Growing small-fruit crops in short-season gardens

by Stephen L. Love, Esmaeil Fallahi, and Kathy Noble

CONTENTS

YOU ARE A SHORT-SEASON, HIGH-ALTITUDE GARDENER IF:

You live in Idaho at an elevation above 4,500 feet, **OR**

Your USDA hardiness zone is 4 or lower, **OR**

You have a frost-free growing season of 110 days or less

INTRODUCTION

Small fruit crops are a diverse group and include vine, shrub, and herbaceous (nonwoody) plants. Because these crops have little in common, it becomes difficult or impossible to make universal recommendations for growing them. However, some principles hold true for them all. First, variety selection is critical to consistent performance. Varieties must be both hardy and early. Also, proper planting and maintenance techniques will help the plants remain healthy and productive.

RASPBERRIES

ADAPTED VARIETIES

Raspberry varieties are classified as summer-bearing or fall-bearing (table 1). The summer-bearing types develop fruit on one-year-old canes and are usually ready to harvest in July. These are the hardiest varieties and are generally the best for short-season, high-altitude locations in Idaho. However, the summer-bearing varieties vary considerably in winter hardiness, and proper variety selection is critical to cane survival and consistent production.

Fall-bearing types grow fruit on both old and new wood. The result is a potential for two separate harvests, one in late July, the other in early to late September. Unfortunately, fall-bearing varieties are only moderately hardy. Fall-bearing raspberries often bear the biggest portion of their crop in late fall when growing conditions in short-season gardens are marginal. So, fall-bearing types are recommended only for the warmest climates and protected urban areas within the short-season, high-altitude regions of Idaho.

University of Idaho Extension

Raspberry varieties must be both hardy and early.

Day-neutral and June-bearing strawberry varieties are high yielding.

Three other types of raspberries are available in the nursery trade—yellow, purple, and black. Yellow raspberries are almost as hardy as the red varieties and can be grown successfully in many of Idaho's short-season, high-altitude locations. Adapted varieties include Amber, Fall Gold, and Golden West.

Purple raspberries result from crosses between the red and black types. They are typically hardy to -20°F and, if protected, are suitable for the warmest of Idaho's short-season climates. They have good flavor and are excellent for preserves. Good varieties include Brandywine, Success, and Royalty. Black raspberries, the third type, are usually injured by temperatures of -10°F or lower and are not adapted to short-season, high-altitude gardens.

MANAGEMENT

In short-season climates, proper planting and good early care, especially weed control, are critical to rapid production. If plants get off to a good start, they will develop healthy, strong canes during the first year, bear a partial crop the second, and reach full production the third.

Plant as early in the spring as feasible. Bare-root plants are available in early spring and are usually less expensive than potted plants. Potted plants can be placed in the garden any time during the growing season, but late planting may delay bearing for an additional year. If established properly and given sufficient care, raspberries will bear for up to 10 years.

Competition with weeds, especially perennial weeds such as grasses and bindweed, will slow early growth and prevent plants from reaching their productive potential. Most weeds will be easier to manage if steps are taken to provide effective control before planting.

Keeping raspberry plants healthy is the best way to maximize hardiness. To be at their best, raspberries need a deep, rich, well-drained soil, full sun, good weed control, proper fertilization, proper irrigation, and good pest control.

Mulching around the canes will improve winter protection. If conditions in any given winter are harsh enough to damage canes, mulch will keep the crowns healthy and allow vigorous regrowth of new canes.

Iron chlorosis—Raspberries are prone to iron chlorosis in locations with highly alkaline soil. The resulting yellowing of the leaves affects overall health, berry yield, and hardiness of the plants. Varieties differ in their ability to avoid chlorosis and remain healthy in high pH soils. Unfortunately, there is little good information on which to base recommendations for tolerance.

If you have alkaline soils, area nurserymen may have local experience that will help you determine the best varieties to plant. If iron chlorosis does become a problem on established raspberries, treat the plants every 2 to 3 weeks, beginning in early spring, with foliar applications of a fertilizer that contains iron and zinc.

STRAWBERRIES

Strawberries have been bred to grow in many climates, from the temperate areas of coastal California to the harsh regions of central Canada. Only a few of these varieties do well in Idaho's short-season, high-altitude regions, and selection of winter hardy varieties is critical.

