

The Medical Marijuana Grow Guide

An Incomplete Look at What it Takes to Grow Cannabis

Setting Up

Room/closet/cabinet: The first step to setting up your growroom is determining where it will be. Most personal level growrooms utilize either a preexisting room, such as a spare bedroom, an attic, or a basement, a closet, whether it be walk-in or not, or a cabinet. Cabinets of all shapes and sizes can be purchased from Home Depot or a similar store, but keep in mind that there has to be room in the cabinet for your plants, your lights (with a suitable distance between them and your plants), and ventilation. Also, keep in mind that the smaller the room, the harder it is going to be to dispel heat.

Soil

Pros: Smaller initial investment, more forgiving, quality (*very* debatable)

Cons: messy (especially getting rid of spare soil), each plant has to be watered separately, must buy new soil each run

Hydro

Pros: less messy, no soil to dispose with, only have to feed/water one thing

Cons: expensive initial setup, less forgiving (you have to feed *everything*), hydro nutrients can be prohibitively expensive, organic hydro is hard

Types of Hydro: It should be noted that “hydro” is a very general word. There are at least four common kinds of hydro.

Ebb and flow, the first, utilizes pots or rockwool cubes on a table that can hold 1 to 4 inches of water. Nutrient solution is pumped into the table, then the table is drained, which brings new oxygen-rich air in contact with the roots. This works very well for SOG setups.

Air tables are tables of rockwool, coco coir, peat, or another medium that have nutrient solution pumped into them by an external air pump.

Deep water culture uses pots filled with clay pellets or rockwool in buckets of nutrient solution so that the roots of the plant dangle into the solution. A pump is constantly splashing solution over the roots. This is probably the easiest style of hydroponics for a beginner.

Top feed systems are the final style. It uses buckets with rockwool, gravel, coco coir, or clay pellets, and feeds the nutrient solution via spaghetti tubing from the reservoir to the base of the plants. The runoff is collected and sent back to the reservoir.

Light

There are three different types of lights that are used for indoor growing: Florescent, Metal Halide, and High Pressure Sodium. There are advantages and disadvantages to each.

Florescent lights are convenient because they are very energy efficient, cheap, and they do not generate too much heat. Unfortunately, they don't really put out enough lumens to make growing with them worthwhile. Plants grown under fluorescents stretch more than others, and the bud they produce is very airy. The only good use for these is to keep clones and mother plants.

High Pressure Sodium (HPS) lights are a grower's bread and butter. If you are only planning on buying one light, buy an HPS. They produce a lot of heat and take up a lot of power (they run between 125 and 1000 watts), they provide the best spectrum and most intense light for a flowering plant.

Metal Halide (MH) lights are used by some growers in veg, since they provide a more appropriate light spectrum for vegetative growth than HPS. It is not recommended, however, to have a MH as your sole light. They vary from 175 to 1000 watts.

Sizes, coverage and space between plant and light:

250w: 3'x3', 12"-18" away from plants

400w: 4'x4', 12"-24" away from plants

600w: 4'x4', 18"-24" away from plants

1000w: 6'x6', at least 24" away from plants

These sizes and distances can change with different reflectors, and even between different specific lights.

Reflectors are a hugely important investment, as they reduce hotspots and therefore allow you to hang your light closer to your plants. The difference between a good and a poor reflector can mean an almost 100% increase in your harvest.

It is suggested to buy your ballast when you buy your lights, so that you can be sure they match. Ask your salesperson for help determining which ballast to get.

When hanging your lights, make sure that they can be moved up and down. You will need to keep them a constant distance away from the plants, but the plants grow, so you will need to be able to raise and lower your lights.

Water and light proofing

Make sure your growroom has absolutely no water or light leaks. If your floor is not waterproof, the structure that your growroom is made out of will slowly start to rot. I suggest pond liner on the floor of the room, though there are many ways of going about this. Light proofing is even more important. If there are light leaks into your growroom during the 12-hour dark period, your plants will be caused undue stress and may

hermaphrodite. To check for light leaks, stand in your room with the lights off, and let your eyes adjust for a couple minutes. Then check and fix light leaks with tape. Also, make sure that the walls of your room are reflective. Either cover them with Visqueen, or paint them bright white.

Containers

Most containers are made of either plastic or fiber. Plastic is the more practical material for indoors, as the main advantage of fiber pots is the fact that roots can grow through the bottom and into the ground. Fiber pots are also not reusable. Most indoor grows use containers between 2 and 5 gallons for their final size, depending on how large the plants are eventually going to get. Plastic pots come in both square and round shapes. There's no real advantage to either, though for a SOG setup square pots utilize space more efficiently. In order to know when to transplant, there are two options: the first is the general rule that once the plant gets too much wider than its container, it's time to transplant, and the second is to turn the plant upside down, slide the pot off, and check to see how rootbound the plant is.



