

Garden to Gut, **Tomato,** Comprehensive Grow Guide

Specs

- Full Sun
- Annual
- Berry
- Heavy Feeder
- Warm Season
- 2-3 for difficulty

Introduction

The record for the most tomatoes grown on a single plant is 32,000, highlighting the incredible productivity this plant can achieve under ideal conditions. As moderate feeders, tomatoes belong to the Solanaceae family and are grown as annuals. They thrive in full sun with well-draining, fertile soil, preferring a slightly acidic pH of 6.0 to 6.8. Depending on the variety, tomatoes typically take 60 to 100 days from planting to the first harvest and yield about 5 to 15 pounds per plant under average garden conditions. They have moderate water requirements, needing consistent watering 1 to 2 times per week to maintain evenly moist soil without waterlogging. In Atlanta, tomatoes are rated 3 out of 5 in difficulty due to challenges such as susceptibility to diseases in the area's humid climate, issues like cracking or blossom-end rot from inconsistent watering, wildlife interference, and the need for staking or caging to support their growth. Despite these challenges, tomatoes can be successfully grown with attentive care and preparation.

Planning

Season

Tomatoes are a warm-season crop, with the growing season in Atlanta typically spanning from April to October. They are usually planted between April and May. Active growth occurs at temperatures between 60°F and 90°F, although they can tolerate a broader range from 50°F to 95°F. However, exposure to temperatures below 50°F can stunt growth and reduce fruit quality, while temperatures above 95°F can cause issues such as blossom drop and hinder fruit development. To mitigate temperature stress, gardeners can apply mulch to stabilize soil temperatures and use shading techniques during extreme heat. In Atlanta, tomatoes grow actively from April to October and are typically harvested from May to October.

Soil and rootzone

Tomatoes are heavy feeders that thrive in well-drained, fertile soil rich in organic matter. The soil should have a pH range of 6.0 to 6.8 and be loose and well-aerated to support healthy growth. For tomatoes, it is crucial that the soil remains consistently moist but not waterlogged to prevent problems such as root rot or blossom-end rot. The root zone of tomatoes typically extends 12 to 24 inches deep and 24 to 36 inches wide around the base of the plant, providing ample space for strong root development and efficient nutrient uptake to support vigorous growth and fruit production.

Structural needs

Tomatoes, especially indeterminate varieties, require structural support to manage their growth effectively and ensure healthy development. Several strategies are available, and the choice depends on preference, budget, tomato variety, and experience level. Common methods for supporting tomatoes include staking, caging, trellising, the Florida weave, and stringing, each with its own benefits and considerations. For indeterminate varieties, which can grow tall and vine-like, methods such as stringing, trellising, and staking are particularly popular, with a minimum support height of 5 feet to accommodate most of the season's growth. Ideally, a trellis system 7-8 feet tall is recommended for optimal support, although indeterminate plants can grow even taller if allowed. For determinate varieties, which have more compact growth, caging, staking, and the Florida weave are widely used, requiring supports around 3-4 feet tall or as specified by the variety.

Staking involves driving a sturdy stake into the ground before planting to avoid damaging the root system, then gently tying the plant to the stake at intervals as it grows. Tomato cages, readily available at garden centers, are placed around the plant and provide a simple, self-contained support structure, with ties added as needed. Trellising involves training the plants along a vertical structure, such as a fence or frame, to encourage upward growth. The Florida weave uses stakes spaced along a row of plants, with twine woven between the stakes to support the plants collectively. Stringing involves tying a string from an overhead support to the base of the plant, allowing the plant to climb the string. All these methods promote better air circulation, make pruning and harvesting easier, and support healthier plants overall by preventing sprawling growth and reducing contact with the soil, which can harbor pests and diseases.

Difficulty

We have rated tomatoes a 3 out of 5 in difficulty for growing in Atlanta, Georgia.

