

Outdoor Grow Guide

My first outdoor grow was a disaster.

Yours doesn't need to be.

I made a simple guide for outdoor growers everywhere.

I hope you like it!

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Genetic Selection

The starting point of a successful cannabis garden is the selection of genetics suitable to be grown in your area. Most cannabis plants are short-day plants, and the latitude of your grow site will determine the dates when different strains will finish flowering.



If you are lucky enough to live in a temperate area with a long growing season, many different strains may work in your garden. They will flower at different times, depending on their genetic response to seasonal day length. For growers living above about 40 degrees latitude, there are early flowering strains available that can be harvested before weather conditions deteriorate.

Autoflowering strains are a great choice for many home growers. These plants will start flowering as soon as they are mature (about 3 weeks after germination) regardless of day length. For northern growers this allows for plants to be harvested during ideal late summer conditions.

Most of us opt to **grow from seed** when growing from home, because we have a better selection available, and seeds are usually disease free when we get them. Breeders that develop strains for outdoor production may be able to provide information about pest resistance and harvest dates at your latitude.

Regular cannabis seeds will produce 50% males, so if that's what you have, be sure to germinate plenty. **Feminized seeds are usually the best choice for home growers.** There is no reason to spend time growing male plants that will need to be culled before they pollinate the neighborhood.

Site Selection

Cannabis is a vigorous annual herb that can be grown in most habitable areas of the world. Whether you are trying to find the perfect place in your garden or thinking of putting some pots out on your patio, you are more likely to be successful if you take some care to locate the perfect site for your crop.

Cannabis loves light. A minimum of eight hours of direct of light is recommended to grow nice weed. The time of first light is also very important. Cannabis is susceptible to fungal pathogens late in the grow cycle. When plants receive direct light early in the morning, the dew can quickly dry, with less opportunity for mold to establish.



Sun Tracker phone apps can show you the solar track and day length at your site for any day of the year.

Fertile garden beds are ideal for outdoor crops, but if you are just growing a few plants, containers can work well.

Black plastic pots get very hot in the direct sun. Light colored cloth pots of at least 5 gallons will support your plants and keep the roots from cooking.

Air circulation is important for plant health, but late summer windstorms can damage your plants, so take advantage of natural windbreaks when possible.

Cannabis plants are sensitive to light during the dark period. Low levels of light (Less than needed to read large print) will not interrupt flowering, but even brief flashes of bright light are a problem.

Soil Preparation

Soil should be prepared a month or two before transplanting. In the northern hemisphere, we usually plant our outdoor crops during the month of May. Outdoor beds can be amended with compost, minerals, and other organic inputs. Soil samples can be tested by a lab to determine which inputs are necessary for balanced soil fertility.



Quality compost is the heart of an organic garden, and a couple of inches can be turned into your beds every spring.

Compost will provide nutrients for your plant as it breaks down and is rich in microbes that benefit plant growth.

Minerals like rock dust and greensand provide essential plant nutrients but can be slow to mineralize into forms your plant can use. Liming agents like dolomite provide elements including calcium and magnesium which form bicarbonates in the soil to stabilize PH. **Soil amendments** can be scratched into the soil surface, and covered by mulch for no-till systems, or blended into beds.

For container growers 5 gallons or more of soil will be required per plant. If you are ambitious, you can mix your own **organic potting soil**. After mixing, soil should rest for a week or two in an aerobic environment for the nutrients to mineralize.

Soil structure in outdoor beds can be improved by tilling in amendments like pumice, coco coir, or spent potting soil. This will provide an ideal air to water ratio for your plants to thrive. Soil should never be left exposed. After you have amended your soil beds, cover them with mulch or a ground cover.

Seed Germination

Cannabis seeds are protected by a durable outer shell. Chemical scarification, or roughening of the seed coat, will help water and oxygen to enter the seed and begin the germination process. This can be achieved by soaking seeds for 16-20 hours in a .5% **hydrogen peroxide solution**. This solution can be made by combining 1 part household H₂O₂ (3%) with 5 parts water.

This treatment will also kill fungal pathogens and drive oxygen into the seed to benefit germination ratios. I usually plant directly into organic soil, but peat plugs, or other rooting media also work well. Planting media should be damp when placing seeds. You might see root tips emerging from some of the seeds after soaking.



Use a chopstick to create a hole or “dibble” about ¼”- ½” deep in the planting media. Seeds can be placed in their holes with tweezers.

