EASY OUTDOOR GROWER’S GUIDE

Medical Marijuana Growing for the Beginner

By Timothy D and AF Mullenniex
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Tips and Instructions from a legal grower of medical marijuana.

Acknowledgements

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# Contents

INTRODUCTION.......................................................................................................................... 7

CLIMATE ...................................................................................................................................... 8

NUTRITION ............................................................................................................................. 8

SECURITY ................................................................................................................................... 9

EQUIPMENT AND SUPPLIES ................................................................................................. 9

CHAPTER ONE: Planting Clones............................................................................................. 11

THE GARDEN PLOT ................................................................................................................ 11

SOIL PREPARATION ............................................................................................................... 12

SOIL BACTERIA ...................................................................................................................... 14

pH TESTING .......................................................................................................................... 14

CLONE SELECTION ............................................................................................................... 15

PLANT JOURNAL ................................................................................................................... 15

PLANTING THE GARDEN .................................................................................................... 17

CHAPTER TWO: Nutrition and Care....................................................................................... 21

WATER ...................................................................................................................................... 21

FERTILIZER ............................................................................................................................ 21

PESTS ...................................................................................................................................... 24

SUPER-CROPPING ................................................................................................................ 25

CHAPTER THREE: Tying Your Plants and Harvest ................................................................. 28

TYING THE PLANTS ............................................................................................................. 28

SECURITY ............................................................................................................................. 30

HARVEST ............................................................................................................................... 31

CURING .................................................................................................................................. 32

FINAL TRIM ............................................................................................................................ 34

CHAPTER FOUR ....................................................................................................................... 37

BLACK BUTTER ..................................................................................................................... 37

INGREDIENTS ....................................................................................................................... 37

METHOD .................................................................................................................................. 38

PEANUT BUTTER AND GINGER CANNABIS COOKIES ......................................................... 41

INGREDIENTS ....................................................................................................................... 41

METHOD .................................................................................................................................. 41
Trimmed bud
INTRODUCTION

So you’re a brand-new grower with your medical card in hand, tons of enthusiasm and energy, but at a complete loss where to begin. We’re here to help. This guide is meant to be a beginner’s manual for legally growing medical marijuana. It does not claim encyclopedic knowledge of all the ins and outs of growing bud, but shares one grower’s experience in maximizing the quality and yield from a small number of legally-allowed plants.

This grower averages between one and two pounds of organically grown bud from each of his plants on an annual basis. He has worked out his issues of pest control, fertilization, and chemical-free watering with the aid and advice of “old growers” and over years of personal experimentation. Although the potency of marijuana is dependent upon the genetic make-up of a plant, the smoothness, flavor and “taste” of the bud—the overall quality—is directly affected by how a plant is grown. This grower is locally known for the yield, flavor and overall excellence of his crop.

Although your options as a medical marijuana grower include growing from seed or from clones, growing with soil or hydroponically, and growing indoors or outdoors, this guide focuses on outdoor growing of clones. The advantage to starting your garden from clones acquired from a dispensary is that you are assuring the genetic quality of your plants from the outset. You save yourself the trial and error of growing from seeds—from weaning out the frail plants to watching for hermaphrodites, males, or even reversions under stress of female to male plants (possible when growing with feminized seeds)—to name just a few issues. Of course, the marijuana connoisseur who lives for the joy of learning every aspect of bud cultivation will grow from seed regardless—and we bless your enthusiasm and efforts with hearty well wishes—Godspeed on your quest.

For the rest of you though, we have some words of advice: Take the time to plan your garden—you’ll save time, money, and heartache by a thoughtful approach as opposed to rushing headlong and unprepared into growing. The results will be your reward for patience! Let’s begin...

Figure 1. What we call a marijuana bud actually consists of multiple densely-packed female flowers. The long white "strings" are styles sticking out of individual flowers.
CLIMATE Where you live, your mean temperatures, rainfall, and humidity make a difference in planning your garden. Think in terms of soil drainage and full sun—you want your plants well-watered in full sun, but without water sitting around the roots causing root rot. Shorter growing seasons do not mean plant earlier—you always need to wait until all possibility of frost has passed before getting your clones into the ground. Don’t worry—plants are smart! They will figure out for themselves when it is time to flower depending upon day length (photoperiodism); only the indoor growers (and advanced growers) worry about light control. You just want to provide as much full sun throughout the day as your property will allow. Hotter drier climates will require more water. In all cases, if you’ve provide good drainage for your garden—either by slope, gravel beds or sand added to your soil, then you are safe to keep your plants fully saturated. Plants like water! Over-watering is only an issue if you don’t provide proper drainage.