Tomatoes face challenges such as high nutrient demands, susceptibility to pests like aphids and hornworms, diseases such as blight and blossom-end rot, and wildlife stealing fruit, all of which can significantly impact their growth and fruit quality. However, these challenges can be managed with proper care. Tomatoes are adaptable to different soil types and resilient in warm climates, and their challenges can be balanced with consistent watering, staking for support, and regular fertilization. Despite these hurdles, tomatoes are highly rewarding, capable of producing bountiful, flavorful harvests throughout the growing season. They offer nutrient-dense produce that is versatile in both cooking and fresh eating. Varietal differences play a significant role in difficulty; larger-fruited varieties often pose greater challenges due to increased susceptibility to splitting, fewer fruits per plant, and greater attraction to wildlife. For this reason, we suggest beginner gardeners start with cherry or grape tomato varieties, which are easier to grow and tend to yield better results. Overall, tomatoes are an excellent choice for gardeners with some experience who are ready to cultivate this versatile and productive plant.

Planting

Spacing

When growing tomatoes, proper spacing is crucial to ensure healthy growth and optimal yields. The recommended spacing for tomatoes ranges from 18 to 36 inches, with the variation depending on varietal differences, pruning practices, and the type of structural

support used, such as cages or trellises. Following the appropriate spacing for the specific variety allows the plant sufficient room to grow and thrive. If you choose to plant more densely, monitor carefully for signs of disease, prune regularly to improve air circulation, and consider thinning plants if needed to maintain overall health. Proper spacing ensures adequate air circulation, room for root expansion, and efficient access to nutrients, all of which contribute to maximizing the productivity and health of your tomatoes.

Direct Sowing

To direct sow tomatoes, plant the seeds 1/4 inch deep in well-prepared soil, spacing them 3-4 inches apart to allow for thinning later. After sowing, gently press down on the soil and water thoroughly to ensure good seed-to-soil contact. Thinning is an essential step, as not all seeds may germinate, and this process enables you to select the healthiest and most vigorous seedlings while removing weaker or slower-growing ones. When the seedlings are established, thin them to the recommended spacing of 18-36 inches to encourage strong growth and prevent competition for nutrients, light, and water. Throughout the germination process, keep the soil consistently moist but not waterlogged to promote even sprouting and robust seedling development.

Transplanting

Transplanting tomatoes is an excellent way to get a head start on the growing season, resulting in earlier and larger yields. To transplant tomatoes, either start seeds indoors 6–8 weeks before the last frost or purchase healthy transplants from a nursery. Dig a hole larger than the root ball of the seedling and carefully remove the seedling from its container, being cautious not to damage the young roots unless the plant is root-bound, in which case gently loosen the roots. When planting, bury the seedling deeper than it was in its container, covering part of the stem up to the first set of true leaves; this encourages the development of a stronger root system. Fill in the hole with soil, gently firming it around the base of the plant to eliminate air pockets. Water the tomato plant thoroughly after planting to provide moisture and settle the soil, giving it a strong foundation for the growing season.

Maintenance

Watering

Germination (sowed) (5-10 days)

When tomatoes are germinating, they require consistently moist soil. Water lightly every day to every other day for 5 to 10 days, or until the seeds germinate, ensuring the top inch of soil stays moist without becoming waterlogged. Well-draining soil is essential to prevent waterlogging, which can hinder germination. Regularly check the top inch of soil; if it feels dry to the touch, water gently to restore moisture.

Seedling (sowed) (2-3 weeks)

Once tomato seedlings have sprouted, slightly reduce the watering frequency while watering slightly deeper. It is important to maintain consistent moisture for the developing roots. Water every other day, or daily if environmental conditions are particularly hot or dry. Keep the top 2 inches of soil moist, allowing the top half inch to dry out between waterings. Use your finger to check the soil depth to the first knuckle (approximately 2 inches); if it feels dry at that depth, it is time to water again. This watering schedule should be maintained for 2 to 3 weeks until the plant transitions into its juvenile stage.

Juvenile (transplanted and sowed) (3-5 weeks)

Tomatoes develop 2 to 4 sets of true leaves as they transition into the juvenile stage. At this point, reduce watering frequency and focus on watering more deeply to encourage robust root development. Aim to water 3 to 4 times a week, ensuring the root zone, which extends 6 to 8 inches deep during this stage, remains consistently moist but not waterlogged. As the juvenile growth stage progresses, typically lasting 3 to 5 weeks, gradually taper off watering frequency and prioritize deep, less frequent watering. Adjust your schedule based on environmental factors like temperature and rainfall to ensure the plant's needs are met without overwatering.

