

GROWING STRAWBERRIES

ON THE NORTH COAST

Strawberries are grown commercially and in backyards throughout California. Commercially, very specific planting dates combined with proper variety selection and location of planting have led to an extremely successful industry in California.

Backyard production can be enhanced considerably from a little understanding of the horticultural characteristics of the strawberry plant. There are basically two types of strawberries: short-day varieties and day-neutral varieties. Ever-bearers are generally considered to be synonymous with day-neutrals; however, other locations outside of California list specific varieties as ever-bearers, many of which are not available in California.

Short-day varieties essentially produce in late Fall, Winter and especially early Spring, when days are short. If, however, the plants are manipulated into achieving less than their required chilling, that is number of hours of cold temperature to ensure good fruiting, they essentially continue to flower and fruit over a very long period of time as long as temperatures remain below 75 F. This is why you see major strawberry production along the cool coastal regions of California.

Day-neutral varieties essentially do not respond to day length and will continue to produce flowers and fruit all year long, including the Summer, as long as temperatures don't get too high.

Planting systems

Two planting systems, Summer and Winter, are used in California. In southern California, Winter plantings made from late October through December use current season's plants shortly after they are harvested from high-elevation nurseries. Because winters are mild, plants begin to grow immediately and fruit quite soon after planting.

Summer planting system

Summer planting systems are used in the Central Valley and the north coastal region of California. Here, plants are planted from August in inland areas to October on the coast, using plants dug from the previous winter that were stored at 28° F. These plants develop during the fall and winter months and then begin fruiting heavily in the spring.

If short-day varieties are planted in the spring (the beginning of long days), they will not flower and fruit adequately. All of the plant's energy will go into runners. All of your energy will go into weeding and watering, for nothing.

In cool areas, day-neutral varieties can be spring-planted for a summer crop if runners are removed early.

Strawberry varieties

This is one fruit where you should experiment by planting several different varieties at different planting dates to see which varieties work best for you at your specific location.

Short-day cultivars

Douglas

A very large fruit with good color and good flavor and conical in shape. Is an early producer. This is a typically Winter-planted variety, planted the first two weeks of October.

Pajaro

Principally a Summer-planted variety, used in northern California, planted in August and September. The fruit is large, conical in shape, good-flavored and has a dark red color.

Chandler

Typically a Winter-planted variety. Fruit flavor, color and size are exceptional. One of the best-tasting short-day varieties.

Oso Grande

High-yielding, large-fruited variety with excellent flavor. Used mostly as a Winter planted variety.

Sequoia

Large soft fruit with excellent flavor. Plants are resistant to Verticillium wilt.

Day-neutral varieties

Selva

High-yielding, exceptionally firm but mild-flavored variety that must be fully red in color before harvesting. Selva should not be planted before September 10th for optimum performance.

Muir

Superior flavor to Selva and is conical and lighter in color.

Irvine

Winter planted day-neutral with conical, medium-sized, excellently flavored fruit.

Fern-Yolo-Mrak

These varieties are strongly day-neutral and have a good potential for home gardens as they produce all season long. Excellent quality fruit- medium size.

Hecker

Hecker produces small to medium, mild-flavored, deep flavored, deep red fruits abundantly throughout the entire year.

Soil

Strawberries perform best in sandy, well-drained soils when placed on beds 6-8" high and 12-18" wide. Liberal amounts of organic matter applied at approximately one pound per sq. ft., worked into the ground before planting, will help prolong the life of the plants and improve water-holding capacity. Strawberries require a soil pH in the range of 5.5-7.5.

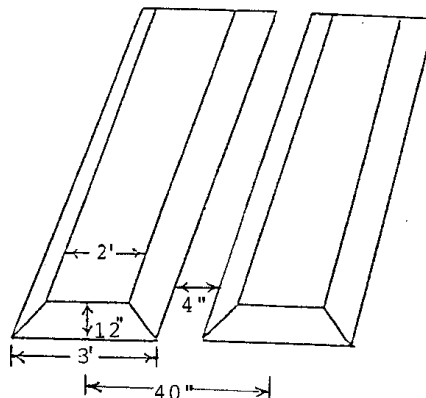
Planting

Strawberry plants should be grown on raised beds to avoid wet feet and root rot conditions; it also makes them much easier to pick. Beds should be raised as high as possible, 12-18", and formed to 2' wide on top, with 40" between beds, center-to-center.

