

Home Fruit Production: Strawberry Cultivars and Their Culture

No fruit is more likely to provide home gardeners with success and satisfaction than strawberries. Strawberries are well adapted to our climate, require a very small investment, and will produce a good crop of fruit about 13 months after planting. Strawberry plants will bear every year if blossoms are protected from frost by mulching and will produce a good crop of berries for up to four years.

Before planting

Select the best site

Strawberries need full sun. Soil should have good surface and internal drainage. Ideally, the organic matter content should be about 5 percent, although strawberries will grow in soil that has as little as 2 percent organic matter.

Take a soil test

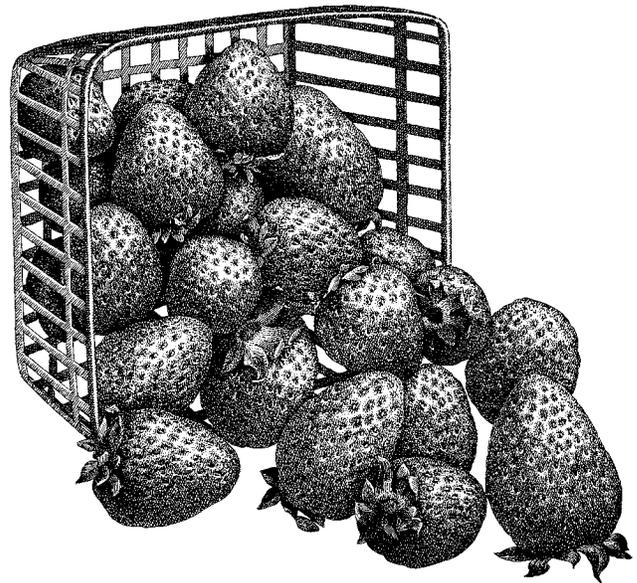
During the fall before planting, take a soil sample to your local MU Extension center and have it tested. If the soil test results indicate that additional nutrients are needed before planting, incorporate them in late winter. If the organic matter content is low, leaf mold, compost, rotted manure or aged sawdust can be incorporated to improve the soil tilth.

Decide how many to plant

You can expect to harvest about 1 quart of berries from each plant you set out plus its daughter plants if grown in a matted row system. Twenty-five to 50 plants will provide plenty of fresh berries for a family of four. For freezing berries, set out an additional 50 to 100 plants.

Purchase well-adapted cultivars

Many strawberry cultivars are suitable for growing under Missouri conditions.



In selecting varieties, consider (1) disease resistance, (2) dessert and freezing quality, (3) yield and (4) season of ripening. Always purchase new plants rather than getting plants from neighbors or relatives. New plants are certified to be free of disease and should be free of viruses, whereas those obtained from a neighbor may harbor disease and insect pests. Buy your plants from a nursery with a good reputation. Consult your neighbors to see what their experience has been with various nurseries. If you are the first in your area to order strawberries, look at catalogs from a variety of nurseries. Do they guarantee disease-free plants? What is their policy if you get poor-quality plants from them? Do their descriptions give cultivar limitations as well as positive traits? Do their prices seem fair? Within reason, it is always better to pay a little more for high-quality plants than to spend less for cheaper, weaker plants.

Popular and better adapted varieties for Missouri

This list is not intended to include all varieties that will grow in Missouri.

Credits

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Earliglow

An early-season cultivar that produces berries that have outstanding flavor. Fruit is attractive with high quality, and it freezes very well. The primary berries are medium-sized and secondary berries are small. The plant is vigorous and usually winter hardy. Shows resistance to leaf and root diseases.

Cardinal

Vigorous plants produce high yields of large fruit in early midseason. Fruit are firm and have good flavor. Plants are winter tender but often are planted as far north as central Missouri. Plants are not resistant to red stele but are resistant to leaf diseases.

Honeye

Berries are medium-large and bright red but sometimes lack good flavor. High yields are harvested in early midseason. Tolerant of most foliage diseases but not resistant to red stele or verticillium wilt. Excellent for freezing. Winter hardy.

Redchief

Berries are medium-large, sweet and have exceptional quality. This cultivar is resistant to five strains of red stele root disease and verticillium wilt. It produces runners freely, and the berries are harvested in early midseason. Excellent for freezing.

Surecrop

Berries are large, light-colored and tart with fair quality. This is one of the most productive, vigorous and disease-resistant cultivar available. Berries ripen in early midseason.

Allstar

Berries ripen in late midseason. They are large, glossy, orange-red, firm and very good quality for fresh eating. Allstar is resistant to red stele and verticillium wilt and is tolerant of leaf diseases.