Once a tray of seeds is seated, you can use your chopstick to tamp media around each seed to ensure full contact.

When the seeds are all covered, they can be watered in gently to avoid disruption

Place the planted seeds in an area that is between 70-80°F with adequate light and air movement.

Relative Humidity between 50 and 70% is ideal. **Do not cover or dome the seeds** but do water the media when it dries out.

Shoots should emerge within 3-5 days, although some strains may take a little longer. Once the shoots have begun to emerge, increase the light intensity so that they do not become leggy.

Seedling Care

Autoflowering cannabis plants do not tolerate root disturbance and should be transplanted to their flowering location soon after roots start popping out of the seed plug.

Short day cannabis plants will benefit from growing for a few weeks in a protected area before being transplanted to the great outdoors. Your plants' structure can be shaped during this period to set them up for success.



Root structure can be influenced by selection of root training pots which guide root tips to holes to be air-pruned. This will cause formation of radial roots and results in a fibrous root system that can quickly occupy new media when transplanted.

Well rooted plants will recover rapidly from training or transplant stress.

Root health is obvious when using root pruning pots, as white roots will be exiting the pot everywhere.

Cannabis plants can be trained to grow multiple top flowers. This benefits outdoor growers by lowering the final height of the plant and encouraging airflow between the colas. Small interventions can have a big impact on young plants without slowing growth. Low-Stress training can be applied by bending plants to promote development of lower shoots.

Your plants will benefit from a liquid fertilizer feed or two when they are in small pots. Seedlings that have been growing under lights should be hardened off before being planted in direct sunshine. Plants can be placed in a mostly shady area for a day or two or covered with a crop cover to allow them to acclimate to outdoor conditions.

Transplant Tips

Cannabis plants have roots for a reason and are not fond of being moved between different environments. Good growers try to manage these transitions to be as smooth as possible and avoid transplant shock.

Your seedlings should be transplanted as soon as they are well rooted and **hardened off**. Root balls will slide easily out of their pots if they are allowed to dry out, then lightly top watered prior to transplant.



The soil that you are planting into should be moist and fluffy, and at a similar temperature to the soil in the pot. Properly hydrated soil should clump together, but not leak water when squeezed.

When planting into garden beds, irrigate thoroughly a day or two prior to transplant.

Dig a hole large enough for the new plant to be seated with the soil surface at the same level as surrounding soil. Fill around the root ball with potting soil. Once the transplant has been placed and filled, the new soil level should just cover the transplant root ball.

Water in your new plant generously to make sure there are no air pockets between the root ball and the new soil. When the transplant has been properly set, there should be plenty of water available in the soil to sustain the plant for at least a few days. It is best to **delay the first watering** to allow the soil to dry as much as possible without the plant getting droopy. This will encourage the roots to rapidly expand into the new soil in search of water.

Sexing Plants

Following **seed germination**, Cannabis plants will grow vegetatively for four to eight weeks to reach sexual maturity. Seedlings have an opposite branching pattern where new leaves and shoots form in pairs as the plant grows. This will shift to an alternating growth habit, with one leaf and shoot per node, when the plant reaches maturity.



A male plant will form an anther, which is a small ball with a short stalk.



A female plant will form a pistil which consists of an ovule with two white hairs emerging from it.

Cannabis has distinct **male and female plants** based on their inheritance of sex chromosomes. There is nothing wrong with males, but we don't want them in our garden.

Cannabis sex can be observed visually once **preflowers** have formed next to the stipule at the base of each node. Female cannabis plants will grow a pair of white hairs, while males will form little balls on stalks.

In **some cases** cannabis plants will not show their sex until flowering has begun. A faster way to sex plants is to send tissue samples to a cannabis lab for **genetic analysis** soon after germination. Once flowering has started, it is important to examine unsexed plants several times a week to cull males before pollen is produced which can seed your crop.

Water Matters

Watering your plants might seem like a simple task, but it is easy to get it wrong. In addition to providing critical elements for photosynthesis, water moves nutrients through plants, and keeps them upright.

Water quality is important. Many municipal sources contain chlorine, and tap water should be left in an open container overnight to off gas. Water should be between about 60 and 70 degrees when provided to the plant to maximize the dissolved oxygen content of the water.

Root health benefits when soil is watered thoroughly, then allowed to dry and pull air into the root zone. With root-pruning pots, a great way to achieve this is to bottom water in addition to watering the soil surface. Your plants will need to be in a saucer or tray for this to work, and it will take a bit of practice to learn how much water to put in each tray.