Matured (60-100 days from germination to maturity)

Tomatoes reach maturity when they develop an extensive root system, robust vines, and flower clusters or fruits. At this stage, water deeply and less frequently, targeting the root zone, which extends 12 to 24 inches deep. Depending on environmental conditions, such as heat or drought, mature plants typically require watering 1 to 2 times per week to ensure optimal fruit production and growth. Refer to your plant calendar to determine expected watering needs and adjust based on the plant's appearance and the surrounding conditions to prevent stress.

Pruning

As previously stated, tomato plant varieties are classified into two categories: determinate and indeterminate, and the pruning approach differs between them. For determinate varieties, pruning is generally unnecessary unless parts of the plant are diseased or

damaged, as determinate tomatoes produce fruit in a concentrated period and benefit from retaining their foliage. For indeterminate varieties, maintenance pruning is essential to reduce disease by increasing air circulation and to direct the plant's energy toward fruit production. Indeterminate tomato plants can be grown as single-stem or multi-stem plants, depending on your preference and spacing.

If you opt for the single-stem approach, prune all suckers that grow in the axis between the main stem and the lateral branches. This approach simplifies trellising, allows for higher density planting, and is recommended for beginners due to its simplicity and effectiveness. For a multi-stem approach, allow the first 1–2 suckers below the first flower cluster to grow into additional main stems, but limit the total number of stems to two or three. As these new stems grow, you can allow 1–2 suckers on each to develop while continuously pruning any additional suckers. This method can yield a greater overall harvest but requires more careful management to prevent energy diversion from fruit production.

Regardless of the method, prune any leaves or stems rubbing against one another, especially between plants, to reduce the risk of disease. Later in the season, closer to the last expected frost (typically early to mid-October in Atlanta), look to top your indeterminate tomato plants. Topping involves cutting the main stem two leaf nodes above the last fruit cluster. This redirects the plant's energy toward ripening existing fruit instead of producing new growth. Topping should be done 4–6 weeks before the last frost to ensure the plant has sufficient time to complete fruit production. By following these pruning guidelines, you can maintain healthy and productive tomato plants throughout the growing season.

Fertilizing

Tomatoes are a heavy feeder. For leafy growth, they primarily require nitrogen; for fruit production, they require potassium; and for overall plant health, they require phosphorus. Tomatoes absorb these nutrients in high demand, making regular feeding throughout the season essential. It is always a good idea to get a soil test before planting to understand the nutrient levels in your soil. Before planting tomatoes, amend the soil with good compost and add a natural nitrogen fertilizer like blood meal or alfalfa meal. Apply compost and these amendments 2 to 3 weeks before planting to allow the nutrients to integrate into the soil. After the tomatoes produce their first flowers, shift your focus to a fruit production fertilizer. Fertilize with natural nitrogen sources like blood meal or alfalfa meal every 3 to 4 weeks during early growth. When flowers appear, reduce

nitrogen and apply high-potassium fertilizers, such as kelp meal, every 4 weeks to support fruit production. Additionally, side-dress with phosphorus sources such as rock phosphate once or twice during the growing season for sustained availability. Tomatoes also commonly lack adequate calcium, which helps prevent blossom-end rot and strengthens cell walls. Incorporate calcium sources like gypsum or crushed eggshells into the soil at planting time.

Common problems

Blossom end Rot

- **Symptoms:**
 - **Dark Sunken spots:** Initial symptoms include small, dark, water-soaked spots on the blossom end of the fruit (opposite the stem end). These spots enlarge and become sunken and leathery as the condition progresses.
 - **Leathery Texture:** The affected areas may turn brown to black and develop a tough, leathery texture.
 - **Fruit Deformation:** Leaves may develop yellow spots that eventually turn brown.
- **Cause:** Blossom end rot is primarily caused by a calcium deficiency in the fruit, which is often exacerbated by inconsistent watering practices. Rapid fluctuations in soil moisture, high soil salinity, or excessive nitrogen can interfere with calcium uptake. The condition is not caused by a pathogen but rather by environmental and cultural factors.
- **Solution:**
 - **Consistent watering:** Ensure consistent soil moisture to help with calcium uptake. Water deeply and regularly, especially during dry periods, to maintain even soil moisture levels.
 - **Calcium Supplementation:** Apply calcium fertilizers or foliar sprays. Products such as calcium nitrate or gypsum can be used to increase calcium availability in the soil.
 - **Mulching:** Use mulch to retain soil moisture, regulate soil temperature, and reduce evaporation. Organic mulches like straw, compost, or wood chips are effective.

