage in blackberry fruit.

Credit: Bernadine Strik, © Oregon State University



Figure 42. Erect blackberry showing Roundup injury to new primocanes in the spring (strap-like, twisted, pinkish growth).

Credit: Bernadine Strik, © Oregon State University

Weeds and weed management

Weeds compete with blackberry plants for water and nutrients, so it is important to keep weeds out of the row. Within the row, new primocanes can be easily broken. In trailing cultivars, primocanes need to be bundled and trained on the soil, so pull any weeds by hand to avoid tangling. In erect types, hoe or cultivate to remove weeds and unneeded primocanes outside of the in-row area. Mulch in the row, such as straw, sawdust, bark or weed mat (Figure 13), may help control weeds (see “Mulching”).

Chemical weed control options suitable for blackberry plantings are limited in the home garden. Be extremely careful when using glyphosate (Roundup) to kill weeds anywhere near your planting. Blackberry plants are sensitive to this herbicide (Figure 42). For detailed information on specific weeds and weed control, see the [PNW Weed Management Handbook](https://catalog.extension.oregonstate.edu/weed). (<https://catalog.extension.oregonstate.edu/weed>)

Vertebrate pests

Birds, deer, squirrels and mice can be nuisance pests for blackberries. If you are not able to fence your entire property or garden area, netting can provide protection and is effective against birds as well.

Insect pests

Spotted wing drosophila

The most important insect pest in blackberry production is the spotted wing drosophila, or SWD. This pest is much less prevalent or not found in central, eastern or southeastern Oregon. This vinegar fly looks a lot like the common fruit fly. The female lays eggs in developing fruit, generally after it first develops some color. The larvae feed inside the berry while the fruit is ripening without much evidence of the damage from the outside of the fruit. Populations of SWD build up during the season, so late-fruiting cultivars (such as erect and semierect cultivars) are more prone to damage. You may use fine exclusion netting to prevent adults from reaching the berries. For more information on how to control and manage this insect, see the SWD publications listed in “Resources.”

Red berry mite

Red berry mites are most common on late-fruiting, summer-bearing blackberries, such as semierect cultivars. Adult mites overwinter in the bud scales. After bud break, they migrate to berries as the fruiting laterals grow. The mite is about 4 mm long and feeds at the base of berry drupelets as they develop, which prevents the red drupelets from turning black during ripening. The affected drupelets remain hard and red (Figure 43), not soft and red, which is a symptom of UV damage.



Figure 43. Symptoms of red berry mite — sections on berry with red, hard drupelets.

Credit: Bernadine Strik, © Oregon State University

Raspberry crown borer

The raspberry crown borer can be found in the Willamette Valley. The adult is a clear-winged moth that resembles a wasp. Larvae bore into the canes and crown of blackberry and raspberry plants. The life cycle requires two years to complete. Symptoms of severe infestations include dead or dying plants (Figure 44). There is no control other than to rogue out or remove infested plants and destroy or burn them, where permitted.

Rose stem girdler

The rose stem girdler is a recent pest to blackberry in the Willamette Valley. The adult is a small, metallic-colored beetle. Larvae burrow along the cane length, creating visible bumps. Canes can die above the feeding point (Figure 45A). When you identify the larva (Figure 45B), cut below the infected cane section and burn (where permitted) or destroy these canes to kill the larvae. It's important to do this before the adults emerge — generally in April or May in the Willamette Valley.



Figure 44. The plants at the back of this row of raspberry show injury from raspberry crown borer.

Credit: Neil Bell, © Oregon State University



Figures 45A. Red raspberry primocanes showing tip death caused by larval feeding of the rose stem girdler.

Photo: Patrick Jones, © Oregon State University



Figure 45B. Cutting a primocane lengthwise just below a dead tip reveals a larva of the rose stem girdler.

Credit: Bernadine Strik, © Oregon State University

Brown marmorated stink bug

Brown marmorated stink bug (BMSB) is a pest in blackberry and a wide range of other fruit crops. While it is not considered a major pest in this crop, if you have high populations of BMSB in your yard, you may see some fruit damage, particularly in late-season cultivars. Nymphs (Figure 46A) and adults feed on developing drupelets, causing them to collapse or change color (Figure 46B).

