HS1154

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Growing Strawberries in the Florida Home Garden[1]

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Growing Conditions and Varieties

Temperatures between 50 and 80°F (10 and 27°C) and day lengths 14 hours or fewer are required for the development of flowers and fruit on most strawberry varieties. In the U.S., these conditions occur only for a short period in late summer or early fall, and again briefly in spring. In peninsular Florida, however, this combination of day length and temperature exists for much of the fall, winter and spring. Single-crown (stem) strawberry plants are planted in Florida during the fall, from late September to early November. Flowering and fruit production generally begins in November and continues into April or May. Fruit production over this period is not constant, but occurs in two or three cycles, and can be interrupted by freezing weather. Because the highest quality fruit are produced on relatively young plants with not more than four or five branched crowns, plants are usually tilled under at the end of the fruiting season, and new plants are planted the following fall.

Currently, we suggest three varieties for the Florida home garden: 'Camarosa', 'Sweet Charlie', and 'Festival'. All three varieties produce attractive, flavorful berries suitable for eating fresh or for freezing. 'Camarosa' has been the most productive variety in North Florida, while 'Festival' has been the most productive variety in Central Florida. These varieties are capable of producing 1 to 2 pints of fruit per plant (approximately 300 to 600 g per plant) over the season. Strawberries grow best in a location receiving at least 8 hours of direct sunlight per day. If a full sun location is not available, try to choose a spot that is sunny during the morning and early afternoon. The soil should be well drained and slightly acidic (pH 5.5-6.5).

Soil Preparation and Plant Establishment

Most strawberry plants grown in Florida are planted in double rows on soil that has been mounded into raised beds (Figure 1). After beds are made, drip irrigation tape or tubing can be laid in a 2- to 3-inch-deep (5 to 7.5 cm) trench down the center of the bed. The soil is placed on top of the tubing before fertilizer is banded and covered with the remaining loose soil. Strawberry plants also can be grown in planter boxes, pots, barrels and in other types of containers. Raised beds (as compared to flat beds) create a well-drained soil environment in which roots

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have sufficient oxygen for survival during periods of extended irrigation or rainfall.

Raised beds also make hand harvesting easier. Black polyethylene mulch (1 to 1.5 mils-thick or 0.025 to 0.38 mm-thick) on 48- to 60-inch-wide rolls (122 to 152 cm) is most often used to cover the raised beds. It provides excellent weed control and keeps the fruit cleaner than if it were lying directly on the soil surface. Mulch in colors other than black can be used, provided it is opaque. Clear mulch is not recommended because it does not provide adequate weed control.

the remainder of the fertilizer in a narrow band approximately 1 inch (2.5 cm) deep down the middle of the bed (above the drip line or soaker hose, if they have been placed in the bed).

Transplants are set through slits made in the polyethylene mulch. Bareroot plants are the most common type of transplant available. These transplants may or may not have leaves on them. Those with leaves at the time of transplanting generally produce greater early-season fruit yield than those without leaves at the time of transplanting. Bareroot transplants with leaves, however, usually require frequent sprinkler irrigation from about 10 a.m. to 5 p.m. for the first 1 to 2 weeks after transplanting. Another type of transplant is the plug or containerized transplant. This type of transplant may be available in plastic trays or in small plastic pots. Since the root system of this type of transplant typically stays intact when the plant is pulled from its container, very little sprinkler irrigation is needed after transplanting. Regardless of the type of transplant used, it is important not to set the transplant too deep, covering the crown, or too shallow, leaving roots exposed.

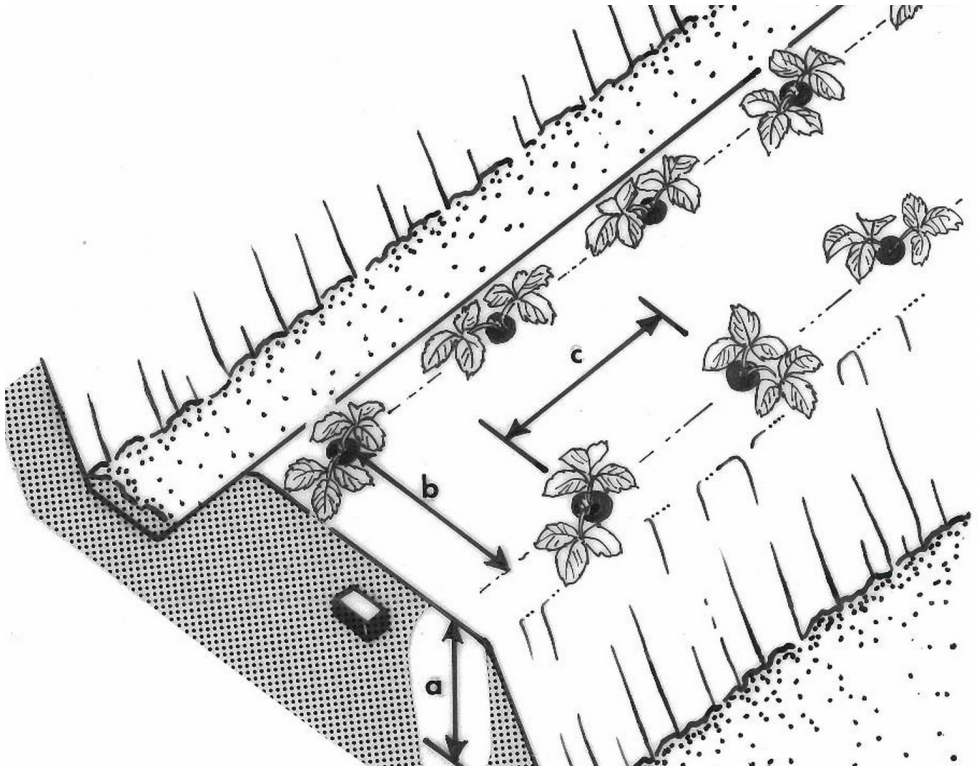

Figure 1. Raised bed design recommended for Florida garden strawberries(a=7-9 inches; b=12 inches; c=12-18 inches)