ADAPTED VARIETIES

Strawberry varieties are classified as June-bearing, everbearing, or day-neutral (table 2). Fruit of June-bearing varieties mature over a period of a few weeks in late spring. They yield more, larger, and better-quality fruit than the everbearing types. Everbearing strawberries produce their largest crops in spring and fall, with a trickle of berries in between. These varieties work well when you want a small but continuous supply of fruit. Day-neutral strawberries act rather like everbearers in that they bear all summer long, and they produce the greatest yields of the three types of strawberries.

Table 1: Raspberry varieties for Idaho's short-season, high-altitude regions

VARIETY	HARVEST TIME	FRUIT SIZE	NOTES
Summer-bearing			
Algonquin	July	Large	Excellent flavor, very hardy
Boyne	July	Medium	Old favorite, very hardy
Canby	July	Large	Firm fruit, thornless, moderately hardy
Festival	July	Medium	Good for processing, hardy
Latham	Late July	Medium	Firm fruit, good yield, moderately hardy
Nordic	July	Medium	Good fresh or processed, very hardy
Reveille	July	Large	High yield, bred in Canada, very hardy
Fall-bearing			
Autumn Bliss		Medium	Dark red fruit, mild flavor, good yields
Autumn Britten		Large	High yields, good flavor, few spines
Fall Red	July/September	Medium	Good quality, moderately hardy
Redwing	July/September	Medium	Good quality, moderately hardy
Summit	July/September	Medium	Excellent quality, moderately hardy

Table 2: Strawberry varieties for Idaho's short-season, high-altitude regions.

VARIETY	FRUIT SIZE	NOTES
June-bearing		
Cavendish	Very large	Good quality, very hardy
Earliglow	Small	Excellent quality, hardy
Honeoye	Large	Excellent flavor, very hardy
Lateglow	Large	Excellent flavor, hardy
Scott	Large	Excellent quality, hardy
Shuksan	Large	Very hardy, tolerates alkaline soil
Totem	Large	Good quality, very hardy
Everbearing		
Ft. Laramie	Large	Very sweet, very hardy
Ozark Beauty	Large	Productive, hardy
Ogallala	Large	Top quality, hardy
Quinalt	Medium	Consistent performer, hardy
Day-neutral		
Tribute	Large	Excellent quality, hardy

MANAGEMENT

Establish strawberries in early spring to ensure they are ready to bear the following year. During the first season, it is important to pinch off all blossoms that develop so that energy can go into plant establishment instead of fruit production. It may be acceptable to end the pinching process for day-neutral strawberries in August and allow a small crop of berries to develop.

Strawberries can be damaged in winter by either desiccation or cold injury. Prevent desiccation by irrigating thoroughly in late October or just prior to ground freezing. Prevent cold injury by mulching the plants with 4 to 6 inches of straw or pine needles. Do not mulch with oat straw, hay, leaves, grass clippings, or other tightly matting materials that may suffocate the crowns. Remove the mulch by raking it away in early spring before new growth appears. In locales with early and extensive snow cover you can usually get by without providing winter protection.

GRAPES

Generally speaking, grapes are at best marginally adapted to Idaho's short-season, high-altitude regions. However, gardeners are going to plant them, so here is limited information that will help give the best probability of success.