Letting the plant get too rootbound can stunt the growth

Ventilation

It is essential that your growroom have some air movement. Air movement thickens stalks, helps prevent mold and insects, and spreads CO₂. Fans are essential, even if it is only one small one that is blowing back and forth over your plants. Ventilation to the outside is also necessary. For heat reasons, it is recommended that you put the intake as low as you can, and the exhaust as high as you can. Make sure neither of the vents lets light in. Some sort of fan should be attached to the exhaust to suck air out of the room (and air back into the room via the negative pressure). If smell is a concern, and you're planning on using a carbon scrubber, attach it to the exhaust after the fan.

Odor control

Large ozone generators are very effective at getting rid of smell, but they are also prohibitively expensive. Ozone generators are also available in very small forms, even a spray (Ozium), but their effectiveness is debated. Ozium works quite well, but it's only a temporary solution.

Carbon scrubbers are can-type filters that filter the smell out of the air being exhausted from your room.

Style of Growth

Sea of Green (SOG): Sea of Green is an indoor growing style utilizing small plants grown from clone and put directly into 12/12 to induce immediate flowering. They are kept very close together, with only about a square foot per plant maximum. The result is a room full of plants entirely made up of single colas, with a possible perpetual harvest.



Screen of Green (SCROG): A method using fewer, larger plants which are topped or FIMed and then trained under one large net that covers the entire canopy. The net keeps the plant in a profile that gets the most light to the majority of the plant. Eventually, the plant will burst through the net, and the end result is a bunch of colas poking through the net.





Au natural

Those who don't want the numbers of a SOG or the trouble of SCROG can simply veg their plants for as long as they have room to, top them early, and let them naturally grow into bushes. The only caveat with this style of growing is to be sure to leave enough room so that the plants will not be blocking each other's light when they reach full size.



Ideal conditions

The ideal conditions for most cannabis plants are 75 degrees F and 50% humidity.

Make sure that the light is distributed evenly among all of your plants.

Try to avoid hotspots by using better reflectors or more lights.

CO2

Adding additional CO2 helps make up for the fact that, since you are growing indoors, there isn't a constant flow of fresh air to your plants. Because the CO2 around the leaves is used up very quickly, it needs to be replaced. Adding CO2 artificially can make it so that not only do you have enough CO2, you have more than enough. This will speed up

the rate at which your plants do everything, including using up nutrients, so take that in mind. Ideally, your parts per million (ppm) of CO₂ should be between 1000 and 1500.

Starting Out

Clones

Clones are cuttings taken off of other plants. They are genetically identical to the plant they were taken from, though clones don't have the same vigor as seed starts. They are always the same gender as the plant they were taken from. Clones can be nice because you start out with a plant a couple of inches tall, as opposed to starting with a seed.



A recently rooted "Cheese" clone

Seeds

Germination: in order to germinate seeds, put them folded in a water-soaked paper towel on a plate. After a few days, the first of them should start sprouting small white roots out of a crack in their shell. Place the seed root-down about a quarter to a half inch under the ground, and keep the soil damp. It will come through the top of the soil in a few days.

Seedlings

When the plants are still seedlings, don't use the final pots. Get small ones as an intermediary between what you started the seeds in and their final containers. Don't fertilize the seedlings until at least 3 or 4 weeks after they pop through the ground.



A "Cinderella 99" Seedling

Sexing

Once the plants are big enough, or once they are turned to 12/12, they will begin to develop preflowers. Male preflowers look like little balls in the space where the branch

meets the main stem, and females have little white hairs at the same place. Pull all male plants as soon as you are sure that they are male.

Strains

Indica versus Sativa: *Cannabis indica* comes from regions further away from the equator, such as the Hindu Kush and Afghanistan. They are shorter, bushier and more compact, with wider fingers on their leaves and buds that are denser and fatter. They have shorter flower times and stretch less when they are flowered. *Cannabis sativa* is from more equatorial regions such as Thailand and the rest of South Asia, Latin America, and Africa. Its growth pattern is much more lanky and tall, with slender, long fingers and air, leafy, spear-shaped buds. They take much longer to finish and grow to incredible heights. If you're growing a sativa, make sure you have a lot of headroom. It should be noted that most modern strains are hybrids of sativas and indicas, though they may lean one way or another. Sativas have a more up, cerebral effect, where as indicas have a more sedative, body high. Most patients find that indicas are more medicinal.

Flower time: The shortest flowering indica plants run 40 to 45 days, and the longest can be up to 65. The shortest sativas (usually South African genetics like Durban Poison) run 60 to 65 days, and the longest (usually Thais) run up to 120 days.

