

How To Grow Organic Strawberries

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STRAWBERRY FIELDS FOREVER



- **Growing organic strawberries** is my single most favorite fruit to grow in our garden. We have 300' new feet of growing strawberries coming into their second year this year, which means we'll pack a freezer out with strawberries!
- **Growing strawberries** commercially began in the 1700's when a French farmer crossed a North American strawberry with a French strawberry and came up with the strawberries we're now familiar with.
- Strawberries are a member of the **rose [rosacea] family**.
- The "straw" in strawberries came, it is conjectured, from **using straw to mulch** the growing berries early on.

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TYPES OF STRAWBERRIES AVAILABLE

- There are many strawberry varieties available, but there are three major categories.
- The most common varieties are "**June-bearing**" strawberries, a bit of a misnomer in our Northern climate zone as we generally get the bulk of

our berries in the **first week of July**. However, it mainly means that the berries have about a **2 week** picking window.



- The second major category is the “**Ever-bearing**” strawberries. These plants produce smaller crops in the **spring and fall** . My experience with ever-bearing berries is that the **flavor is not as good** as the June-bearing varieties.
- New to the scene are what are called the “**Day-neutral**” varieties. These will produce a **small but steady supply** of berries throughout your growing season, I am told by our plant supplier, Nourse Farms. I don’t have any feedback yet from anyone who’s grown these, but if you have an opinion, **please comment** at the bottom of this post, I’d **love to hear** your opinion.
- The June-bearing berries will still give you the **most berries** in a season, but as the season is **2 to 3 weeks long**, you’ll have to learn how to **preserve strawberries** so you can have them through the winter. We’ll cover that in the “Storing & Preserving Strawberries” section below.

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WHEN TO PLANT

- Strawberries are a very **hardy plant**. We live in the **north** and planted our berries in **April** last year, considerably **before the last frost** and had great results.
- If you live in a **Southerly** climate zone, you can plant your strawberry plants in the **fall**.



- Strawberries are **perennial** plant; you won't get many berries the first season, and some commercial experts say to **pluck off the flowers the first year** so the plants can get stronger.
- If you plan to plant strawberries this year, you should order **no later** than the **end of March** (and that might be pushing the availability of some varieties).
- If you get a **late frost forecast** after your berries bloom, protect the blossoms with **row covers** if possible, or run an **overhead sprinkler** to ice-over your blossoms...this will protect your berry crop.
- I purchased our strawberries from **Nourse Farms** and was pleased with their service. Just Google them and they'll come right up at the top of that search query. I was able to order strawberry plants in January and have them shipped at the end of March.

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WHERE TO PLANT

- Choose an area of your garden that receives, at the very least, **6 hours of sunlight** daily.
- In **Northern** climate zones, **8 to 10 hours of sunlight** is preferable as the nights are cooler. Our berries here in NE Washington State get **10+** daily, which is **ideal**.



- In **Southern** climate zones, some **afternoon shade** is good so the berries don't get cooked.
- **Ever-bearing** strawberries are **more suited** to **Northern** climate zones, although some of the newer varieties being developed may overcome this obstacle.
- Check with your berry plant **supplier** for the **best varieties** available for your area. You might try half a dozen varieties to find out which one **you like best** if you have the space to do so.

- **Don't plant** strawberries **near the root zones** of trees – generally the area where the branches of the tree extend to.
- As do many garden crops, strawberries like **well-drained** sandy loam soil with lots of **organic materials** mixed in.
- While it's not a problem in most areas, strawberry plants are **susceptible** to more diseases if the soil is **salty**.
- Strawberry plants are **highly sensitive to salt**. Too much salt in your soil can cause “**leaf scorch**,” reduce fruit yields (sometimes severely), and even **kill** your plants.

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PREPARING THE GROUND TO PLANT STRAWBERRIES

- Strawberries will **grow decently** in soils with a **pH level range of 5.0 to 7.0**, but they thrive best toward the middle of this range.
- Nitrogen, phosphorus, potassium, magnesium, calcium, sulfur, iron, manganese, boron, zinc, copper; almost all of these can be provided by **supplementing** the rows with several inches of **compost** or **composted manure**, mixed to a depth of **10 to 12 inches**, before planting.