Other insects that can be problematic in blackberries include raspberry beetle (raspberry fruit worm), stink bugs, root weevils, leaf-roller larvae, leaf hoppers, spider mites and aphids, depending on your production region. Check with your local OSU Extension office if insects become a problem. Also see the [PNW Insect Management Handbook](http://pnwhandbooks.org/insect). (<http://pnwhandbooks.org/insect>)



Figure 46A. Brown marmorated stink bug nymphs feed on fruit of an everbearing erect blackberry.

Credit: Bernadine Strik, © Oregon State University



Figure 46B. Fruit damaged by brown marmorated stink bug.

Credit: Bernadine Strik, © Oregon State University

Diseases

Septoria leaf spot and purple blotch

Most trailing blackberry cultivars are sensitive to leaf and cane disease. Purple blotch lesions can be seen on primocanes in winter and spring. Lesions can be as long as 2 inches and are purple with a red margin. This disease may also occur on semierect cultivars (Figure 47A). Septoria leaf spot is visible on fruiting lateral leaves in spring (Figure 47B). At first, spots are small and purplish in color. They later turn brown. In older leaf spots, centers are whitish with brown to red borders. Spots may also occur on canes. While these cane and leaf diseases may reduce bud break and yield if severe, generally no pest control measures are needed with good pruning, training and weed management.



Figure 47A. Infected canes show lesions of purple blotch.

Credit: Bernadine Strik, © Oregon State University



Figure 47B. Spotting from infections with Septoria cane and leaf spot

Credit: Bernadine Strik, © Oregon State University



Figure 48. Botrytis gray mold on trailing blackberry fruit.

Credit: Bernadine Strik, © Oregon State University

Botrytis fruit rot and cane disease

Blackberry fruit are susceptible to gray mold (Botrytis fruit rot) if there is overhead irrigation or rain during the fruiting period (Figure 48). Remove and destroy diseased fruit from the planting as soon as it is visible.

Cane and leaf rust

Cane and leaf rust occurs in western Oregon in spring when a significant rainy period follows a warmer period. It is not systemic in the plant. Symptoms include yellow spots on the top of the leaves and then yellow fungal spots on the underside of leaves on the floricanes (Figure 49). If left to advance, rust can progress to the berries, or the berries will die without leaves to support their development. If the disease occurs, remove infected floricanes and destroy or burn them where permitted. In fall, rake and destroy or burn the fallen leaves. Do not tie primocanes until after leaves fall. This breaks the disease cycle so that the rust spores do not spread to the primocanes that are growing.



Figure 49. Cane and leaf rust in blackberry.

Credit: Bernadine Strik, © Oregon State University

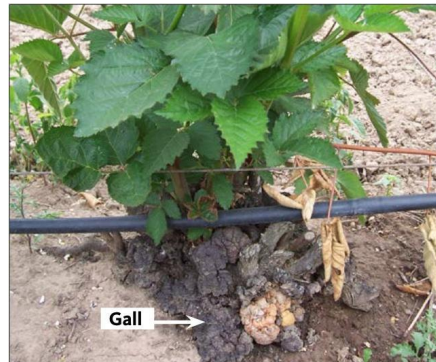


Figure 50. Symptoms of crown gall in erect blackberry. Note the gall growth at the crown.

Credit: Bernadine Strik, © Oregon State University



Figure 51. Symptoms of phytophthora root rot in trailing blackberry.

Credit: Bernadine Strik, © Oregon State University

Crown gall

Crown gall bacteria may come into your planting with infected plants or persist in soil as a result of previously infected plants. Symptoms appear as small, rough ridges or elongated overgrowths of gall tissue (Figure 50). Galls frequently cause canes to split open. Once present in the soil, the bacteria can survive for years. This disease is spread by splashing rain, overhead irrigation water, pruning tools, wind, insects, hoeing and rototilling. Disinfect tools after pruning or after working in an infected patch. Prune only during dry weather. If a plant is infected, remove it. Buy only certified disease-free plants.