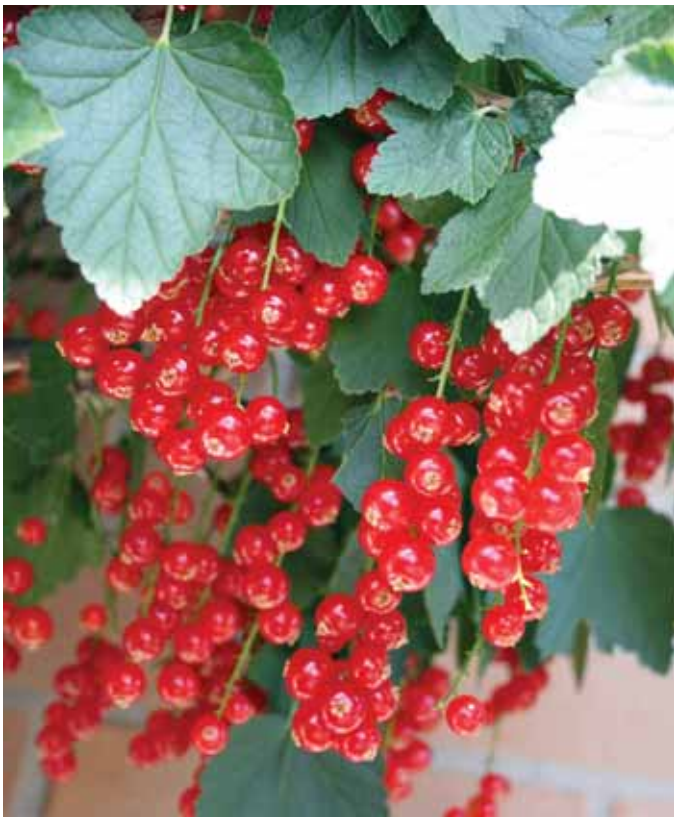
ADAPTED VARIETIES

As with most fruit crops, selection of cold-hardy varieties is essential to survival and productivity. The European wine grapes and most of the high-quality seedless table varieties are definitely not hardy in Idaho's short-season locations. A few varieties developed by breeders in the northeastern United States and Canada are claimed hardy to zone 4, and a rare few to zone 3. These last have some chance of surviving and producing grapes in the warmest of the short-season areas and maybe even into some of the harsher locations if grown in a protected site (table 3).

MANAGEMENT

In cool, short-season climates, extra measures will be needed to ensure survival and speed maturity. Selecting an appropriate planting location is a good start. Grapes need full sun and complete protection from wind. In all of Idaho's harsh climates, they will benefit from being located on the south side of a masonry wall or other structure that traps heat and holds it at night.

Hardy grapes are marginally adapted to short-season climates.



Most currant and gooseberry varieties are hardy to zone 3

Do not locate grapes in a lawn. The frequent applications of fertilizer and water are far beyond optimal for grapes. Common lawn management practices will cause excessive vine growth and decrease winter hardiness. Grapes are also very susceptible to damage from some of the herbicides used on lawns.

In highly alkaline soils, iron chlorosis (light yellow leaves with dark veins) can become a problem on grapes, although they are more tolerant of high pH soils than many other fruit crops. If iron chlorosis becomes apparent, begin a spring and summer regime of foliar applications (dilute solutions sprayed on the leaves) of fertilizers that contain iron, zinc, and boron. These applications must be frequent (every few weeks), consistent, and made over a period of years.

Some grapes varieties may need protection to get through the winter. At first glance, this may appear to be a daunting task. However, if a vine is properly trained when young, it is fairly simple to provide a protective covering.

In a process called "laying down," the young plants are pruned and trained to a single main trunk that is positioned horizontally on a low trellis in one direction away from the crown. In late fall, the entire vine is removed from the trellis,

Table 3: Grape varieties for Idaho's short-season, high-altitude regions.

VARIETY	HARVEST TIME	COLOR	SEEDS	NOTES
Beta	Mid-September	Dark purple	Seeded	Juice or preserves, very hardy
Canadice	Mid-September	Pink	Seedless	Table, moderately hardy
Edelweiss	Early September	White	Seeded	Table or wine, hardy
Elvira	Mid-September	White	Seeded	Wine, very hardy
Minnesota 78	Mid-September	Purple	Seeded	Jelly and juice, very hardy
St. Croix	Mid-September	Red	Seeded	Wine, hardy
Swenson Red	Mid-September	Red	Seeded	Table, hardy
Valiant	Early September	Blue	Seeded	Table or preserves, very hardy
Vanessa	Mid-September	Red	Seedless	Table, moderately hardy
Worden	Mid-September	Dark purple	Seeded	Juice and preserves, very hardy

Table 4: Currant and gooseberry varieties for Idaho's short-season, high-altitude regions.

VARIETY	HARVEST TIME	FRUIT SIZE	NOTES
Red Currants			
Cascade	July-August	Large	Sweet fruit, resists mildew and blister rust
Perfection	July-August	Large	Resists mildew and rust, very cold hardy
Rondom	July-August	Medium	High-quality fruit, resists mildew and rust
Stephen's No. 9	July-August	Very large	Resists mildew and rust
Black Currants			
Ben Sarek	July	Large	Resists blister rust but susceptible to mildew
Crandall	August	Large	Black fruit, good preserved, resists mildew and rust
Titania	July	Large	Resists mildew and rust
White Currants			
Gloire des Sablons	July-August	Medium	Pink fruit, resists mildew and rust
White Currant 1301	July-August	Medium	White fruit, resists mildew and rust
Gooseberries			
Captivator	August	Medium	Greenish-red fruit, resists mildew and rust
Glenndale	August	Small	Dark red fruit, thorny, resists mildew and rust, heat adapted
Jahn's Prairie	August	Large	Red-pink, dessert-quality fruit; resists mildew and rust
Pixwell	July	Medium	Greenish-pink fruit, resists mildew and rust
Poorman	August	Medium	Red, sweet fruit; resists mildew and rust; few spines
Jostaberry (black currant x gooseberry)			
Jostaberry	Early July	Large	Black, sweet, good preserved, resists mildew and rust

lowered onto the soil surface, and covered with about 8 inches of straw mulch. As an alternative, the trellis can be constructed to fold down and the entire assembly covered with mulch.