Caveat: If you live in an environment where it rains all of the time and is excessively overcast, you will have mold issues—it may be best for you to grow indoors.

NUTRITION Yes, you want to feed your plants and make sure their nutritional needs are met from the initial preparation of your soils through the growing cycle to the eventual harvest of your crop. But you do not have to resort to chemical fertilization. Chemicals affect the taste of your bud; even “washing” for two to three weeks prior to harvest does not remove residual undesired chemical taste, meaning you retain undesired chemicals in your weed. Organic growing truly does produce better quality, besides being better for the environment.

Several nutrients are required by plants to thrive, a primary element being Nitrogen. The main problem associated with chemical fertilizers is Nitrate runoff into ground water. Nitrates are the source of Nitrogen that plants use to make amino acids—the building blocks of proteins; proteins are responsible for most of the structure and cellular work in living critters. Chemical fertilizers—produced from non-sustainable products like petroleum—provide nitrates immediately available for uptake, which often leads to over-feeding the plants and usually to an excess being washed away. Organic fertilizers—derived from sustainable organic matter like bone, cotton or manure—need to be broken down by soil bacteria into a form that plants can uptake. This is more of a time-released feeding—better for the plants—and leaves very little converted nitrate to wash away. Nitrates in high levels in well water is toxic; in our rivers and streams they cause algal blooms that lead to “dead zones” from loss of oxygen.

Crop rotation is a method that utilizes members of the pea family (legumes) to recondition soil. These plants have clusters of round balls on their roots called root nodules which house a bacterial symbiont that fixes Nitrogen from the air into Nitrates. (Symbiosis just means two or
more species living together.) If you locate your *Cannabis* garden within your vegetable garden, you can help recondition your soil from year to year by moving your plants around—like any organic farmer—allowing beans or peas or soybeans to add nitrates back to the soil.

Our grower buys locally produced “chicken pellets” (bird shit) for time-release fertilization, as well as *Age Old Grow* and *Bloom* organic fertilizers, and he rotates his garden plots. Another good practice is making your own compost, but you can definitely find multiple organic fertilizer options available at your local garden suppliers.

![Figure 2. Mixed Cannabis and vegetable organic garden.](image)

**SECURITY** Even though you are a legal grower now, you still need to be prudent. Follow all regulations for your state, including keeping plants out of sight and mind of neighborhood children, local (and federal) police, and especially protected from theft at harvest time! Consider a privacy fence a necessity, and take the proper security measures such as patrolling, and/or electronic surveillance to guard your plants. Nothing is as heartbreaking as growing a beautiful crop to the point of harvest only to have it stolen at the last moment! If you are a renter, get permission from your landlord. A good way to explain your garden is to show them your paperwork and doctor’s note. Eviction at harvest time is about as heartbreaking as theft.

“Follow all regulations for your state, including keeping plants out of sight and mind of neighborhood children...”

**EQUIPMENT AND SUPPLIES** Garden preparation and maintenance equipment: Rotor-tiller (optional), shovel, rake, buckets, wheelbarrow, tarp, garden string, garden poles (e.g. bamboo), hand gardening tools, water hose, fencing, water pans (for beneficial insects), security lights and cameras. Garden Supplies: Organic fertilizers: general fertilizer like chicken pellets, vegetative fertilizer like *Age Old Grow*, and flowering fertilizer like *Bloom*; *Tropical Organics* flavor enhancer *Banana Manna*; vermiculite; sand; topsoil; compost; pH testers and
balancers; biological soil inoculants; seaweed extracts; natural pest controls: praying mantis eggs, ladybugs, marigolds, lemon spray. Harvest and Trimming supplies: magnifying loop or handheld microscope, manicure scissors, regular scissors, 90% rubbing alcohol or Goo Gone®.

Figure 3. Bamboo poles

Figure 4. Equipment needed for garden prep and maintenance.