Root rot

Phytophthora root rot, a soilborne disease, is aggravated in wet, heavy soil. Symptoms include primocanes dying in midsummer and fruiting laterals collapsing just prior to or during fruit harvest (Figure 51). Infected plants will die over a period of time. Although most blackberry cultivars are tolerant to heavy soil and will not get root rot, the trailing cultivar 'Columbia Star' may get this disease under poor growing conditions. If you decide to replant in another area of your yard using newly purchased plants, check which crop plants may be susceptible to phytophthora root rot before planting in your old, infested spot.

Other diseases may become problematic in blackberries. If disease becomes an issue, check with your local OSU Extension office for control recommendations. Control methods are also outlined in the [PNW Plant Disease Management Handbook](https://catalog.extension.oregonstate.edu/plant). (<https://catalog.extension.oregonstate.edu/plant>)

Resources

- [A Detailed Guide for Testing Fruit for the Presence of Spotted Wing Drosophila \(SWD\)](https://catalog.extension.oregonstate.edu/em9096%20) (<https://catalog.extension.oregonstate.edu/em9096%20>), EM 9096
- [Acidifying Soil for Blueberries and Ornamental Plants in the Yard and Garden](https://catalog.extension.oregonstate.edu/ec1560) (<https://catalog.extension.oregonstate.edu/ec1560>), EC 1560
- [Acidifying Soil in Landscapes and Gardens East of the Cascades](https://catalog.extension.oregonstate.edu/ec1585) (<https://catalog.extension.oregonstate.edu/ec1585>), EC 1585
- [Applying Lime to Raise Soil pH for Crop Production—Western Oregon](https://catalog.extension.oregonstate.edu/em9057) (<https://catalog.extension.oregonstate.edu/em9057>), EM 9057
- [Eastern Oregon Liming Guide](https://catalog.extension.oregonstate.edu/em9060) (<https://catalog.extension.oregonstate.edu/em9060>), EM 9060
- [Growing Berries on the Oregon Coast: An Overview](https://catalog.extension.oregonstate.edu/em9177%20) (<https://catalog.extension.oregonstate.edu/em9177%20>), EM 9177
- [Growing Berries on the Oregon Coast: Raspberries and Blackberries](https://catalog.extension.oregonstate.edu/em9180%20) (<https://catalog.extension.oregonstate.edu/em9180%20>), EM 9180
- [Improving Garden Soils with Organic Matter](https://catalog.extension.oregonstate.edu/ec1561%20) (<https://catalog.extension.oregonstate.edu/ec1561%20>), EC 1561
- [Laboratories Serving Oregon: Soil, Water, Plant Tissue, and Feed Analysis](https://catalog.extension.oregonstate.edu/em8677) (<https://catalog.extension.oregonstate.edu/em8677>), EM 8677
- [Oregon State University Spotted Wing Drosophila information page](http://spottedwing.org/) (<http://spottedwing.org/>)
- [Pacific Northwest Insect Management Handbook, Pacific Northwest Plant Disease Management Handbook, and Pacific Northwest Weed Management Handbook](http://pnwhandbooks.org/) (<http://pnwhandbooks.org/>), revised and reissued annually.
- [Pruning and Training Blackberries online course](https://workspace.oregonstate.edu/course/pruning-blackberries) (<https://workspace.oregonstate.edu/course/pruning-blackberries>)
- [Blackberry Cultivars for Oregon](https://catalog.extension.oregonstate.edu/ec1617%20) (<https://catalog.extension.oregonstate.edu/ec1617%20>), EC 1617
- [A Guide to Collecting Soil Samples for Farms and Gardens](https://catalog.extension.oregonstate.edu/ec628) (<https://catalog.extension.oregonstate.edu/ec628>), EC 628
- [Soil Test Interpretation Guide](https://catalog.extension.oregonstate.edu/ec1478) (<https://catalog.extension.oregonstate.edu/ec1478>), EM 8713
- [Raised Bed Gardening](https://catalog.extension.oregonstate.edu/fs270) (<https://catalog.extension.oregonstate.edu/fs270>), FS 210
- [Selecting Berry Crop Varieties for Central Oregon](https://catalog.extension.oregonstate.edu/ec1621) (<https://catalog.extension.oregonstate.edu/ec1621>), EC 1621

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