Late-spring frosts may damage or kill the grape blossoms. The simplest way to protect the plants is to set a sprinkler nearby and spray the vines with water overnight and into the next morning when below-freezing temperatures have ended and all the ice has melted. The supporting trellis will keep the weight of the ice from damaging the vine.

CURRANTS AND GOOSEBERRIES

Currants and gooseberries are very well adapted to Idaho's short-season, high-altitude regions. They are hardy into zone 3 and can grow in shallow, lean soils. Currants will consistently produce high yields of very high-quality berries that can be used for juices, jams, jellies, and sauces. Available varieties are derived from a number of closely related *Ribes* species.

ADAPTED VARIETIES

Currants come in red, black, and white types (table 4). Red and white currants are used for both processing and eating fresh. Black currants are primarily used for processing. Gooseberries are closely related to currants but produce larger fruits that can be eaten fresh or cooked into jellies or pies. Currant canes are thornless, while canes of many gooseberry varieties are thorny.

MANAGEMENT

Powdery mildew and white pine blister rust are serious diseases of currant and gooseberry crops. Powdery mildew is especially serious on European gooseberries and black currants. Many mildew-resistant varieties are available.

Although blister rust does little damage to currants and gooseberries, these crops are alternate hosts for the disease, which kills five-needled pines, including western white pine, whitebark pine, limber pine, and bristlecone pine. If you live within 1 mile of native or cultured five-needled pines, make it a point to select currant and gooseberry varieties that are resistant to blister rust.

Currants need very little in the way of special treatment in Idaho's short-season, high-altitude climates. They are suited to small yards and serve a second role as attractive, medium- to large-sized landscape shrubs. Some also provide attractive fall color. They can be grown under full sun or partial shade. Currants are heavy feeders and need regular applications of nitrogen and potassium. This makes them compatible with lawn grasses, and bushes planted in a lawn will need little or no extra fertilization.

ELDERBERRIES

Elderberries are usually planted as tall ornamental shrubs. Those derived from the species *Sambucus canadensis* produce dark purple, edible fruit. They are hardy in all of Idaho's short-season, high-altitude regions and are easy to grow (table 5).

Elderberries are grown as landscape ornamentals and for their edible fruit.

Blueberries require acidic soil and grow well in northern Idaho.

Most elderberry varieties will set fruit when planted alone, but some produce more abundantly if a second, pollenizer, variety is present. Elderberries prefer full sun and a deep, rich soil. Otherwise, they need little in the way of special treatment.

BLUEBERRIES AND HUCKLEBERRIES

Blueberries are suited to many northern Idaho locales but are very difficult to successfully grow in southern Idaho. They require strongly acidic soil (pH 4.0 to 5.3) to remain alive, productive, and healthy. Such soils are relatively common in northern and central Idaho.

Huckleberries, the western version of the blueberry, are native to much of northern Idaho. Short-season gardeners who live where soils are acidic and the climate cool may consider growing blueberries or one of the huckleberry species derived from native stock.

Table 5. Elderberry varieties for Idaho's short-season, high-altitude regions.

VARIETY	HARVEST TIME	FRUIT SIZE	NOTES
Adams	August	Large	Black berries; good for juice, pies, wine
Madonna	August	Large	Purple berries, ornamental foliage
Nova	August	Large	Purple-black, sweet berries; good for pie, wine
York	Late August	Very large	Purple-black fruit; good for jelly, juice, wine

ADAPTED VARIETIES

Blueberry varieties are classified as highbush, lowbush, or half-high, depending on the mature size of the plants (table 6). Lowbush and half-high varieties tend to be more winter hardy than highbush varieties. Lowbush varieties are usually grown in the northeastern states, and, due to their very low stature, are more difficult to manage and harvest. They are the least preferred types for the home garden.