Figure 5. Examples of flavor enhancer, soil inoculants, and fertilizers.
CHAPTER ONE: *Planting Clones*

Your first growing season will require the most preparation with regards to planning the garden area, preparing the soil, building any needed fencing, and setting up your security, and will cost you from $500 to $1000 in startup costs. Be forewarned: this is a *lot* of work, but well worth your effort!

**THE GARDEN PLOT**

For 9 to 10 plants you should have a garden area of at least 25 by 25 feet in full sun. Study your planting area from sunrise to sunset on a clear day prior to designing your garden—to determine if and when shadows appear and for how long. Full sun will give you optimal growing while shorter stretches of sunlight on your crop will significantly reduce vegetative and bud development. *More sun equals more and bigger buds.*

Prepare for your first season by rotor-tilling (or hand-tilling) your garden area thoroughly a good 8 to 10 inches deep. Rake out and remove all of the rocks and weeds. Level your ground as much as possible as slopes can lead to over-fertilization of downhill plants from leaching and runoff.¹ Our grower uses triangular sections as opposed to rows—through experience he has found that the triangle provides better access to plants and best utility of space. This means you will dig three holes to a section, each of which will be at least six feet apart between centers. Pathways should be at least eight feet between centers. Do not crowd your space—your plants need light and airflow and you need adequate walkways between your plants; later in the season you will need access and room to tie up your budding plants to prevent

¹ Slopes aren’t all bad and, in fact, can be a good way to handle drainage issues. Later in this guide we will specifically address how to deal with fertilizer run-off on a slope.
breakage. *Planning ahead saves heartbreak later.*

Dig your holes about three feet deep and three to four feet in diameter. The first year you will completely dispose of the dirt you remove from the holes.

![Figure 8. In the second and subsequent years you will set aside the soil you've removed from the hole--to be later mixed (in the place of topsoil) with your peat moss, vermiculite and fertilizer.](image)

**SOIL PREPARATION** You will now make a new soil mixture for each hole. Your first year’s soil preparation, in effect, creates brand new soil for the holes. In subsequent years you will recondition your soil mixtures rather than make all new.

![Figure 9. Organic compost, vermiculite and organic chicken pellet general fertilizer will be constituents of our new soil mixture here. Not shown: sand and peat moss.](image)

Mix one part sand to four parts compost top soil (1:4 ratio), to which you will add 2 gallons dry weight of vermiculite, 2/3 gallon dry weight of chicken pellets (or an equivalent organic fertilizer), and five gallons dry weight of peat moss. Mix well, adding water to moisten—but lightly enough that it doesn’t stick to your shovel and is still easy to work—and refill the hole.
with this blend (or mix directly in the hole as illustrated below). Once filled, flood the hole with water to fully saturate the soil mixture and let settle. Each hole should have a “bowl” depression the full diameter of the hole for future watering purposes.

Figure 10. A new soil mixture is made directly in the hole. A) Topsoil is poured into the hole followed by chicken pellets and vermiculite (B and C), peat moss, sand and water. Multiple layers fill the hole (D and E), and a final watering completes this hole (F).

Figure 11. You will saturate your new mixture, leaving fairly compact soil and a good planting depression.

Move on to the next hole and repeat the process.

**A cautionary note:** be careful! It is very easy to break a leg or injure a knee by stepping into a soft area or open hole!
SOIL BACTERIA  Mix the biological soil inoculants in water according to manufacturer’s specifications (e.g., 10 tablespoons per 5-gallon bucket of water). Then treat each hole with 32 ounces of the mixture. Thirty days after planting, you will repeat this procedure but only use 16 ounces of the mixture for each plant. This introduces several species of the important soil bacteria that will break down the Nitrogen in your fertilizer into a form your plants can utilize. Although the manufacturer recommends repeating this process every two weeks this isn’t actually necessary, as the bacteria are living organisms that will reproduce themselves in the soil. It doesn’t hurt either, so how often you inoculate with the bacteria is up to you.