Early Blight

- **Symptoms:**
 - **Dark Spots with Concentric Rings:** small, dark brown spots will start to appear on older, lower leaves. They have distinctive concentric rings, giving them a target-like appearance. The spots can enlarge and merge, forming irregular blotches
 - **Leaf Yellowing and Premature Death:** As the disease progresses, the area of the leaf outside the tissue may turn yellow. Eventually as the diseases become more prominent the entire leaf may turn yellow, wither, and die.
 - **Stem and Fruit lesions:** dark sunken lesions can develop on the stem and on the fruits.
- **Cause:**
 - Caused by the fungus *Alternaria solani* can be promoted by warm, humid weather and is often exacerbated by long periods of leaf wetness.
- **Solution:**
 - **Ensure good air circulation:** by pruning for air flow and maintaining proper spacing of the plant
 - **Remove any affected plant parts:** to prevent the spread of the fungus
 - **Apply fungicidal treatments:** if needed, such as neem oil or copper based fungicides
 - **Practice crop rotation:** to avoid the build up of *Alternaria Solani*

Septoria Leaf spot

- **Symptoms:**
 - **Small, circular spots:** Small, water-soaked spots on leaves, usually 1/16 to 1/4 inch in diameter, with dark brown margins and gray or tan centers. As the spots enlarge the centers become more papery in texture, while dark margins remain distinct
 - **Yellow Halos:** Surrounding the spots you may notice yellow Halos
 - **Leaf Blight:** Severely infected leaves may turn yellow and drop prematurely.
 - **Fruit infection:** In severe cases, the infection can spread to the fruits, causing dark, sunken spots.

- **Cause:** Septoria leaf spot is caused by the fungus *Septoria lycopersici*, which thrives in warm, wet conditions. The spores of this fungus are spread by wind, rain, splashing water, and contaminated tools and hands.
- **Solution:**
 - **Ensure good air circulation:** by pruning for air flow and maintaining proper spacing of the plant
 - **Remove any infected parts:** Regularly prune and remove infected leaves, flowers, and fruits to reduce the spread of the fungus.
 - **Apply fungicidal treatments:** if needed, such as neem oil or copper based fungicides
 - **Crop rotation:** with non host plants, to prevent the build up of the fungus

Tomato HornWorms

- **Symptoms:**
 - **Visible hornworms:** Tomato Hornworms are large green caterpillars, with V-shaped markings along their body. They have a prominent horn-like tail and can grow up to 4 inches long. They can be found on the undersides of leaves, stems, or along the fruit of the Tomato plant.
 - **Leaf damage:** One of the first signs of Tomato Hornworms, is large irregular holes in the leaves. They can defoliate parts of plants rapidly quick
 - **Eggs:** Hornworms eggs are hard to spot, but are small spherical eggs either pale green or white. They are usually layed singularly or in small clusters.
 - **Droppings:** Look for dark green or black droppings (frass) on the leaves and ground beneath the plant. These droppings are a clear sign that hornworms are present.
 - **Fruit Damage:** Hornworms can also chew on green tomatoes, leaving large, open wounds on the fruit.
- **Cause:** Tomato hornworms are the larvae of the five-spotted hawk moth (*Manduca quinquemaculata*). The adult moths lay eggs on the undersides of leaves, which hatch into the incredibly destructive caterpillars. They can eat an immense sum, very fast, and are attracted to the foliage of plants.
- **Solution:**
 - **Physical removal:** Regularly inspect your plants and pay close attention to look on the underside of leaves. Physically remove any tomato hornworms you see or hornworm eggs.