- Choose an area that is **grub free** and **weed free**; if strawberries have been in the area in the past **3 years**, avoid the area as it may still contain **soil-borne pathogens** from the previous plants.
- **Don't choose** an area that has been planted with **grass** or **pasture** recently; they tend to harbor lots of grubs and/or weeds.
- Also **avoid areas** where tomatoes, potatoes, peppers, or eggplant have been planted as well; these plants may have infected the soil with **Verticillium Wilt**, which many strawberries are **susceptible** to.

- Strawberries are **heavy potassium users**; supplement additional compost or composted manure to increase your soil's potassium levels.
- As mentioned before, your soil should drain well – but not too well. If your soil **drains too quickly**, organic matter (such as compost) can slow down the release of moisture. If it **drains too slowly**, compost can also help it to drain faster.

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CHOOSING THE BEST VARIETIES FOR YOUR AREA

- You'll want to make sure you grow strawberries suited to your area. A small patch of **30 square feet (3' x 10')**, if properly maintained, can produce 10 to 15 pounds per year for 3 to 5 years.



- Check with your **county extension** to learn what diseases are prevalent in your area. Choose varieties that are **resistant** to those diseases.
- Most **reputable suppliers** of strawberry plants should be able to help you choose the **right variety** for your climate zone.

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INDOOR/CONTAINER STRAWBERRIES

- The only reason for planting strawberries indoors is to grow **containerized strawberries**. Otherwise, they are a cold-hardy plant and can be planted outdoors any time in the **early spring** once the ground is thawed.



- If you want to plant strawberries in containers, it's best to use a **10 to 12 inch deep container** as strawberry roots like to go deep, and **at least 6" diameter** for 1 plant.
- Use a **good potting soil mix** in your containers, and make sure there's plenty of **drain-holes** in the bottom of the container as well.
- When you're planting a strawberry plant, you want to make sure the **roots are pointing straight down** into the soil and that the **soil level** is at the **collar** of the plant (where the green starts).

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PLANTING STRAWBERRIES FROM SEED

- In the past few years, some gardeners have started planting **strawberries from seed**, especially the "**Alpine**" strawberry. While I've not personally tried this yet, it is intriguing.



- When you get the seeds, **freeze** them for a **couple weeks**. Freezing emulates winter and prepares your seeds for **spring**.
- You can plant your seeds in soil **blocks or trays** about a **½ an inch** deep.
- Keep the soil moist and in direct light – preferably **sunlight**. They'll **germinate** in about **2 to 3 weeks**.
- Once they've developed at least **3 true leaves**, you can plant them **outdoors**.

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TRANSPLANTING STRAWBERRY SEEDLINGS OUTDOORS

- Strawberries are hardy plants, but if temps are still dropping to **20°F or below**, **hold off** transplanting your seedlings or planting stock that you've ordered.
- It's best **not** to have your plants **shipped in**, though, **until** your local weather is **past the danger** of **sub-20°F** weather.



- Last year we marked out **9 rows – about 35 feet in length** – prepped the soil, and ordered our berry plants.
- When we received our 500 plants last spring (300 for us, and 200 for our dear Ukrainian neighbors, Viktor and Angelina), we had to wait **3 days** to plant.
- On planting day, we put our 300 plants in **water** with some **gelatinous goo** provided by Nourse Farms (to keep the roots moist longer).
- When we planted our plants, we **trimmed the roots** to about **4 or 5 inches** in length, stuck our trowel into the soil as **deep** as it would go (about **6 inches**), and moved it back and forth to create a hole in the soil, then inserted the roots.
- We then pulled out the trowel and packed the soil in around the roots up to the **plant collar** (where the roots and plant meet).
- We spaced the plants about **12 inches apart** (the **recommended** distance is **12 to 18 inches**, but as I *love* strawberries, I wanted as many as we could squeeze into each row. We spaced our rows **42 inches apart** so I could **rototill** between the rows without destroying the plants.

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SUCCESSFULLY GROWING STRAWBERRIES

- With **June-bearing** strawberries, the first year you plant them, the best practice is to **remove flowers a couple time per week** to allow the plant to gain strength without having to compete with the berries.
- Honestly, this was painful to do...I wanted strawberries badly. However, I did as I was advised and the plants became **very vigorous**.