pH TESTING  Marijuana plants require full sunlight, adequate water, airflow, nutrition and the proper pH balance between 6.5 to 6.9. The term pH stands for “potential of hydrogen ions” – the more hydrogen ions the lower the pH, or the greater the acidity of your soil. A pH of 7 is neutral so marijuana plants do well with a slightly acidic soil. Use a clean trowel to take ½-inch samples of soil from several holes around your garden and mix in a clean plastic bucket (not metal) and let dry. Add your sample to a testing kit (available online or at most hardware stores and nurseries) and dip a test strip. You will compare color changes on the test strip to a label provided with your kit to determine the pH of your soil. You can adjust the pH of your soil by adding a pH balancer to your watering supply—‘pH up’ or ‘pH down’ according to package instructions. (An alternative organic method for adjusting pH: Alkaline soils may be adjusted by adding pine needles or sulfur while acidic soils can be treated with wood ash or lime). If you have trees around your garden then you will want to spot check the soil pH around each species of tree. Pine tree resin makes surrounding soils more acidic than marijuana plants can tolerate; you should check these areas monthly and will probably have to adjust the soil pH with a ‘pH up’ or other alkaline treatment.
CLONE SELECTION  
Talk to your dispensary about the clone strains they have available and try several varieties each year. You’ll learn the different growing habits of indicas and sativas (Cannabis sativa and Cannabis indica are the species of marijuana cultivated for their cannabinoids), and you’ll also determine for yourself the various medicinal effects provided by each plant and which work best for you. For example, some people prefer a body ‘muscle relaxant’ effect that leaves motor skills and mental acuity intact, while other people prefer a head high to help distance them from pain. Multiple hybrid strains have been developed over the last fifty years with great results; different strains have different effects. You want to select clones that look healthy and vibrantly green. Inspect them closely for bugs or egg casings. Pests can often be picked up by plants in the seedling stage—you do not want to bring such pests home to your garden! Get all of your plants from the same location each year to limit the possible transfer of pests.

Begin acclimation of your babies to the outdoors as soon as the weather permits. Poke holes in the bottoms of your containers for water drainage and water thoroughly. (You don’t want your plants to get root-bound so if roots come out of the holes you will have to carefully put the plants into larger containers). Keep them indoors at night until all threat of frost has passed, but during the day --after it has warmed up-- set the plants outside on the dirt in full sun for about four hours and then the rest of the day in the shade. Rotate the plants daily for even growth.

PLANT JOURNAL  
Keep a planting journal. This will not only help you keep track of your plants and your methods from year to year, it will also allow you to quickly identify and fix problems that may arise. In your journal, name and number your clones, then use an acronym for your plant labels. Make a map of your garden—everyone thinks they’ll remember what they planted where, but guess what—invariably they forget! First make a map, then plant. Document everything and date everything—e.g., when did you plant? With what, how much, and when did you fertilize or inoculate? When and how much did you water? (Included in the appendix at the end of this guide is an example plant journal for you to practice with during your first season. Beginning the second year, any old 3-ring notebook will do).
These plants have name labels that are printed with numbers and the appropriate acronyms: Plant #1 is SDRW for Sour Diesel Rhino Wreck and plant #4 is MK for Master Kush.
After all threat of frost has passed, plant your garden.

1. Set out your babies according to the map you designed in your journal.

2. Notice the depression in the soil; every hole should have one to hold excess water.

3. Dig a hole just deep enough for your plant. Water to dampen the soil in the new hole.

4. Sit the container in your hole to gauge the proper depth.
5. Carefully remove the cup from your soil – DO NOT TOUCH THE ROOTS!!

6. Plant your babies. Tap the soil down firmly and water thoroughly.

Please note that adding rooting hormones or vitamins to prevent transplant shock is optional and a subject open to debate. If you choose to err on the side of caution, just be sure to use an organic treatment such as Essential Plus or get seaweed extracts for organic sources of auxins – the natural chemicals that stimulate root growth. (An FYI for those diehards who swear by Super Thrive—it actually contains auxins). The cause of transplant shock is actually water stress—that is, lack of water. If you prepare your hole with moistened soil prior to planting and then water well after planting, your clones should do fine.

Figure 14. One week after planting, 2011.
The following is an excerpt from a photo journal of three strains; the plants are numbered by hole-numbers and the acronyms indicate their names. On this page, the photo journal follows their growth from the first day of planting through day 26.