The volume of water provided in the tray should be the amount that the soil can absorb in a couple of hours.

Pick up each plant every day, and you will become accustomed to the weight of the pots and will know then they are dry enough to water again. If your plant gets droopy, you have waited too long.

Bottom watering works well for container plants of any size, and liquid feeds can be applied to the soil surface. When growing in garden beds, irrigation is best provided by **inexpensive drip tape**, and soil water is preserved by application of mulch.

Feed the Soil

Cannabis is a heavy feeder. In addition to starting with a fertile soil, a few supplemental feedings will fuel a bountiful harvest.

Nutrients can be provided by application of dry inputs, or with irrigation water. Dry inputs are blends of minerals and protein meals that provide slow release fertility.



Protein meals are processed organic materials that provide a rich nutrient source as they are consumed by soil biology.

These inputs have different nutrient profiles depending on the source of the organic matter.

Kelp and Alfalfa meal provide important trace elements, while macronutrients are supplied by **Feather, Blood, Fishbone, Insect frass** and other organic amendments.

Nutrient spikes can be applied by inserting a garden knife into the root area, opening a slot to pour inputs, then watering in.

Organic liquid fertilizers are usually hydrolysates made by fermentation of biological inputs like fish, seaweed, or plant residues. In addition to readily available nutrients, these products usually contain other beneficial compounds including amino acids, microbes, and phytohormones.

For small scale container grows it is best to **keep things simple**. Start with a fertile potting soil. Feed every other week with a fish hydrolysate until week 3 of flower, switch to a liquid kelp for a couple of feeds, then water only for the last two weeks. You will be a happy camper.

Pest Management

You are not the only one who likes cannabis plants. When growing outdoors, there is always some herbivore chewing on the leaves. This is not a big issue with a vigorously growing plant, but in some cases intervention is necessary. **Plants are not helpless.** They have been engaged in a continual state of chemical warfare for millions of years. Plant immune systems benefit from the microbial community present in healthy soils. Some of these microbes have been cultured to make **bio-insecticides** which are non-toxic unless you're a bug.



Spinosad is an organic approved bio insecticide that is effective against a range of insects, and **Bacillus** strains effectively control fungus gnats (BTI) and caterpillars (BTK). In addition to eating your leaves, caterpillar manure on your cannabis flowers will make them susceptible to **bud rot**.

Pesticidal soap sprays will kill most insects on contact. These products are widely available and approved for use in organic agriculture. **Wettable Sulfur** is an effective fungicide which can be sprayed on plants during the vegetative stage. Sulfur will not stay suspended in water, so you have to shake the sprayer as you are using it.

Cannabis is very susceptible to fungal pathogens like Powdery Mildew, and Bud Rot during the flowering stage. The best disease prevention is to avoid the environmental conditions that promote mold.

Pruning to promote airflow, keeping rain off flowering plants, and growing strains that will be harvested before bad weather arrives will contribute to plant health.

Prune and Trellis

As your cannabis plants grow vigorously during the long days of summer, they will benefit from pruning and trellis support. Most cannabis plants will naturally grow into a Christmas tree shape. This can increase the likelihood of bud rot in the large main cola. Training your cannabis plants to have multiple top flowers, rather than one main cola can increase your yields.



Topping plants is an effective way to alter the shape of plants. When the growing tip of a plant is removed it causes lower branches to grow more quickly, resulting in a bushier structure.

Topping **autoflowers** can be counterproductive as they have a short life cycle, and anything that slows growth can reduce yield.

Autos can be trained to have multiple tops by using **low stress training** techniques, but I usually don't bother with these short cycle plants.

Leaves and branches growing on the interior of the plant should be pruned. This will improve airflow and focus the plants energy on the flowering sites with better light exposure.

Plants that have multiple top branches loaded with fragrant herb require trellis support. The **trellis requirements** will depend on the size of your plant, and the wind conditions at your site.

Pots can be anchored by driving stakes into the ground to keep them from blowing over. Tomato cages provide good support for small plants, while bamboo stakes or wire fencing can be used for larger plants. Some autos do not require trellis support due to their more compact structure.

Flower Development

All of the hard work that you have done so far is to set your plants up for success during the **flowering stage**. Most strains will flower for 6 to 9 weeks before they are ready for harvest. Plants can double in size during the first few weeks of flower and will need plenty of food and water to reach their potential. Once flowers have formed on your plants **they should not be sprayed**.

