



Strawberry Production in Oklahoma

Home Horticulture Section

Department of Horticulture

Oklahoma has extensive areas of excellent soil suitable for strawberry production. The climate of eastern Oklahoma is especially favorable for quality production of this crop. The market demand for fresh strawberries is good and this should be an excellent choice for a U-pick or direct marketing crop in many areas of the state.

The strawberry is a hardy plant and easier to grow than most other fruit. When careful attention is given to cultural details, they produce good crops in less time than most other fruit, about a year after planting, and will continue to produce for three or more years. The berries ripen early in the season and ahead of other fruit.

Besides being a versatile dessert fruit, strawberries are highly nutritious, with one cup of fresh berries supplying more than the recommended daily vitamin C requirement.

Site and Soil Preferences

The most successful strawberry planting is one that receives full sun most of the day. Shady locations or those that receive sun less than three-fourths of the day tend to promote more vegetative growth with fewer fruit buds being formed. There may also be more problems with diseases.

Strawberries can be grown on a wide range of soil types as long as there is adequate drainage, aeration, and moisture retention. The best soils, however, are loam or sandy loam soils with added organic matter. Poorly drained and wet soils usually result in retarded plant growth and vigor and frequently a higher incidence of disease problems. The strawberry is not particularly sensitive to soil acidity or alkalinity but does best at a pH range of 5.8 to 6.5.

Varieties

While there are many varieties to choose from, the performance of any one variety is greatly influenced by the local growing conditions and climate. In choosing a strawberry variety, the following points are very important.

- Select varieties adapted to your region. (The varieties listed in this fact sheet are all recommended for Oklahoma.)
- Select healthy, virus-free plants.
- Purchase plants from an established nursery and place orders several months before planting, indicating desired delivery date.
- Strawberries are self-fruitful (they don't require cross-pollination) and will produce good crops if only one variety is planted.
- The fruiting season can be extended by planting varieties that ripen at different times.

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are also available on our website at:
<http://osufacts.okstate.edu>

- Consider the preservation quality and disease resistance of the variety.

June bearing varieties are the most successful in Oklahoma. They produce a single crop each year in early May to mid-June, depending upon the season and location. The varieties are listed in order of ripening.

Early Season Varieties

These varieties ripen early May to early June. Some may ripen as early as late April in southeastern Oklahoma during mild springs.

Earlidawn: The first variety to ripen. Occasional problems with late spring frosts damaging blossoms. Susceptible to verticillium wilt and red stele disease. Berries are firm, medium sized, light red in color with a tart flavor.

Blakemore: An old variety that continues to do well over most of the state. Berry size is only medium and becomes small toward the end of the season. A heavy runner plant producer. Fruit color is good and flavor is excellent. Fruit color and flavor of frozen berry is fair. Ripens two to three days later than Earlidawn.

Sunrise: Berries are medium in size with a light, bright red color. They retain an attractive appearance for several days after picking. A heavy runner plant producer, resistant to wilt, red stele, and leaf scorch but very susceptible to leaf spot. Ripens four to five days later than Earlidawn. Currently the leading early season variety in the state.

Earlibelle. About seven days later than Earlidawn. Medium to heavy attractive fruit that freezes well. Not a heavy runner plant producer. Plants are resistant to leaf spots and leaf scorch.

Mid Season Varieties

These varieties ripen mid-May to mid-June. Some may ripen as early as May 5th to May 10th in southeastern Oklahoma during mild springs.

Cardinal: An outstanding variety for Oklahoma. Fruit is large, firm, and uniformly bright red. Excellent quality for use fresh or processed. A good runner plant producer, resistant to leaf spot, leaf scorch, and powdery mildew.

Surecrop. Good color and firm berry. Fruit size is slightly larger than Blakemore, but smaller than Cardinal. Excellent fruit quality for fresh use or when processed. Size holds well throughout season. A very good plant producer. Resistant to leaf spot and red stele.

Guardian: Large to medium, very attractive fruit. Size holds well throughout season. Excellent quality for fresh or processing. Plants resistant to red stele and verticillium wilt.

Tennessee Beauty: Berry size is slightly larger than Surecrop, but not as large as Cardinal. Fruit color and quality is good. A prolific runner plant producer. Resistant to leaf spot. May be considered a late mid-season variety.

Atlas: Harvest period is similar to Tennessee Beauty. Fruits are medium to large, similar to Cardinal, but not as good a producer. Atlas is resistant to leaf spots and is an excellent berry for all sections of the state.

Late Season Varieties

These varieties ripen late May to mid-June.

Delite: A very attractive large fruit. Not a heavy producer when compared with most mid-season varieties. Poor runner plant producer. Resistant to most diseases.

Marlate: Good yields of medium sized fruit. Very attractive appearance. Heavy plant producer and resistant to leaf spot. Probably the best choice for a late season variety.

Preparing the Soil and Setting the Plants

The soil where strawberries are to be planted should be worked well and a fine plant bed prepared before plants are set. If the planting is to be established where sod is growing or weeds are a problem, the area should be worked a year in advance to kill the grass. It is especially important to rid the area of perennial weeds such as bermudagrass and nutsedge prior to plant establishment. Soil insects such as white grubs should be eliminated prior to planting with a soil insecticide.