- **Neem oil:** apply neem oil or insecticidal soap to deter Hornworms from feeding
- **Companion planting:** Planting companion plants such as dill, basil, or marigolds can deter moths from laying eggs on your nightshade crops

Cracking/splitting

- **Symptoms:**
 - **Radial cracking:** crack radiate outward from the stem of the tomato, these cracks can be shallow or deep
 - **Concentric cracking:** circular cracks form around the stem end of the tomato, the cracks may form rings around the top of the tomato and can vary in depth.
- **Cause:** cracking is caused when the fruit swells to a size that the skin of the tomato cannot handle and then it cracks. Usually caused fluctuating watering, the tomato plant being deprived of water for an extended period of time, and then getting a lot of water at once.
- **Solution:**
 - **Consistent watering:** Ensure consistent soil moisture. Water deeply and consistently, especially during dry periods, to maintain consistent soil moisture levels.
 - **Mulch:** mulch can help with reducing high water fluctuations within the soil.

Powdery Mildew

- **Symptoms:**
 - **White or gray powdery coating:** usually appears on upper surface of leaves, but can also cover stems, flowers, and fruit
 - **Leaf distortion:** infected leaves may twist and curl
 - **Yellowing of leaves:** as infection progresses leaves may yellow
 - **Leaf drop:** infected yellowed leaves may drop prematurely
- **Cause:**
 - Caused by various fungal pathogens; that thrive in warm, humid conditions. Spores are usually spread by wind and rain
- **Solution:**
 - **Ensure good air circulation:** by pruning for air flow and maintaining proper spacing of the plant

- **Remove any affected plant parts:** to prevent the spread of the fungus
- **Apply fungicides:** such as neem oil, potassium bicarbonate, sulfur based fungicides, or milk spray

Fusarium Wilt

- **Symptoms:**
 - **Yellowing leaves:** Yellowing leaves, often starting on one side of the plant
 - **Wilting:** Leaves wilt and droop, especially during the hot part of the day, but may recover at night, depending on the progression of the infection
 - **Stunted growth:** Plants exhibit stunted growth and may eventually die
 - **Brown Streaks:** Infected fruits may develop dark, sunken lesions that can cause rotting
- **Cause:** Caused by the soil-borne fungus *Fusarium Oxysporum*, which thrives in warm soil conditions and enters through the roots of the plant
- **Solution:**
 - **Remove the infected plant:** to prevent the spread of the fungus
 - **Improve the soil health:** by incorporating organic matter, to create a healthier biotic life
 - **Crop rotation:** with non host plants, to prevent the build up of the fungus

Sunscald

- **Symptoms:**
 - **Pale or White Spots:** Affected areas on the fruit appear pale, white, or light yellow, usually on the side exposed to direct sunlight.
 - **Leathery Texture:** The damaged area becomes dry and leathery, often feeling tougher than unaffected skin.
 - **Sunken Areas:** The sunscald spot may sink slightly as the fruit ripens.
 - **Rot Development:** In severe cases, secondary infections can set in, causing the affected area to rot.
- **Cause:** Sunscald is caused by excessive exposure of fruits to direct sunlight, particularly during hot, sunny weather. It often occurs when plants lose their protective canopy of foliage due to pruning, pest damage, or disease. Sunscald is more common in unshaded areas during peak summer temperatures.
- **Solution:**

- **Prevent Over-Pruning:** Avoid excessive pruning that removes too many leaves, as this can expose fruits to direct sunlight. Prune selectively to maintain good air circulation while preserving enough foliage for shade.
- **Use Shade Cloth:** In extremely hot weather, use shade cloth or row covers to reduce the intensity of sunlight on plants.
- **Adjust Watering:** Proper watering can help the plant maintain healthy foliage, which acts as a natural sun barrier. Ensure consistent moisture without waterlogging.
- **Mulch:** Apply organic mulch to regulate soil temperature and reduce overall plant stress, which can help maintain healthier foliage.
- **Harvest at the Right Time:** Pick ripe fruits promptly to reduce their exposure to prolonged sunlight on the vine.