A fertilizer formula containing nitrogen (N), phosphorus (P) and potassium (K) is essential for successful strawberry growth and fruiting. Two pounds (about 900 g) of a 10-5-10 (N-P2O5-K2O) or similar garden fertilizer with micronutrients (i.e. zinc, copper, iron, manganese and boron) per 10 feet (3 m) of row should be incorporated into the bed before planting. It is recommended that between one-third to one-half of all the N fertilizer should be provided in a commercially available slow-release form (i.e. Osmocote® or similar) to increase nutrient absorption. Incorporate one-fourth of the fertilizer evenly across the top of the bed with a rake. Apply

After the plants are established on the bed (i.e. when leafy bareroot transplants no longer have a tendency to wilt during the hottest part of the day), begin using drip tape or a soaker hose to keep the beds moist. Watering at a low pressure (e.g. 10 psi) for 20 to 40 minutes at the time should thoroughly moisten the beds. Beds can also be watered by saturating the soil between beds, but this method is not as efficient and requires more water than the within-bed drip method. Early in the season when the plants are small, one to two short waterings per week should be sufficient. Later in the season, when the plants are larger and weather is warmer, two or three longer waterings per week will be needed.

Freeze Protection

Strawberry flowers and fruit can be damaged by air temperatures below 32°F (0°C), while the leaves and crowns of the plants that have become acclimated to cool fall and winter weather usually do not sustain any permanent damage unless they are exposed to air temperatures in the low 20s. The most practical method for the Florida gardener to protect flowers from freeze damage may be to cover plants with old sheets or blankets or a commercial polypropylene row cover during the afternoon preceding an expected freeze. The covering should be anchored down on all sides to prevent wind from blowing it off the plants.

Pest Management

One of the keys to successful pest management of strawberries in Florida is to start with healthy transplants, especially plants free of root diseases, spider mites, and nematodes. Growers often face an uphill battle if they start the season with diseased or infested plants. Plants are best purchased from a reputable nursery or garden center.

To control most diseases on leaves, flowers, and fruit, the Florida gardener can apply a protectant fungicide spray product that is formulated for home garden use. Be sure that strawberry is listed on the label, and carefully follow label directions. Removing old, diseased leaves from the plants may help to reduce future leaf and fruit infections. Powdery mildew, a fungal disease that results in leaf distortion and powdery white patches on the undersides of leaves, is usually brought under control with several spray applications of sulfur. Sulfur should be applied when the air temperature is less than 80°F (27°C) to reduce the chance of causing foliage or fruit burn.

The types of insect pests feeding on strawberry plants generally change as the season progresses. Early in the season (i.e., October and November), various types of caterpillars ("worms") are often found feeding on crown, leaf, or young flower tissue. Applications of *Bacillus thuringiensis* insecticide, such as Dipel®, or of a product made of the neem seed with the active ingredient azadirachtin, are usually effective at controlling small caterpillars. Bifenthrin pyrethroid is permitted and effective for armyworm control but pyrethroids in general are damaging to many naturally occurring beneficial insects and mites. Of course, caterpillars in small plantings can be removed and destroyed by hand.

Later in the season, aphids or flower thrips may cause some damage to developing fruit. Malathion, neem products, or bifenthrin can be used to control these pests, although natural predators and parasites in the home garden usually will take care of the problem, if the gardener has patience.

Spider mites (which are tiny arthropods that suck juices from plant leaves) are generally a more persistent pest on strawberries in Florida than are insects. Start examining plants for spider mites in early December, looking especially for plants that have leaves with small patches of yellow, pinprick-sized stipples showing through the upper leaf surface. A hand lens can be used to see the mites moving about on the undersides of leaves. If mites are found on 5% or more of the leaflets examined (1 out of 20 leaflets), it is likely that the population needs to be controlled with applications of a home garden pesticide such as a neem product or bifenthrin. Single applications are usually not recommended. They are most effective when two applications are made (or even three when infestations persist), spaced approximately 5 to 7 days apart. Before using any pesticide, be sure to read and follow all label directions.

Parasitic nematodes (microscopic round worms) and certain soil-borne pathogens can cause problems if strawberry plants are set in the same area year after year. It is advisable to switch your planting to an area that has not been planted in strawberries for two or three years. Avoid planting strawberries in areas where you have just grown tomatoes, potatoes, eggplant, or other vegetable crops that are susceptible to verticillium wilt. Sweet corn is a good crop to plant between strawberry crops. Solarizing the soil during the summer before planting can also help to reduce soil-borne pests and pathogens. County cooperative extension offices have information on this process.

Although bird pests such as robins and cedar waxwings are difficult to control in commercial plantings of strawberries, birds can be effectively excluded from small garden plantings by covering the plants with bird netting.

Harvesting and Storage

A fruit is ready to harvest when three quarters of its entire surface area is red. The fruit starts to deteriorate soon after it has become totally red, so it is best to harvest fruit regularly, generally every two to four days. Ripe strawberries are delicate and bruise easily, so a gentle picking technique is recommended. Fruit that is held between the thumb and forefingers can be snapped from the fruit stem (pedicel) by twisting the forearm and wrist. Strawberries that are not going to be consumed immediately after harvest should be placed in a refrigerator, preferably in a moisture-proof container to keep them from drying out.