Organic matter in the form of manure or a green manure crop can be added by plowing or tilling into the soil in the fall or winter prior to setting the plants.

Soil fertility should be determined by a soil analysis. A soil sample can be collected and taken to the local OSU County Extension Office.

If a soil analysis is not conducted, a general fertilizer application may be made. A complete fertilizer such as 10-20-10 or 12-24-12 at the rate of 300 to 400 pounds per acre should be mixed in at a depth of 4 to 6 inches prior to planting.

Late winter to early spring (February to March 20) is the most preferred time to set plants in Oklahoma.

In the southeastern third of the state plants may be set in the fall (October to mid-November) if a plant source is available. These plants will have a more extensive root system by spring and will be more vigorous producers of runner plants. Adequate soil moisture must be present during the winter months for good root development.

It may not be possible to set plants immediately when they arrive from the nursery. However, the package should be opened immediately and if the roots show signs of dryness, supply moisture to the packing material. Plants should be held in cold storage at 28° to 30° F, kept in a refrigerator or heeled in the soil in a shaded area until planting can take place. Plants may be set either by hand or transplanted by machine.

Do not allow plants to become dry during the planting operation. As each bundle of plants is opened, place the plants in a container with sufficient water to keep the roots wet. Planting may be facilitated if the roots are trimmed slightly with scissors or a sharp knife.

It is extremely important that care be taken to set the strawberry plants at the proper depth. They should be set so that the crowns (where the leaves arise) are even with the ground surface after the soil has been firmed around the roots (Figure 1).

Spread or fan the roots out slightly and pack the soil firmly enough so that a quick upward pull of the leaf will result in breaking the stem rather than uprooting the plant.

At the time of setting the plants, a starter solution comprised of about 1 cup of 12-12-12 or 12-24-12 per 10 gallons of water can be poured around individual plants. About 1 pint of the solution around each plant will help promote early growth.

Additional water amounting to about 1 inch per week should be applied by irrigation if the soil is dry and rainfall does not occur.

The recommended spacing for strawberries is 4 feet between rows and 24 inches between plants in a row. This will require approximately 5500 plants per acre. Since the strawberry has the potential to produce 30 to 50 runner plants the first year of growth, this will allow for a matted row system of culture by allowing plants to develop runners in the row while keeping the middle between the rows free of plants (Figure 2).

First Season Care

During the summer, runner plants form from mother plants and take root. In the fall, plants build up food reserves and form fruit buds for the next year's crop. The plants must be maintained in a healthy condition for the best development of new plants and fruit buds.

Since the strawberry plant is shallow rooted, it requires frequent watering following transplanting. During the spring and summer, if during any two week period the plants fail to

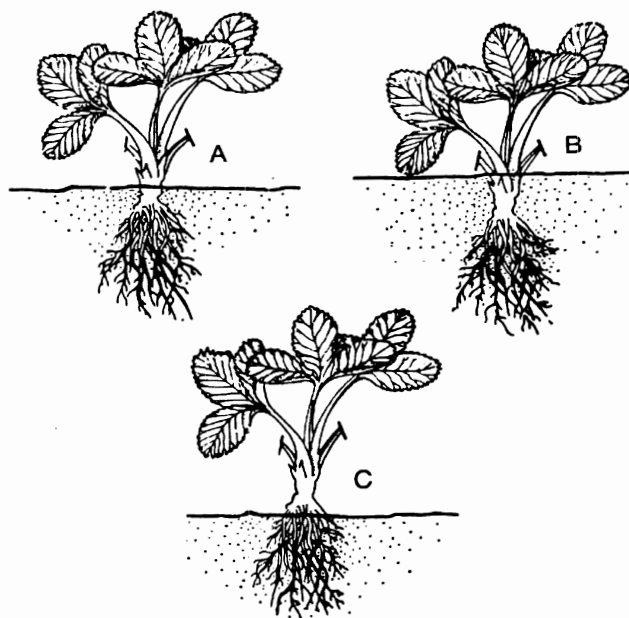


Figure 1. A, proper planting depth and method. B, too deep. C, not deep enough.

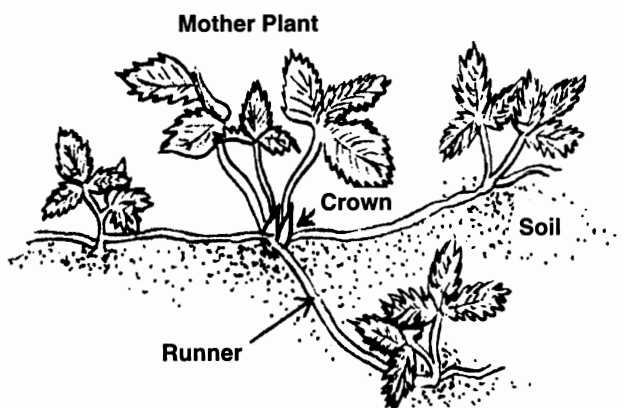


Figure 2. Plants set 2 to 3 feet apart will produce 30 to 50 runner plants the first year.