**DAY 1:**

<table>
<thead>
<tr>
<th>#2 - SDRW</th>
<th>#3 - MK</th>
<th>#8 - PD</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Day 1 #2" /></td>
<td><img src="image2" alt="Day 1 #3" /></td>
<td><img src="image3" alt="Day 1 #8" /></td>
</tr>
</tbody>
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**DAY 10:**

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<th>#8 - PD</th>
</tr>
</thead>
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<tr>
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<td><img src="image5" alt="Day 10 #3" /></td>
<td><img src="image6" alt="Day 10 #8" /></td>
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</tbody>
</table>

**DAY 26:**

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<th>#3 - MK</th>
<th>#8 - PD</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image7" alt="Day 26 #2" /></td>
<td><img src="image8" alt="Day 26 #3" /></td>
<td><img src="image9" alt="Day 26 #8" /></td>
</tr>
</tbody>
</table>
With a photo journal it is easy to see the difference in growth habit and leaf shapes between different strains. In our example, the first plant (SDRW) is a tri-hybrid (the parental crosses were Sour Diesel, White Rhino, and Train Wreck) and has an intermediate morphology between indica and sativa, while the MK is an indica with big fat leaves, and the PD is a sativa-dominant hybrid with long, skinny, sativa-like leaves. Also note that the newly planted clones on day 1 have clipped lower leaves. The dispensary did this to remove yellowed leaf tips burned by grow lights in the seedling stage—to focus the plant’s energy on its healthy organs. By Day 26 the plants are fully green and healthy, and have been pruned into a rounded bushy growth.

Figure 15. A sneak peak at the larger cropped bushes two months after planting.
CHAPTER TWO: Nutrition and Care

WATER

Right after transplanting, your clones may look droopy and sad for awhile. Test their moisture daily—you can stick a finger into the dirt and if the soil is dry past your first knuckle (an inch to inch and a half) add water. You will always add water to the “bowl” depression that you left in the ground when you filled each hole. Do not water your plants from above. Just as with any garden plant, marijuana can ‘sunburn’ under hot summer sun if they’re being watered from above. Plant “plumbing” is through the roots and specialized tubular cells called xylem tracheids. They pull the water up through the plant.

“For the first week after planting, only water your babies. They’ve been stressed by transplanting and you want to allow them some time to recover before fertilizing.”

FERTILIZER

You will be pushing vegetative growth and your later bud development by fertilizing. You will use three types of fertilizer: 1) the chicken pellets—first to condition your soil, then once a month after planting the clones—think of this as a general time-released soil conditioner; 2) the Age Old Grow fertilizer (12:6:6)\(^2\) promotes the development and growth of leaves in the vegetative stage of your plant; and 3) Bloom fertilizer (2:5:0) promotes vigorous flowering during the bud stage of your plants. Like water, you will add the nutrient to the soil directly around each plant. (Remember that you have already pre-treated the soil with the bacteria needed to break down the fertilizer, and that you will repeat the soil inoculant process thirty days after planting. Use your journal as a diary to keep track of these dates).

The second week after planting, pick a day of the week for fertilizing—you need to feed your plants once a week on a regular schedule, working around any rainfall. Use only half of your

\(^2\) Fertilizer grade numbers like 12:6:6 indicate the percentage of Nitrogen to Phosphorous to Potassium; in this case 12% to 6% to 6%.
regular treatment of Age Old Grow the first time you fertilize and the full treatment on all subsequent feedings.

| Age Old Grow—vegetative-stage organic fertilizer | Chicken pellets, general organic fertilizer | Liquid Bloom—flowering-stage organic fertilizer | Banana Manna — flavor enhancer |

Mix ½ cup of Age Old Grow organic fertilizer in five gallons of water. Spread 6 to 8 full 8-oz. cups of the mixture around the base of each clone (48 to 64 ounces). The best time of day for both feeding and watering plants are the morning hours before it gets too hot. If your garden is on a hill, be sure to feed the plants at the top of the slope ¼ more fertilizer assuming leaching downhill will occur; keep an eye on the plants lower on the slope—you may have to give them less if it looks like they’re getting burned. After applying the fertilizer wait one day before watering normally.