After beds are raked smooth and pre-irrigated, open a V-shaped hole about 6-7' deep with a trowel. Place a level teaspoon of slow-release fertilizer or ammonium sulfate in the bottom of each hole and cover with approximately 1" of soil to prevent root burn. Spread the roots out in a fan shape in the hole and cover with soil, firming it around the roots. Set plants at the exact level that they were growing in the nursery, not too high nor too deep. Plants set too high will be weak, and plants set too deep will rot.

Evenly space plants from 8-15' apart in the bed, depending upon the ultimate size of that particular variety.

APPROXIMATE DIMENSIONS OF STRAWBERRY RAISED BED



Irrigation

Strawberry plants have shallow roots and require consistent moisture throughout the growing season. Newly planted plants are generally overhead irrigated at one week intervals (1" of water) to get good initial vegetative growth and then switched over to drip irrigation as the season progresses. Overhead irrigation can be used during the growing season but should be monitored carefully to minimize the time period that the plants and fruit are actually wet. Drip irrigation keeps the moisture away from the fruit and prevents fruit rot. It is generally run every day during the summer for 1-2 hours.

Fertilization

You will need additional nitrogen fertilizer six weeks after planting if plant growth is weak and leaves are light green. Broadcast ammonium nitrate or similar nitrate fertilizer at a rate of approximately 1/2 pound per 100 square feet of row. Organic fertilizers can be used, but amounts should be increased according to their nitrogen content. Irrigate immediately after fertilization to move the nutrient material down into the root zone. Strawberries may need to be fertilized several times during the growing season, depending on the reaction of the plants. Poor vigor and light green leaves indicate a need for fertilization. Slow-release fertilizers work very well in strawberry plantings because they release their nutrients slowly over the entire season.

Pruning

Trim off all runners as they develop. The runners will weaken the mother plant and reduce fruit size. They essentially become weeds in the planting.

Pests (weeds, insects, diseases)

Weed Control

Strawberries can be mulched either with the traditional straw or with other organic material placed around the plants to an adequate depth; that would control weeds. Most modern and commercial plantings use clear plastic polyethylene mulches. Mulches offer the advantages of controlling weeds, keeping the roots cool and moist, and preventing direct contact of the fruit with soil organisms that can soften and rot the fruit before and after harvest.

Plastic mulches are generally laid down in late Winter over the top of the plants, secured on the sides and a hole is cut for each plant to grow through.

Cultivation around strawberry plants should be kept to a minimum, because of the shallow root system and disturbance that cultivation may cause.

Insects

Weevils- several attack strawberries, both above and below ground. Most insecticides are ineffective, and so abandoning the planting and moving to a pest-free area is recommended.

Spider mites- these tiny insects produce webbing and stippling of the foliage, stunting the strawberry plants and reducing yields and fruit quality. Dusty conditions contribute to spider mite populations. Overhead watering, especially when combined with an insecticidal soap, is effective in controlling most mites by washing them off the plants and destroying their habitat.

Aphids- can damage foliage, stunt plants, and cause damage to the fruit during the early, cool part of the season. Generally, insecticidal soap applied at weekly intervals provides adequate control.

Leaf rolling caterpillars- the salt marsh caterpillar and cutworm will feed on strawberry plants. These can be effectively controlled with *Bacillus thuringiensis* (BT), Dipel, Thuricide, etc.

Slugs and snails- feed on foliage and fruit. They can be controlled with applications of Metaldehyde with repeated applications.

Diseases

Verticillium wilt- is caused by a soil-borne fungus that can cause die-out in strawberry plantings. Avoid land that has previously been planted in susceptible crops, such as tomatoes, potatoes, cucumbers, peppers and nightshade weed. Hecker is a resistant variety.

Root rot - several fungi, but mainly Phytophthora, attacks the crowns and roots, particularly in poorly drained or over-irrigated plantings. There is no control for affected plants. Prevent root rot by planting on raised beds, and not over watering.

Botrytis fruit rot - is a very serious rot of strawberries, also known as gray mold. It is most serious during cool, wet weather. One of the best controls is to use plastic mulch that separates the fruit from direct contact with the ground. Fungicides are essentially ineffective.

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