Aphids

- **Symptoms:**
 - **Visible Aphids:** Aphids are small, pear-shaped insects that can be green, black, brown, yellow, or red. They are typically found on the undersides of leaves, stems, and are attracted especially to new growth
 - **Sticky honeydew:** Aphids excrete a sticky, sugary substance called honeydew, which can coat leaves and stems, making them appear shiny and sticky.
 - **Sooty mold:** The honeydew can attract sooty mold, a black fungus that grows on the sticky surfaces, further weakening the plant.
 - **Distorted leaves:** Leaves may become curled, twisted, yellowed, or puckered due to aphid feeding
 - **Visible ants:** Ants may be found around aphid-infested plants because they are attracted to the honeydew. Ants often protect aphids from predators to keep their honeydew supply.
 - **Stunted growth:** Affected plants will stop growing and appear smaller and less vigorous, due to aphids sucking the phloem sap from the plants
- **Cause:** Aphids reproduce quickly, especially in warm weather, and can be spread by wind, animals, or human activity. They are attracted to new, tender growth on plants, where they feed on the plant's sap. They can be found on the underside of new leaves, new stems, and flower buds.
- **Solution:**

- **Physical removal:** a strong jet of water, soft brush, or hand can be effective at removing small infestations of Aphids
- **Neem oil:** apply neem oil or insecticidal soap to deter Aphids from feeding
- **Reflective mulch:** using reflective mulches, can deter aphids from landing on plants
- **Control ants:** Use barriers or ant baits to control ants that protect aphids. Ants protect aphids to harvest their honeydew, by controlling the ants will help reduce aphids

Harvesting

Tomatoes are harvested by picking fully ripened fruits to ensure optimal flavor, texture, and nutrition while encouraging the plant to produce more. Knowing when to harvest and how to handle the fruit is key to maximizing your tomato crop throughout the growing season. Tomatoes will first flower, and once the flowers are pollinated, they produce fruit.

Most tomatoes are self-pollinating, meaning the flowers contain both male and female reproductive systems. However, pollinators can greatly enhance yield, as self-pollination is not always guaranteed. In the absence of pollinators, shaking the vine gently can help dislodge pollen onto the flower's ovary, aiding in pollination. Tomatoes are ready to harvest when they have reached their full color based on the variety—red, yellow, orange, or purple—and feel firm yet slightly soft to the touch. Ripening occurs from the bottom up, so ensure the fruit has an even color tone throughout. Avoid harvesting fruits with green patches unless they are naturally green-shouldered varieties. A gentle squeeze should reveal firmness that yields slightly under pressure; overly hard fruits may need more time to ripen. Tomatoes generally detach easily from the vine with a gentle twist or slight tug; if resistance is felt, the fruit may not be ready. To harvest, use clean, sharp scissors or pruning shears, or carefully twist the fruit at the stem to avoid damaging the plant or nearby fruit. During peak production, check plants every 2–3 days, as ripe fruits left too long on the vine may attract pests or split. After harvesting, store ripe tomatoes at room temperature away from direct sunlight for optimal flavor. Regular harvesting not only improves the quality of individual fruits but also encourages the plant to direct its energy toward producing new fruit, ensuring a consistent and productive season.

Storage

For storage of tomatoes, handle the fruits gently to avoid bruising, as damaged tomatoes are more susceptible to spoilage. Avoid washing the tomatoes before storage to prevent

excess moisture, which can accelerate decay. If washing is necessary, ensure the tomatoes are completely dry before storing. Tomatoes are best stored at room temperature, away from direct sunlight, to preserve their natural flavor and texture. Arrange them in a single layer on a countertop or in a shallow bowl lined with breathable material, such as a paper towel, to minimize bruising. Fully ripe tomatoes can be stored in the refrigerator for 1–2 weeks if extended shelf life is needed, but it's recommended to bring them back to room temperature before consuming to regain some of their flavor and aroma. Regularly inspect stored tomatoes for signs of overripeness or spoilage, including soft spots, mold, or leakage, and promptly remove any affected fruits to prevent decay from spreading. By following these guidelines, you can enjoy your fresh tomatoes at their peak flavor and quality for as long as possible.