Medicinal potential: There are certain strains that are well known for their medicinal potential. Some of these are Mr. Nice's Medicine Man, Sensi's G13xHashplant and Black Domina, BOG's Lifesaver, and T.H. Seeds' The HOG.

Distributors: Most breeders don't sell their seeds directly to the United States. There are websites that distribute their seeds for them. Three of the most trusted of these websites right now are seedbay.com, seedboutique.com, and drchronic.com.

Breeders: Generally, more expensive seeds are the more quality genetics. If you paid \$20 for 10 seeds, don't expect your results to be as nice as someone who spent \$150 for the same number. Buying from respected breeders is usually the best way to go, albeit also the most expensive. Some of the most respected breeders out there are DJ Short, Sensi Seeds, Reservoir Seeds, Legends Seeds, Mr. Nice Seeds, Serious Seeds and T.H. Seeds.

Vegetative Growth

Once the plants are hitting their full stride, it's time to start fertilizing them. Start with a feeding once a week, and increase slowly if it looks like you could be feeding them more. Give them your grow mix at full strength (it should be nitrogen heavy), as well as a full compliment of micronutrients and whatever supplements you are giving them.

Many people use different methods to change the profiles of the plants. One of the most popular is pinching, or topping, them. This involves taking a very sharp knife and cutting off the top new growth, while leaving the two nodes below it. This results in the branch

having two tops instead of one. If you leave the bottom 30% instead of taking the entire new top off, it will grow multiple new tops instead of just two. This method is called FIMing. These methods make for bushier plants making more, smaller colas instead of one dominant one. Another popular method to increase the bushiness and yield of a plant is supercropping, which involves bending down the top foot of the branches of a plant to an angle parallel with the ground. The plant will recover from the bending, and the branch will grow out at a right angle, exposing more nodes to light. Many people, instead of supercropping, merely tie the branches down to achieve a similar effect.



Training a plant by tying it down



How to FIM a plant

The light cycle for a cannabis plant during vegetative growth can either be 24 hours on or 18 hours of light with 6 hours of dark.

Flowering

At the beginning of flower, your plants should be getting a fairly balanced mix of Nitrogen, Phosphorus, and Potassium, balanced a little heavy on the Phosphorus and light on the Nitrogen, as well as a full compliment of micronutrients and additives. Now is the time to add any flower-specific additives you have to your feeding schedule. Keep feeding seaweed-based nutrients, but only for about 2 weeks. As the buds start to form, keep lowering the amount of nitrogen you are using until the last 2 or 3 weeks, where you cut it out entirely. Your plants should have no more nitrogen in them when they are harvested—the fan leaves should be yellowed all the way up.

For the last week (if you're growing organically) or week and a half to two weeks (if you're growing chemically), feed the plants nothing but water. If you are ambitious, use distilled or pH-balanced water instead of normal tap water.



“Blockhead” in late flower



“Blueberry” in early flower

Fertilization

Macronutrients (N-P-K)

Nitrogen: Nitrogen is responsible for new vegetative growth. It is washed out of the soil easily, so when plants are in veg they need it on a regular basis, but be careful of overdoing it. If the tips of the leaves start to burn, back off. Also, slowly bring the nitrogen to a halt during flower, so that there is none left when you harvest—nitrogen is harsh, and doesn't burn well. Plants that are fed too much nitrogen in flower produce leafy and stretched out buds.

Phosphorus: Phosphorus is used for roots and flowers. Plants need a lot of it while they're budding, and it is also useful for cloning and seed starts, but it uses some throughout its life.

Potassium: Potassium increases a plant's resistance to diseases and mold, as well as helping it form thick, strong stalks. It is necessary at all stages of growth.

Micronutrients

Cannabis needs a lot of micronutrients: Magnesium, Calcium, Sulfur, Zinc, Manganese, Iron, Boron, Chlorine, Cobalt, Copper, Molybdenum, Silicon, Nickel, Sodium, and Fluoride. Obviously, buying a separate fertilizer for each is totally out of the question. The best way to do it is to buy an all-in-one product like Earth Juice Microblast, which contains some of the more important 7 of the 15, and supplement the others as necessary. Metanaturals makes a good calcium supplement, any seaweed-based product will give you plenty of Chlorine, and many others happen to be in other fertilizers. Read the labels of what you're feeding them, and correct deficiencies as they crop up.

Fulvic and Humic Acids

These help increase the absorption of nutrients by chelating them, which increases their bioavailability and prevents their precipitation. While plants will stay alive without these,

they are the type of ingredients that make the difference between good product and great product. Many companies make products containing these. Two of the most popular are Botanicare Liquid Karma and General Hydroponics Diamond Nectar.