Guardian

A late midseason cultivar with moderate to high yield potential of medium to large fruit. Excellent fruit firmness and very good flavor. Susceptible to leaf spot but resistant to leaf scorch, red stele and verticillium wilt.

Jewel

Plants produce high yields of large wedge-shaped fruit with good firmness and very good flavor that ripens in late midseason. Plants should be hardy in most Missouri winters, but runners do not grow excessively. It has some resistance to leaf diseases but no resistance to red stele or verticillium wilt.

Lateglow

A late-season cultivar with high yield potential. Fruit are very large with excellent firmness and very good flavor. The plants are resistant to red stele and will tolerate most Missouri winters.

Sparkle

An old favorite with fruit that ripens late in the season. Berries tend to be soft and medium-sized but have very good flavor. Plants bloom late so they may escape spring frost injury. They are resistant to the most common strain of red stele but are susceptible to leaf diseases and verticillium wilt.

Everbearing and day-neutral cultivars

Traditional everbearing cultivars such as Ogallala and Ozark Beauty are not truly everbearing. They tend to produce a crop in the spring and a small crop in the fall, with little or no crop in between. Ogallala berries are medium sized and dark colored with a fair flavor. Ozark Beauty produces medium-sized, light-colored berries of average quality and has been extremely variable in its performance in Missouri.

Day-neutral cultivars can potentially produce flower buds, and fruit can be harvested about every six weeks regardless of day length. However, these cultivars do not initiate floral buds when the temperature exceeds 85 degrees Fahrenheit. Thus, day-neutral cultivars such as Tribute and Tristar generally produce a spring and fall crop in most of Missouri. Tribute plants produce moderate to high yields. Berries are large, have excellent firmness and very good flavor. The plants have good winter hardiness, are resistant to red stele and verticillium wilt and tolerant of the leaf diseases.

Tristar plants produce moderate yields. Berries are medium to large and have excellent firmness and outstanding flavor. These plants have good winter hardiness, are resistant to red stele and verticillium wilt and are tolerant of the leaf diseases.

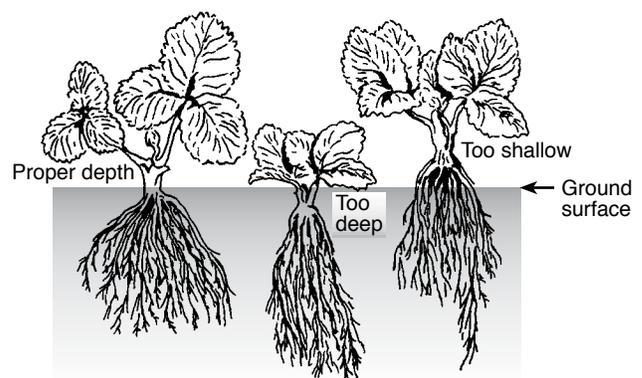


Figure 1. Proper depth for planting strawberries.

At planting

Plant as early as soil is workable in the spring — early March to early April. Test for workability by digging a shovel full of soil and tightly squeezing a handful. Does the ball of soil break easily? If so, it is ready to till. Add 10 pounds 5-10-5 or 8-24-8 fertilizer per 1,000 square feet and work into the upper 3 to 4 inches of soil. Plants can now be transplanted.

Space rows 42 to 48 inches apart; plants in the row should be spaced 30 to 36 inches apart. When setting out plants, (1) keep the roots moist at all times; (2) spread roots out in hole; (3) plant at proper depth (see Figure 1); and (4) water plants (you can add 1 tablespoon of a water-soluble fertilizer per gallon of transplant water.)

First-year care

Remove blossoms

Remove blooms on newly planted strawberries. If berries are allowed to develop, they deplete the food reserves of the plant and delay runner production.

Cultivate

The most important practice in a new strawberry planting may be cultivation. For the first six weeks or so it should be frequent — perhaps once a week. This does two things: (1) kills weeds, and (2) loosens soil for better runner penetration. If necessary, herbicides can be an effective tool in controlling weeds in strawberries.

Train runners

To establish manageable rows, train runners to root in the row rather than the aisle between rows (Figure 2).

