

## STRAWBERRIES (*Fragaria* spp.)

***Check your plants immediately upon receipt and remove them from the shipping box as soon as possible. Transplant them out as soon as possible. If you are unable to transplant them out right away, remove any elastics or ties and gently loosen the plants, then store them in a cool place, ideally at 28–32°F (-2–0°C), to discourage rot-inducing pathogens that can start to develop in storage at temperatures above 32°F (0°C). Keep roots damp.***

Johnny's offers two types of strawberries, summer-fruiting (also known as June-bearing) and day-neutral. While they share many cultural requirements, there are differences between the two types and cultural techniques and practices that are specific to each type. The first section of this guide covers practices common to both types, followed by sections on practices specific to each type. Be sure to review all three sections before planting. If you are unsure which fruiting type of strawberry you have, refer to the variety descriptions in our catalog or on our website. Take notes on your observations as you grow to improve upon your success.

## GENERAL CULTURAL RECOMMENDATIONS

### LIFE CYCLE

Perennial. Hardiness varies by variety; refer to our catalog or website descriptions for more information.

### SITE SELECTION

Strawberries grow well in a range of well-drained soil types but require a sunny, weed-free location. Where there is poor natural drainage, they can be planted in raised beds. Optimum soil pH for strawberries is 6.5–6.8, with added organic matter for the best growth. We suggest testing your soil before planting to determine soil pH and fertility, preferably the prior year, then amending accordingly. Your local Cooperative Extension service can provide information and assistance, or you can use a soil test kit from Johnny's.

Select a location where crops of strawberries, raspberries, or vegetables in the Solanaceae family have not been previously grown in the soil. Soilborne pathogens from these crops can also infect strawberry plants.

### SPRING PLANTING

Plant in early spring; an occasional snowfall or frost will not harm newly set plants. Natural spring rains aid in getting plants off to a good start, but if you are unable to plant in early spring, drip irrigation can be laid to help ensure adequate soil moisture. Keeping the soil and roots moist to ensure good root-to-soil contact is key to successfully establishing transplants. Rainfall of 1–2" or the equivalent irrigation each week is recommended, depending on soil type.

### FALL PLANTING

Fall planting is suitable in regions with mild winters (generally Zones 7 and higher). Plant in early to mid-fall, about 6–8 weeks before the first hard frost. This allows plants to develop strong root systems prior to entering winter dormancy. Keep transplants well-watered through the fall to support root growth. Avoid fertilizing at planting; doing so may trigger tender top growth prone to cold injury. Prune off any flower buds or runners that develop to focus the plant's energy on root establishment. Fall-planted strawberries often exhibit more vigorous growth, leading to an earlier harvest in the spring, often eliminating the need for a typical establishment period.

## PLANTING DEPTH & SPACING

Factors that are critical to successfully transplanting strawberries include depth of planting and soil compression. The plants must be transplanted neither too deep or too shallow, and the growing medium must be packed firmly but not hard-packed around the roots.

Space the plants 12–18" apart in rows 3–4' apart. (If planting day-neutral varieties, consult the relevant section below for additional spacing options.) When digging the holes in which you will set the roots, be sure that the hand tools you use (or planter shoes, for commercial growers) penetrate deep enough to facilitate proper positioning.

Set the plants in the holes with their roots hanging straight down. A garden stake or thin wood slat can also be used to tuck the plants into the growing medium by folding  $\frac{1}{2}$ " of the root ends over the stake end and gently pushing the stake and plant straight down into the ground. The roots should not be bent to one side or another beneath the soil surface.

**Care should be taken to set each plant so that the middle of its crown is level with the soil surface** (Fig. 1), and that no roots are damaged in the process of planting.

The crowns should remain free of soil throughout the season; take care to ensure the crowns are not left covered by soil when hoeing, weeding, and cultivating.

## WEED CONTROL

Weed control is crucial to successful strawberry production. We recommend preparing your site the year before planting to remove perennial grasses and to reduce weed pressure. At planting time, the beds should be thoroughly prepared and weed-free. Remove weeds while they are still small with weekly

cultivation during the growing season. Growing on plastic mulch offers excellent weed control, but depending on the lifespan of the plastic, beds may need to be replanted yearly.

## SOIL FERTILITY

Maintain optimal soil fertility with compost or balanced fertilizer to promote healthy, vigorous plant growth. For organic growers, we recommend annual application of compost. Conventional organic growers can fertilize in limited amounts on a regular basis to encourage adequate growth but over-fertilization must be avoided, as it can lead to soft, disease-prone growth and soft berries. To avoid burning the roots, do not fertilize with conventional products until the plants are established, about 6 weeks after transplanting.

## MULCHING

To prepare for winter, apply mulch in early to late November, after 6–10 hard frosts and the plants have started to go dormant. This helps prevent rapid freezing and thawing by maintaining a more even temperature around the plants, which in turn promotes survival and higher crop yields.