Microbial life

If you are growing organically, it is necessary to keep your soil alive. A cannabis plant is not the only thing growing in that expensive soil: there's a whole city of beneficial microbes down there helping the plant out. Many companies, such as 3D Organics and Roots Organics, make soil inoculants that you can water in. Once you've introduced them, feed them on a regular basis with a molasses-based catalyst like the one made by Earth Juice or Roots to keep them thriving.

pH Balancing

Cannabis plants like to live in environments between a pH of 6.5 and 7. Having your pH stray too far from that can cause serious problems, like nutrient lockouts. In order to prevent that from happening, use a pH up and down (like the one made by Earth Juice) and a pH meter to balance what you feed them.

Organics vs. Chemicals

Chemical pros: Cheaper, smaller doses, can be read on a PPM meter (especially good for hydro), doesn't gunk up your hydro reservoir, higher yield

Chemical cons: Easier to burn plants, inferior final product, unnatural

Chemical brands: Adv. Nutrients, Sensi, Botanicare, General Hydro, Foxfarm, Canna

Organic pros: Superior final product, natural, harder to burn plants

Organic cons: More expensive, lower yield (usually), can be more complicated

Organic brands: Earthjuice, Metanaturals, Advanced Nutrients, Botanicare, Roots Organics, 3D Organics, B'cuzz

Harvest

Timing

In order to tell when it is the most optimal time to harvest, it's necessary to buy a small magnifier that magnifies at least 50 times. You can buy a very nice one with a light on it from Radioshack for about \$10. When your plants are getting close to harvest, check them regularly with the magnifier. The trichomes (crystals) change from clear, to milky white, to amber as they mature. Not all trichomes change color at the same time, but the bud should be picked when the majority of the trichomes are milky white, and the first few are just starting to turn amber.

Drying

After the bud is cut down off the plant, it's time to hang and dry it upside down. A helpful trick is when you're cutting it off the plant; take big enough sections so that you can hang them on their own notches. If this isn't possible, string or wire works as well. Be sure to hang them far enough apart for them to have airflow between them. Having a dehumidifier and a fan in the room helps a lot. Leave them hanging until you can snap the

stems, and then transfer them to paper bags to let them dry out the rest of the way. Be careful to not fill the bags so much that the buds on the bottom get compressed.

Trimming

Once the plant is dry enough to no longer be limp, it can be trimmed. Trimming means taking a pair of small trimming shears (Fiskars makes good ones) and cutting off the extra leaf. This extra leaf can be used for hash making or cooking. It is up to the individual to decide how much leaf should be left on.



Fiskars Micro-Tips

Curing

Finally, transfer them to their final home, which is usually either a canning jar (works best), turkey bag, or ziplock. Check the bags or jars to make sure that no moisture is collecting in them, as this can cause mold. Your product will improve dramatically in taste and smell while it is being cured, peaking at about 2 or 3 months after you bag or jar it up.

Problems

Mold

There are many kinds of mold that can affect cannabis plants, and they are all very destructive. Some of the more common are powdery mildew and bud rot. The only way to prevent mold is to make sure your growroom and the place you are drying your product are not too humid and have lots of airflow between the plants. Also, be attentive, and pull any moldy bud before it has a chance to spread.



Mold can be hard to spot on a growing plant

Insects

Spider mites, thrips, whiteflies, aphids, and caterpillars, are just some of the many insects that can do serious damage to your plants. There are several different approaches you can take, both organically and chemically, to get rid of them. Organic options abound: neem oil, pyrethrums, and nicotine are just some of the many. Chemicals, though, have the really heavy guns, if you are willing to use them. Be sure to do your research to make sure that the insecticide you have affects the particular pest you have. Another option is introducing other predatory insects, like ladybugs or nematodes, to your grow room. This can be very effective, and is worth considering as a precautionary measure, but remember that many of the insecticides that kill bad bugs kill the good ones too.

Other animals

Insects aren't the only animals that can do serious damage to your plants. Mice, for instance, are capable of girdling (chewing the bark all the way around the main stem) and killing a plant in a matter of hours. Simple common sense (and a couple of mousetraps) are usually enough to deal with bigger predators, as they tend to be less elusive and numerous than insects.

Final Notes

If you are actually going to go and try to grow your own cannabis, this grow guide *is not enough*. There will be many problems that crop up along the way, and this is a basic outline, not a comprehensive guide. These resources will prove invaluable to you throughout your gardening experience:

Marijuana Horticulture: The Indoor/Outdoor Medical Grower's Bible by Jorge Cervantez (2006 Van Patten Publishing)

The International Cannagraphic Magazine Forums
www.icmag.com/ic