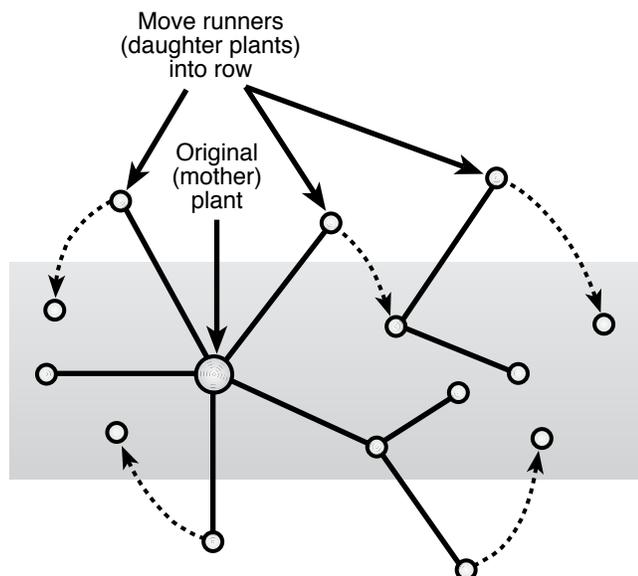


Figure 2. Train strawberry runners to root in the row.

Irrigate

Strawberries can survive all but the most severe drought periods. However, irrigate to get the highest yields of large berries. Strawberries should have a minimum of 1 inch of water per week — more during prolonged hot, dry periods. A simple rain gauge will determine weekly rainfall. Irrigate to make up for rainfall deficiencies.

Mulching

Winter mulch is used to prevent alternate freezing and thawing of the soil and subsequent heaving of the plants out of the soil. Other benefits of mulching include help in controlling weeds and grass, protection from severe cold temperatures and help in keeping berries clean during harvest.

Kinds of mulches

Many materials can be used for mulching; in Missouri the two most commonly used are straw and aged sawdust. Obtain straw shortly after wheat harvest. Loosen bales and soak with water. This and subsequent rains should germinate most of the grain before it is time to apply the straw.

When to apply mulches

Apply straw mulch in late November or early December — after a few days of temperatures down to 20 degrees Fahrenheit. Straw should be sifted loosely over the plants, just enough to cover them from view. After a week of settling, add additional straw where necessary.

When sawdust is used for a mulch, try to maintain a 1-inch mulch depth. No additional winter protection is needed.

Second- and third-year care

Remove mulch

Remove straw mulch in the spring as the weather begins to warm (before bloom). Check closely after each warm period (late February through March); if the strawberry foliage begins to show yellowing, remove the mulch. Rake mulch toward row aisles, but leave a light sprinkling on the plants — they will push through. If spring frosts threaten, rake the mulch back over the plants. But be sure to rake off the mulch during the day.

Control insects and diseases

Many pest problems can be avoided by using good cultural practices as described above. When insects or diseases can no longer be controlled culturally, pesticides may be applied.

Harvest

Pick berries daily if possible and pick all berries that are ripe. Toss out all moldy berries. This will help prevent rots from spreading.

Renovate and fertilize

After harvest decide what to do with your strawberry bed. The two options are:

1. Simply re-fruit the bed by renovating the plants immediately after harvest. First, remove weeds from row middles. Next, mow old tops off of the strawberry plants to renovate or renew the bed. Set lawn mower high enough to remove strawberry leaves but not injure crowns. Then use a rototiller or spade to cut each plant row to a 6-inch width. This sounds drastic, but do it! Runner plants from the 6-inch strip of "mother" plants will form a new matted row of plants. Apply 5 pounds of 5-10-5 fertilizer per 100 feet of row (10 pounds if sawdust is used as a mulch). Apply about 1-1½ to 2 inches of water a week to the newly forming bed during June, July and August (include rainfall in total). To prevent overcrowding of plants and reduce the incidence of leaf diseases, thin plants to 5 to 7 plants per square foot. This method of renovation can be used to fruit the strawberry bed for a total of three or four years. During the rest of the growing season, irrigate to provide 1 inch of water per week, and continue to control weeds.

2. Replant beds after harvesting berries for three or four years. After several years, strawberry plants tend to become infected with several leaf diseases and have declining yields. When this occurs, plants infected with diseases may be removed and a different crop can be planted on this site. Establish a new strawberry bed next spring where another crop was previously planted. To avoid infecting new strawberry plants with verticillium wilt, do not plant them where tomatoes, potatoes, peppers, eggplant, okra, raspberries or vine crops were planted within the past three years.

Diseases

Black root rot

Caused by soil fungi, nematodes, winter injury, fertilizer burn, drought, too much water or any combination of these. Plants show poor vigor, produce few runner plants and may die in patches. Roots may be spotted with black zones or lack feeder roots, or the entire root system may be killed. Infected roots are black when cut in a cross section. There is no way to control black root rot. However, proper cultural practices that minimize plant stress should limit this disease. If a bed becomes infected with black root rot, plant a new bed in different location, and use only healthy, white-rooted plants.