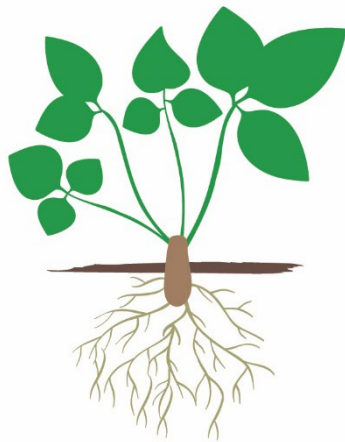
Mulch with salt hay, straw, or any other loose, acid-free and weed-free material. Heavy row cover such as AG-70 is another winter mulch option, especially appropriate if the plants are being grown on plastic. Do not use decayed or wet leaves for mulching as they will mat down and smother the plants; such materials should be avoided.

In the spring when the plants have begun to develop new growth, remove the mulch from the top of the crowns. With the exception of row cover type mulches, the mulch can be raked into the pathways between beds to suppress weeds and prevent mud splash from spring rains, leading to cleaner fruits.

## HARVEST

Select firm, fully red berries. Gently place the harvested berries into a shallow container, no more than 5" deep, to avoid crushing and damaging the fruit. If possible, place berries in a cool, shaded location while continuing to harvest. Store unwashed berries at 32°F (0°C) for 3–7 days or freeze for long-term storage.

**Note:** Heavy rain can damage berry skin and greatly reduce marketable yields, so it is advisable to harvest any ripe berries before predicted rain events.



**Fig. 1: Plant with middle of crown level with soil surface.**

## CULTURAL RECOMMENDATIONS FOR SUMMER-FRUITING TYPES

### ESTABLISHMENT YEAR

Spring-planted summer-fruiting types require an establishment year: encourage the plant to put its energy into becoming established by removing all flower buds during the first year of growth. By doing so, the plant will yield a larger crop the following — or first-bearing—year. As the plant becomes established, the runners will set small daughter plants. Press 2–3 daughter plants per main plant into the soil in mid to late July, to fill in your rows or beds. Allowing any more of the small plants to take root, however, will result in an overcrowded bed. Cut off any additional runners that form during the season to prevent crowding.

### FERTILIZER

Conventional recommendations are for  $\frac{1}{2}$ –1 pound of 10-10-10 fertilizer per 100 ft<sup>2</sup>, to be worked into the soil before planting, with an additional application of  $\frac{1}{2}$  pound per 100 ft<sup>2</sup> as a side dressing during July, followed by another in August.

Organic recommendations are for an initial 2" of compost to be worked into the soil before planting. Additional applications of compost the first year are not necessary because the rate at which nitrogen from compost leaches is lower than the rate at which it leaches from chemical fertilizer. When using granular fertilizer, however, you should be prepared to compensate for wet, rainy periods — which tend to accelerate nutrient leaching — with additional fertilizer applications.

### SUBSEQUENT YEARS

Work in 1–1½ pounds of 10-10-10 fertilizer per 100 ft<sup>2</sup> if growing conventionally, or 2" of compost if growing organically. If using 10-10-10 fertilizer, apply additional side-dressings in July and August, the same as during the establishment year.

Maintain adequate moisture throughout the entire growing season. We recommend the equivalent of 1–2" of water per week, depending on soil type and growing method.

### FRUITING

Summer-fruiting varieties will produce berries all at once as a single crop in June, or earlier in warmer climates.

### RENOVATION

You can expect a well-managed strawberry bed to last 3–5 years. Renovation is a process performed on beds of summer-fruiting varieties to maintain plant health and production.

Follow these simple steps to renovate summer-fruiting strawberry beds.

- Once the berries are harvested, mow the leaves to a height of 3". A lawn mower with the blade set at the highest setting can be used to accomplish this quickly, or for smaller plantings simply clip the leaves with scissors or pruners. Take care not to cut or injure the crowns.
- Narrow the bed with a rototiller to a width of 12–18".
- Each plant should be surrounded by 3–5" of growing space. Remove excess, weaker plants to achieve this.
- Incorporate 1–1½ pounds of 10-10-10 fertilizer per 100 ft<sup>2</sup> if growing conventionally or 2" of compost if growing organically.
- Water well until leaves regrow.

## CULTURAL RECOMMENDATIONS FOR DAY-NEUTRAL TYPES

Day-neutral varieties have much the same cultural requirements as summer-fruiting varieties. Requirements vary during their establishment year, however, and they are not amenable to periodic

renovation but are productive instead for just one to two growing seasons once established.

It is also important to note that production and berry size in day-neutral varieties can sometimes decline during the hottest part of summer. The size and

number of berries generally return to usual once temperatures begin to cool in the fall.

### **ESTABLISHMENT YEAR**

Encourage the plant to put its energy into becoming established by removing all of the flower buds for the first 6 weeks after setting out your plants.

We also recommend that you remove all of the runners during the first year.

Some growers prefer to space the crowns of day-neutral varieties more closely (5–9" in-row spacing for single rows, or 10–20" in-row spacing for staggered double rows), and to remove all runners throughout the lifespan of the bed.

### **FRUITING**

Once established, the plants will set fruit from midsummer through October.

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