Huckleberries have a different flavor from blueberries, and many people prefer them. Because there are no commercial varieties of huckleberries, it may be hard to find plants except at some specialty nurseries. University of Idaho researchers are domesticating wild huckleberries and hope to release garden varieties in the near future. It is also possible to start plants of one of the two predominant huckleberry species from seeds obtained from wild plants.

MANAGEMENT

In short-season climates, early spring planting of potted blueberry plants will encourage faster fruit production. Small plants may take several years to reach full production.

Blueberries make exceptional landscape plants and can be placed anywhere in the yard where there is full sun or part shade and protection from wind. Other than a requirement for moist, acidic soil, blueberries are relatively easy to grow. Wood or bark mulches help retain moisture, cool the soil, and provide nutrition to the plants. Blueberries, although hardy, will benefit from some winter protection where there is insufficient snow to cover most of the major branches.

OTHER SMALL FRUITS

Many other small fruit crops are sold in the nursery trade, but for one reason or another few are adapted to Idaho's short-season, high-altitude climate areas. There are a few possible exceptions.

Table 6. Blueberry varieties for Idaho's short-season, high-altitude regions.

VARIETY	RELATIVE MATURITY	FRUIT COLOR	NOTES
Highbush			
Hardyblue	Med-late	Dark blue	Medium-size berries are spicy and sweet
Northland	Med-early	Dark blue	Very cold hardy, wild berry flavor
Patriot	Med-early	Dark blue	Cold hardy, excellent quality
Half-high			
Friendship	Late	Dark blue	Very cold hardy, excellent flavor
Northblue	Medium	Dark blue	Very cold hardy, good quality
Northcountry	Medium	Light blue	Very cold hardy, wild sweet flavor
Northsky	Medium	Light blue	Extremely cold hardy, wild flavor
Huckleberries			
Vaccinium membranaceum	Varies	Black	Cold hardy, strong wild flavor
Vaccinium deliciosum	Varies	Dark blue	Cold hardy, strong sweet flavor

Blackberries may grow and produce in a warm microclimate.

BLACKBERRIES

Some gardeners may find success with blackberries planted in a protected, sunny location. Two of the hardiest varieties are Darrow and Illini Hardy. Both are thorny, upright blackberries with very large, high-quality fruit. Chester and Dirksen are among the hardiest thornless blackberries.

Blackberries can be very difficult to ripen in cool, short-season areas. To encourage ripening, plant them in a warm microclimate such as the southern side of a building or fence.

HARDY KIWI

One species of hardy kiwi (*Actinidia kolomikta*) could possibly grow in some Idaho locales. It is adequately hardy, but requires acidic soil and a fairly long growing season to ripen. This combination of soil and climate is hard to find in short-season areas of Idaho.

SMALL FRUIT CARE

It is difficult to make universal recommendations for the care of small fruit crops. However, most or all of these crops require a few things in common to survive and produce in Idaho's short-season, high-altitude regions.

PLANTING AND ESTABLISHMENT

Small fruits can be planted bare-root in early spring. Containerized plants can be planted any time from spring through fall. Spring and early summer plantings are better at allowing plants to establish before winter and provide earlier production.

Small fruit plants are generally relatively small in stature and do not compete well with weeds. Competition will slow establishment and delay fruiting. Site preparation prior to planting should include an aggressive process of eliminating weeds, especially perennial weeds.

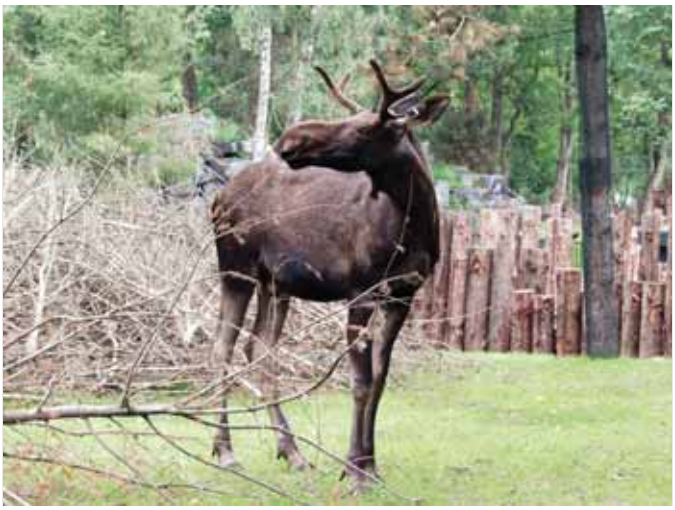
WINTER PROTECTION

Some of the small fruits will benefit from winter protection. For low-growing plants with crowns, such as strawberries, apply a thick layer of mulch during the coldest months of the winter. If your soils are naturally wet or cold, remove the mulch in early spring to allow the soil to warm and dry. Mulches also provide mice and vole habitat. If you mulch, monitor for rodent damage and use traps or baits for control.