- It is advisable if, after your plants have flowered, if a **late frost** is predicted, to either use **overhead watering or row covers** to protect your berry crop.
- We had lots and lots of runners later in the summer. Because some plants had died (very normal), we had gaps in the rows. The runners filled in these spots and more. By **fall** we had probably a plant **every 6 inches**.
- This process of using runners to fill in the gaps is called “**renovating**” your strawberry patch. You can do it **annually** to replace **weak** plants. Some friends of ours, who’ve grown more strawberries than we have, dig these runners up and plant new rows with them.
- In the **fall**, I set my lawnmower on the highest setting and **mowed the berry plants**. This wasn’t easy to do either emotionally, but I am told it will pay off this year.

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MULCHING & WEEDING

- During the **spring and summer**, we **mulch between the rows** of berries to keep the soil moist and to keep the weeds under control.



- We go right up to the plants with the mulch because the **straw keeps the berries from contacting the soil**, preventing them from rotting and keeping them cleaner.
- Because strawberries don't do well with competing weeds, you'll need to make sure to keep your berries as **weed-free** as possible. **Be careful** not to damage the strawberry plant **roots when weeding**.
- We use a **clean barley straw** for mulch that we purchase in the late summer and early fall.

- Mulching in the **late fall** before the weather gets **below 15°F** is **recommended** to protect the crowns of the plants. **6 inches** of straw should be satisfactory.
- **Snow** is also a good mulch if you can count on it, but **if not**, use **straw**.

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WATERING STRAWBERRIES



- In our area, we often have a wet June, so we don't need to water our strawberries much at all, but on a **drier year** and after June we give them about an **inch of water** every **3 to 5 days**.
- If you're using **overhead watering**, it's best to water in the **early morning** so as to avoid having the plants stay wet too long.

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COMPANION PLANTING AND ROTATION CONSIDERATIONS

- Strawberries **do well** with onions , beans, thyme, borage, sage, and marigolds.
- **Borage** strengthens **resistance** to insects and disease, and **Thyme**, planted as a **border** around a strawberry patch, is reputed to **keep away** bad worms.



- **Beans** enrich garden soil by “**fixing**” **nitrogen** into the soil from the air, improving conditions for any crop following them.
- **Onions** are reputed to help strawberries **ward off** disease.
- **Sage** is said to do the same, plus it helps the strawberry plant by **repelling insects**.
- **Marigolds** **deters** root nematodes from strawberries, plus make your strawberry patch even more beautiful.
- **Bad companions** for strawberries are anything in the **Cabbage family**; brussels sprouts, cauliflower, and kohlrabi included.
- The **worst companions** for strawberries **are strawberries**. You should **plow** your strawberries under every **5 years or less** and **replace** them with something else in order to rid the soil of pathogens that are harmful to strawberries.

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HARVESTING STRAWBERRIES

- It's pretty easy to know when a strawberry is ready to pick and eat as they're **bright red in color** and **sweet to the taste**.



- **June-bearing** berries will ripen in June or July for the most part, while **Ever-bearing** berries ripen in June, then usually again in September, and **day-neutral** varieties ripen from June until frost.
- Ripe strawberries are **very soft**, so pick them with **care**. Watch for **rot** and **pitch** the berries into the **aisle** behind where you're picking or to your chickens if you have them. This **prevents** the rot from **spreading** to good berries.
- You can pick your berries with **stems on** or **remove the stems** as you pick. Leaving the stems on allows them to keep a bit **longer**, while picking them **without stems is ideal** if you're going to eat them **immediately**, freeze them, or make jam within a day or two.
- Harvest every **2 to 3 days** during the height of the harvest.

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STORING AND PRESERVING STRAWBERRIES

- If you want to keep your strawberries for fresh eating, **refrigerate** them immediately **after picking**. **Don't wash** them **until** you're **ready to eat** them though.
- Even at that, though, strawberries, depending on the variety, will keep only for **2 to 6 days** in your fridge.



- Our favorite **long term** preservation of strawberries is **freezing**.
- We **wash** the berries, then let them **drain** until relatively dry, spread them on **jelly roll pans**, and freeze them.
- Then we remove them from the pans and put them in **zip lock-style bags** for later usage in strawberry smoothies or ice cream.
- Our second favorite long-term storage method for strawberries is **freezer jam**. You can also make cooked jam, but we much prefer freezer jam as it **retains the fresh flavor** of the berries. Mmmm!
- We use the jam for **toast, sandwiches, ice cream topping**, on flake cereals, and even as a sweetener/flavor enhancer for those pithy early spring strawberries from somewhere down South.