Red stele root rot

Caused by a soil-borne fungus and occurs most frequently on poorly drained sites with clay soils. The fungus is most active in the spring and fall when soils are cold and wet. Small feeder roots are killed, giving a "rat tail" appearance. Main roots that are infected have rusty-red color in the core or stele. Plants may wilt and die during hot, dry conditions. To avoid this disease, plant only red-stele-resistant varieties and plant in a well-drained site in a loamy soil.

Leaf spot and leaf scorch

Two common foliage diseases. Leaf spot produces spots ⅛ to ¼ inch in diameter with purple borders and light gray centers. Leaf scorch produces small solid purple spots with rather undefined borders. When numerous, they almost cover the entire leaf. Cultivars vary considerably in tolerance to these diseases. Foliage fungicides aid in the control of these diseases.

Verticillium wilt

Caused by a soil-borne fungus. In new strawberry plantings, symptoms appear about the time runners start to grow. In established plantings, symptoms appear when the berries ripen. Older outer leaves of infected plants wilt, turn brown around the edges and between the veins and eventually die. Petioles of the leaves may also turn red. Few new leaves develop and new roots that grow from the crown are short and have blackened tips. To avoid this disease, select resistant strawberry cultivars and avoid sites that were previously planted with wilt-susceptible crops.

Gray mold

Caused by the fungus *Botrytis*, which overwinters on plant debris on the ground. During bloom the fungus may be spread to blossoms during rainy weather, and the infection then spreads to the developing fruit. This disease often occurs where a dead petal or leaf adheres to the fruit or where a berry touches the soil. The disease appears as a gray, fuzzy mass of fungal spores on berries. To prevent this disease, thin plants to improve air circulation within the bed and use straw mulch. Fungicides may also be applied.

Leather rot

Caused by a fungus that infects the berries when ripening fruit clusters are in contact with the soil or standing in water after a period of warm, rainy weather. Infected immature fruit turns brown. On ripening fruit, the color becomes bleached out and infected areas are tough and dry. Berries taste bitter and smell rotten. A single infected berry can ruin the flavor of a whole jar of jam. To prevent this disease, use a mulch to minimize rain splash onto the fruit, or fungicides may be applied.

Viruses

May stunt plant growth or cause mottling or curling of leaves. They are introduced by insects such as aphids or leafhoppers. To prevent viruses, use certified plants and control these insects.

Insects and other pests

Tarnished plant bugs

Cause deformed or “nubbin” berries with a concentration of seeds at the tip of the fruit. Nymphs puncture individual seeds and inject a toxin so that the fleshy part of the berry stops developing where the seed was injured. Damaged seeds are hollow and turn a straw-brown color. Plant bugs are often in alfalfa; to prevent the bugs from feeding on strawberries, avoid mowing alfalfa when strawberry plants are in bloom. Refer to MU Extension publication G6010, *Home Fruit Spray Schedules*, for a listing of the products that may be applied to control insect pests on strawberry plants.

Leafrollers

Small worms that roll the leaves together and feed on the leaves. They must be controlled if they become numerous.

Mites

Tiny, spiderlike creatures that are typically found on the underside of leaves. Mites tend to be the most damaging during hot, dry periods, when they suck plant juices from the leaves.

Strawberry weevils or clippers

Puncture fruit buds with their snouts to feed on immature pollen. Later, females deposit an egg inside a floral bud and girdle the petiole of the bud so that it falls to the ground or is left hanging by a small bit of tissue.

Slugs

Eat holes in ripe fruit and are worse during rainy weather or near rotting foliage. Shiny slime trails are evidence of slugs.

Nematodes

Found in the soil and are too small to be seen with the naked eye. Most nematodes feed on roots. Symptoms of nematode damage include galls on the roots or stubby, stunted roots. To avoid a buildup of nematodes, rotate plantings to a different site when establishing new beds.

Causes of malformed fruit

“Nubbins” or “button berries” may be caused by feeding tarnished plant bugs, heavy infestations of cyclamen mites, frost injury, nutrient deficiencies (boron, calcium), inadequate pollination, abnormally high temperatures that make pollen nonviable, or by the application of 2,4-D from Aug. 1 to Nov. 1, when fruit buds are differentiating. (See above.)

Fasciated berries, those that have a cockscomb shape as if several berries have grown together with multiple tips, are caused by short day-lengths in the fall or by cold, dry weather during this time. Fasciated fruit often occurs when cultivars adapted to northern conditions are grown in the south.

Also from MU Extension Publications

G6010 *Fruit Spray Schedules for the Homeowner*

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