Taller plants and shrubs are more difficult to protect. You may provide some benefit by covering them with plastic or burlap.

SPRING FROST PROTECTION

Due to their later blooming habits, most small fruits are not as prone to flower damage from spring frost as are the tree fruits. They are also easier to protect. Small shrubs or garden



Large browsers can destroy small fruit plants.

Irrigation keeps small fruit plants healthy and productive.

plots can be covered with blankets or tarps. Flowers of most small fruits can be protected using overhead sprinkler irrigation applied through the period of freezing temperatures and into the next morning when all ice has melted.

PROTECTION FROM WILDLIFE

Wildlife damage in Idaho's mountains and high deserts can be severe during winter months. Damage from rabbits, rodents, deer, and moose can be a bigger problem than in tree fruits because all parts of the plant are within reach. Control measures are similar to those used for trees but need to be applied more consistently. For deer and moose, high sturdy fences are the only effective protection. A shorter wire mesh fence can exclude rabbits and marmots.

Maybe of greater concern than winter damage is loss of mature fruit. Birds create the worst problems and can destroy a crop in a few days. Netting can exclude birds, but be aware that birds quickly become trapped in coarse netting and can be injured or killed.

PROTECTION FROM WIND

Wind can be very damaging to many small fruits, especially those that grow as shrubs. Spring and summer winds cause blossom drop, leaf burn, and fruit injury.

Plant small fruits where buildings or windbreaks protect them from prevailing winds. Ensure, however, that efforts to create an enclosed space do not create too much shade or a frost pocket that traps cold air.

FERTILIZATION

Small fruits require regular fertilization to remain healthy and productive. Proper fertilizer rates and timings specific to each small fruit crop can be found in other University of Idaho Extension publications.

Small fruits grown in regions with alkaline soils may experience micronutrient deficiencies. This problem will be much worse when plants are located in lawns, are overwatered, or both.

In moderately alkaline soils, applications of elemental sulfur can acidify the soil in raised beds, if necessary. Also, using ammonium sulfate (21-0-0) or other acidifying fertilizer can help maintain suitable soil pH values in alkaline areas or where irrigation water is alkaline.

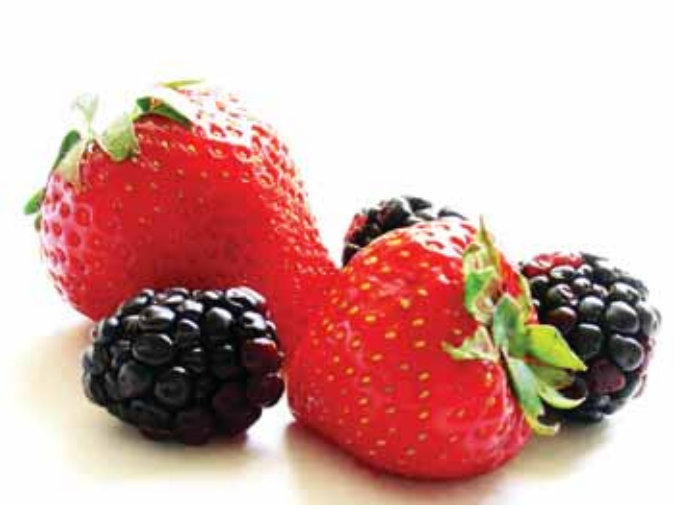
Where the soil is highly alkaline, such as in most high-desert climates, it may be necessary to use foliar applications of fertilizers containing iron and zinc. Beginning in early spring, schedule the applications for every two or three weeks.

IRRIGATION

Proper irrigation is necessary to keep berry plants healthy. Stress from lack of moisture can have long-term effects on plant health and productivity of all small fruits.

Overirrigation will lead to root diseases and a decline in plant health. In alkaline soils, overirrigation will also heighten iron chlorosis problems in crops prone to it.

The amount of water to apply varies dramatically according to soil type, air temperature, slope, and crop. The objective is to maintain a moist, but not waterlogged, soil. Relatively deep-rooted plants, such as grapes, will need the least-frequent irrigation. Strawberries have a very shallow root system and require the most-frequent irrigation.



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