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PREVENTATIVE AND NATURAL SOLUTIONS TO COMMON PESTS



- The **Strawberry Root Weevil** is a small, $\frac{1}{4}$ **inch** long weevil whose larvae are also $\frac{1}{4}$ inch long, **fat, legless**, and **white with brownish heads**.
- The weevils themselves cause mainly cosmetic damage until **mid-summer** when they lay their eggs in the soil around the plants.
- The eggs hatch the larvae which **feed on the roots and crowns** of the berry plants, stunting them, decreasing subsequent crop yields, and potentially killing your plants.
- To assess the seriousness of your infestation, once you see **leaf damage**, grab a **flashlight after dark** and look through your patch.
- At the first sign of leaf damage, an after-dark stroll through the garden with flashlight in hand will help **gauge the extent** of the invasion.
- The **best organic solution** may be **Diatomaceous Earth (DE)**. Food grade diatomaceous earth, which is composed of powdered fossilized algae, possesses razor sharp edges which are innocuous to most animals but **fatal to insects**.
- When insects such as slugs, thrips, fly maggots, aphids, grubs, caterpillars, or mites ingest diatomaceous earth, it punctures their guts and they die from **dehydration**.
- You do have to keep your powder **dry** with DE, though. Once it **rains or you irrigate**, you'll have to **re-apply** it on and around your plants.
- **Organic permethrins** are also effective against weevils and their larvae.
- **Rotate** your berries out of the area ASAP to regain control from weevils.



- The **Tarnished Plant Bug** (*lygus lineolaris*, for those of you who just need to know the Latin name), are **brown to gray oval, winged bugs**.
- The adults are about $\frac{1}{4}$ **inch** long, and their **nymphs** are about the same size and shape, but are **greenish and wingless**.
- These pests **feed on the flower buds** and cause **enlarged brown seeds** and strawberries that we call "**monkey-faces**" or "**nubbins**."
- To prevent an infestation of these bugs, **mow your plants in the fall** and **rid the plants of weeds** so the bugs don't have any place to

overwinter near your plants.

- The only time you need to **check** for these bugs is **during bloom**. Take a **white paper plate** or similar, hold it under a plant, and **lightly rap** the plant with your hand. If you have an infestation, you'll see one or more of them drop onto the plate.
- **Permethrins** are the **best organic way** to rid your plants of this pest, but you don't want to kill good insects either, so use this **only before the bloom**.



- **Strawberry Sap Beetles** prefer to eat **over-ripe** strawberries. These are also known as “**picnic**” **beetles**.
- Strawberry sap beetles are about $\frac{1}{4}$ **inch** long and black with **4 yellow-orange spots** on their backs.
- The easiest way to prevent an infestation of this beetle is to **not allow your berries to get over-ripe**.
- **Slugs** are a significant pest in strawberry patches. They range from $\frac{1}{4}$ **inch long to 2 inches** long or more, depending on your region.
- You'll know you have slugs if you see **small holes** in your berries and **slime trails** on the ground, berries, and leaves of your plants.



- Slugs almost always eat your berries during the **nighttime** or on **cloudy/rainy** days.
- One way to control slugs is to **water deeply but less frequently** as slugs thrive in moist conditions.
- While I haven't tried this, I've been told that if you **bury pans** to soil level and put **beer** in them, the slugs are attracted to the beer and will drown in it.

- Another method, mentioned above, is to powder the area with DE (**diatomaceous earth**). You just have to make sure to keep it dry or it doesn't work, or replace it once it gets wet.



- **Spittle Bugs**, or spit bugs, are young froghoppers. It's easy to spot these disgusting little bugs because they hide in a **huge wad of spit**.
- Spit bugs **feed on the stems** of strawberries and other plants by piercing them and sucking out the juice. They can temporarily stunt your plants, although the damage is usually not permanent.
- The **best method** of ridding your plants of these pests is to **crush them** as the spittle protects them from most insecticides.

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STRAWBERRY DISEASES

- **Winter injury** is caused by alternating warm and cold spells during the winter months. **Mulching** with straw or chopped leaves will typically allay this type of damage.