After two or three weeks, plants will stop growing vertically and producing leaves, and will focus on flower expansion. Large fan leaves that are shading flower sites can be removed periodically to improve light penetration and air-flow. At this stage, plants are at the peak of their reproductive potential, and will form large colas of individual flower bracts.



Sexual frustration will drive production of psychoactive cannabinoids. These cannabinoids, along with terpenes and other bioactive compounds are synthesized in glandular trichomes which form profusely on unfertilized flowers.

You will know that you are entering late flower by the smell of success.

The **late flower** stage is a stressful time for cultivators. Your plant will start to senesce. Flower pistils turn brown as they lose their virility, and lower leaves will yellow, and should be removed.

Bud Rot attacks plants first through infection of dying tissue. It is important to keep plants as dry as possible during this period, and some dedicated growers will blow the dew off their outdoor ladies each morning with a leaf blower.

Harvest Timing

Harvesting Cannabis at the right time is an important part of the growing process. Harvesting too early will result in loss of yield, and lower THC. The **synthesis** of cannabinoids is a continual process, and THC will degrade into other non-psychoactive substances like CBN if the flowers are harvested too late.

Once flowers have congregated to form **compact colas** and leaves begin to turn yellow or purple, plants should be observed daily to determine the ideal harvest window. Flowers are usually ready for harvest when most of the white pistils have turned brown. Some strains will continue to produce white pistils late in flower out of desperation to procreate.

Another way to determine if a flower is ready for harvest, is to examine the plants **trichomes**. A jeweler's loupe, magnifying glass, or smart phone camera can be used for this purpose. Trichomes will be clear early in flower and become cloudy and start to amber as the flower ripens.



If most of the trichomes are cloudy, your plant is probably ready to harvest.

Outdoor flowers are usually harvested as soon possible to avoid loss to bud rot. The top flowers on a cannabis plant are usually the first to ripen and can be harvested as soon as they are ready.

The plant will allocate resources to quickly ripen lower flowering sites that are exposed to higher light when tops are removed.

It is best to harvest buds when they are dry, but don't wait for the rain to stop if you need to get your crop in.

Hang Dry

At harvest, cannabis flowers should be carefully examined for signs of bud mold which can spread through your dry room. Fan leaves are removed, and whole plants are hung to dry, or branches are cut to form “hooks” at each node and hung on **clothes hangars**. Smaller leaves are left on the plant and will form a protective layer around the flowers as they dry. THC is degraded by light, and dry and cure areas should be kept dark.



Great cannabis can be ruined during the drying and curing process. Cannabis should be dried slowly, under low temperatures, to preserve the volatile monoterpenes that make it smell so nice.

Hang-drying cannabis branches slows the process by allowing moisture from the stem to migrate into the flower prior to evaporating into the environment.

Under Ideal drying conditions (60 F, 60% RH) cannabis usually takes about **14 days** to hang dry. A grow tent with a portable AC makes a perfect drying chamber.

If your environment is **too dry**, the outer layer of your flowers will dry faster than the interiors. If outer leaves easily flake off and stems are still green after a week you may need to slow things down.

Paper bags create a great climate for slow drying. Branches can be placed in closed bags for a week or more to finish drying. This boosts the humidity in the bag, while allowing gas exchange with the outside environment. Stems should be brownish, and **snap** rather than bending when cannabis flowers are dry.

Trim and Cure

A good way to tell if your cannabis is fully dried and ready to cure is to roll a joint. If you can keep it lit, you are ready for trim jail. Cannabis flowers are usually closely manicured with scissors, but I like to leave a bit of leaf on my head stash. This protects the trichomes during storage and is easily removed prior to consumption.



Glass jars are a great way to cure and store your weed once it has been manicured.

Outdoor cannabis tends to have a higher chlorophyll level than indoor and will benefit from an extended cure.

Mason jars should be kept in a cool dark location.

62% humidity packs can be added to jars and will add or remove humidity as needed. Jars can be opened daily at first, then less frequently to allow for gas exchange. The first time you burp your jars, be sure to feel the buds, if the interior was too wet when you jarred, the flowers will be spongy. Flowers can be placed in a paper bag for a few days to dry, then back in their jars.

Don't worry too much if your product doesn't have a strong smell or great taste when you first jar it up. The smell and smoking quality will improve after a few weeks in glass. When properly cured, cannabis will store for many months. In my humble opinion, the best weed in the world is homegrown. Enjoy your flowers!