Additional suggestion on plant spacing and plants required per acre are:

Plants/acre	9680	9170	8713	5508	5503	5228
Inches						
between rows	36	38	40	36	38	40
Inches in rows	18	18	18	30	30	30

receive adequate rainfall, supplemental watering is required. Enough water should be added to wet the soil to 12 inches. Generally this will require about one inch of water. A trickle irrigation system works quite well on strawberries, providing ease of application and allowing irrigation during harvest.

Cultivation helps keep runner plants within the allotted row area and permits easier rooting of runner plants.

Try to maintain a row width of 18 to 24 inches. Cultivation and hoeing aid in weed and grass control, which is very important in strawberry care. Chemical herbicides may also be used as an aid in weed control, when applied according to specific recommendations. More information on weed control in strawberries can be obtained from OSU Fact Sheet HLA-6233, "Weed Control in Strawberries."

Fertilizer applications are seldom needed if proper recommendations were followed at planting time. But if the new plants appear light green and don't grow well, side dress with nitrogen fertilizer at the rate of about 1 1/2 to 2 pounds of ammonium nitrate per 100 feet of row. Brush fertilizer off the leaves and apply about 1 inch of water if rain is not expected within a day or two.

There are varying recommendations regarding removal of flowers as they appear the first year after planting. It is certain that if berries are allowed to develop, they will reduce plant growth, runner development, and next year's crop. In more northern areas where the growing season is shorter, there is a definite advantage to removing blossoms. In Oklahoma, most producers can generally expect an acceptable amount of growth and plant vigor the second year if the plant is allowed to fruit the first year. Depending upon size and vigor of the plant, as few as none or as many as 1/2 pint of berries may develop per plant the first year. If the plant is allowed to fruit, be certain to give special attention to water and nutrient needs of the plant.

Harvesting

The time from bloom to harvest will depend upon variety, temperature, and the amount of sunlight. It varies from about 18 to 45 days.

Fruit should be picked when it has developed a red color. The intensity of the color will increase with greater maturity, but the fruit will become less firm. Generally, the quality of the harvested fruit will remain in an acceptable condition for a longer time if the fruit is harvested during the cooler part of the day.

Berries are usually harvested with the cap (calyx) attached unless they are to be used immediately, fresh or frozen.

Care of Established Plantings

Renewing or renovating a planting should be done each year immediately after harvest. Start by mowing off the tops as close to the ground as possible without damaging the crowns. Then broadcast 150 to 200 pounds of 10-20-10 or 12-24-12 per acre over the plants. This is important to promote new runner formation.

Narrow the row width to a strip of plants 8 to 10 inches wide with a cultivator, hoe, or rotary tiller. This can be done by destroying the plants on both sides of the row or on one side only.

If chemical weed control is practiced, herbicides should be applied as the next step in renovation. Irrigate if needed. For the remainder of the season, the plants are handled as directed under the section on care of a new planting.

Yields and size of berries will decline if proper renovation is not followed yearly and a new planting may have to be established after three or four seasons.

Mulching

A well established row of vigorous strawberry plants will, because of their own foliage, have a mulched effect. Strawberry plants in the north central and northwest areas of the state may benefit from a winter covering of straw or other similar kind of mulch over the row. This is done to prevent undue freezing and thawing as well as excessive winter drying. The practice also tends to delay plant development and flowering in the early spring and may avoid some spring frosts. The proper time to apply mulch is during mid-to-late December following several hard frosts. At this time the plants have developed dormancy. Mulching at an earlier time may seriously injure or kill the plants. Straw is added loosely to a depth of 3 to 4 inches to cover the entire row.

The mulch must be removed when the earliest strawberry plant growth begins in the spring (usually March). In order to determine the proper time, lift some of the mulch and examine the plants beneath it. If new leaves have begun to develop, their color will be very light green. At such time, the mulch may be removed or raked into the middles by the side of the row. In such an arrangement the mulch could be placed over the row for protection if a frost is expected during bloom or the early fruit development period.

Leaving some of the mulch in the berry row is desirable as long as foliage and flower stalks can emerge.

This will enable the fruit to develop above the small amount of mulch and be protected from soil splashing upon the fruits during rains. The mulch will also aid in harvesting during wet spells.

Insect and Disease Control

The most important consideration is to obtain healthy and disease free plants. Since strawberry plants show very few visible symptoms of virus disease, it is more important to obtain certified plants from virus free stock. Most strawberry plant nurseries have certified disease free plants available.

There are few instances in Oklahoma when chemicals are required to control either insects or diseases. When the

fruit ripening period coincides with cool, cloudy, rainy weather, fruit rots and leaf spot may develop. This usually is more serious when the plants are too crowded, have grasses and weeds in the row, or have had too much nitrogen fertilizer and excessive top growth.

This condition is much more prevalent in the eastern section of the state with more rainfall and less drying wind.

For information on insect disease control, contact your local OSU County Extension Office.

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