- **Slime mold fungi** may grow on strawberry plants during warm, wet weather, particularly in warmer climates in the **spring and fall**.
 - The jelly-like slime mold is usually **tannish or whitish** and comes out of the soil and onto your berry plants, where it forms an assortment of odd-shaped and colored **crusty**, spore-covered formations.
 - While slime mold **doesn't kill** plants, it can smother individual leaves or fruits and is gross to look at. They **disappear** once the warm, moist weather leaves.
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- **Powdery mildew** appears on leaves as **white patches** on the lower leaf surfaces or on the flowers and fruit.
- Leaf infection doesn't seem to affect production, but flower and fruit infection does.
- **Too much moisture** promotes this mildew, so **don't water late in the day**.
- **Avoid too much nitrogen** in the soil, and plant **resistant** varieties.
- You can also make an **organic fungicide spray** using bicarbonate of soda (baking soda). In a gallon of water add a couple drops of **organic olive oil**, a couple drops of environmentally-friendly **liquid soap**, and 3 tablespoons of **baking soda**. Spray it on your strawberry plants to effectively control fungal diseases.



- **Leaf spots** are a very common problem in strawberry plants. They include "leaf scorch" (red spot), "leaf spot," "purple leaf spot," and other similar diseases.
 - You'll see these spots show up as **blotches or lesions** that may cover entire leaves.
 - The **best cure** is to **plant resistant varieties** in your patch. You can also "**renovate**" your patch with fresh runners to reduce the affect of this disease. **Mowing** your patch **in the fall** will also reduce the disease the following year.
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- **Anthracnose** is a hot, humid climate disease (we don't have to worry much about that in our neck of the woods).
- **Tan or light brown** circular spots at first appear on your berries, which then become darker and sunken. It occurs on both green and ripe fruit during hot, humid weather.
- **Planting resistant varieties** and **watering in the a.m.** can help prevent this malady. Because it's caused by splashing water, **mulch** has been noted to help reduce anthracnose by reducing splashing of infected water.



- **Red stele** is a soil-borne fungus that attacks the roots of strawberry plants. You can see the **roots** turning a **reddish color**, and then the **leaves change to red, yellow, or orange colors** and the plants will become stunted.
 - **Planting resistant varieties** is the **best preventative measure** against this ailment. Also, planting in soil that **drains well** (or adding plenty of compost) will help prevent red stele as well.
 - **Over-watering** is also a cause of this disease, especially in soils that don't drain well.
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- **Verticillium Wilt** often strikes the first year your berries are planted. It will show up in your leaves between the veins.
- The older leaves will show **browning** and **may die**, while the younger leaves remain green but stunted.
- It is often brought on by **hot temperatures** and dry spells.
- **Planting resistant varieties** in areas where it has been a problem has been successful.



- **Black Root Rot** is caused by water-logged, poorly draining soil, freezing, or nematodes, or a combination of any of these.
- The symptoms are **roots that turn dark** and lose their feeder roots, causing the plant to lose its vigor.
- Obviously, in the list above, **avoiding poorly draining** clayish soil would be a good start. Adding **organic matter** to the soil would also be effective.



Figure 12. Root galls of root-knot nematodes.

- **Parasitic Nematodes** are small, roundish worms that are very tiny – 1/64 inch to 1/16 inch long.
- These worms burrow into plant roots and create “**knots**” in the roots. Symptoms include stunted plant growth, leaves that turn **yellow**, smaller crop yields, fewer runners, and **loss of overall plant vigor**.
- Because they’re so small, it takes **special equipment** and trained specialists to diagnose this issue, so the **best solution** is to **plant nematode free** plants in nematode free soil.
- The best way to do this for most gardeners is to **rotate** your plants to a **new area** of your garden.



- **Gray mold** is a very common ailment that occurs on the surface of your berries. Very often it starts where a berry is in contact with the soil or other infected berries.
 - **Mulching with straw** is effective in preventing this mold as it keeps the berries from contacting the soil.
 - **Removing any infected berries** daily is a very effective way to keep gray mold under control in your garden. Keep your **ripe berries picked** also. Overripe berries rot quickly.
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- **Leather rot** causes a **bland** berry taste in strawberries when some berries contact dampish soil.
- Some berries change colors with this rot, but some don't. Because the **flesh stays firm**, it is called leather rot.
- **Watering early in the day** helps prevent leather rot. **Mulching** is also effective in keeping the berries from contacting damp soil.

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