Once you begin fertilizing your weed you will need to keep an eye out for signs of over-fertilizing. Every morning before watering do a check—the most telltale sign is yellowing of leaf tips. If you find a plant with yellowing leaf tips, immediately flood the plant with water to dilute the portion of fertilizer still left in the ground. You will note in your journal to cut back the number of cups of fertilizer the next time you feed that plant. Indicas and sativas can take different amounts of food and water and their hybrid strains will reflect this difference. It is always okay to under-fertilize but try to never overdo it as this can burn the roots and kill the plant. If a whole leaf starts turning a pale yellow then the plant is over-watered and you will need to cut back on water. (Good drainage goes a long way towards preventing this issue).

“The best time of day for both feeding and watering plants is the morning hours before it gets too hot.”
Your first year of growing *Cannabis* is an experimental year for you. You will be learning about the different strains and their specific needs, and also how to adjust for weather, climate, pests and pH. You will learn how to study your plants to figure out what they need. One major lesson happens at this step—you learn to carefully push the growth of your bud without over-fertilizing. If your plants are perky—doing well after being transplanted and having their first feeding of Age Old Grow, then you may do another soil treatment of the chicken pellets—a cup per plant—a couple days before their second (full) treatment of Age Old Grow. (See illustration for roughing the soil prior to spreading the pellets. You will water-in the pellets). Only fertilize with chicken pellets once a month as needed until the plants are ready to harvest. “As needed” means as the plants can handle it. You want to push growth without injuring or killing your plants—keep that strict eye out for yellowed leaf tips!

As your babies grow into juveniles and become more dense and bushy, you will need to do some pruning for easier access for watering and feeding. Trim away the lower branches on each bush—trim off all the small branches growing within eight to ten inches from the ground. Although these branches would have formed buds if left alone, by harvest time they’d be dirty and scraggly—they’re also too hard to tie up. By pruning them early you’re conserving the plant’s energy for the upper branches and getting better yield besides.

You will fertilize with Age Old Grow only until you see the first flower buds popping out at the end of branches—then you will switch to fertilizing with organic Bloom to promote vigorous bud development. You might ask “But how can I tell the difference between leaf buds and flower buds —both grow from the same branch tips and axils?” The plants help you. Since these should
all be female *Cannabis* plants, they will all have female flowers with female organs, including the pistils\(^3\) that collect pollen—these look like two white strings sticking out of the buds. When you see the pistils you know you now have flower buds. (But pay attention, over time you will begin to notice the distinctive structure of the flower bud compared to a leaf bud and it will become easier to identify earlier and earlier. More importantly is to catch any unwanted male flowers that may have snuck in! Male flowers will hang down in a cluster from an axil and the individual flowers have a distinctive claw rather than the white pistils of the female).

Timing of budding can also vary from strain to strain, plant to plant. You will most likely be making two batches of fertilizer until all of your plants are budding. You will continue to feed Age Old Grow to the non-budding plants, while feeding Bloom to the budding plants. In Siskiyou County of north-central California all of the plants begin to bud within a week of each other in the month of September. Note that mixing Bloom is exactly the same as mixing Age Old Grow, i.e., ½ cup in five gallons of water.

There are generally three to four rounds of trichome production from your buds, depending upon the strain of your clones. Trichomes are the hairs with the little resinous balls at the tips, where the THC and other cannabinoids are produced. After the second round of trichome production, add the Tropical Organics flavor enhancer—Banana Manna—to your Bloom treatment.\(^4\) Two weeks prior to harvest STOP all fertilizer treatments and use only water. It is very important to flush the plants for the last two weeks, so water them as much as possible. Once you start harvesting you will completely stop everything, even watering. (At that point you will only water if you absolutely have to).

**PESTS** It is never too early to think about pests. Spider mites and aphids are common hazards to marijuana plants. Planting a border of marigolds around any garden will draw pests away from your crops to the marigolds. An even better remedy is to use ladybugs to kill aphids and praying mantis to kill

\(^3\) See glossary for clarification of the term “pistil” as used in this guide

\(^4\) Even though you will fully flush your plants the last two weeks before harvest, the Banana Manna treatment will give a smooth flavor to your bud.
everything else. You can get ladybugs and praying mantis eggs from co-ops or nurseries or order them online. You attach the sticky tape with the mantis eggs on the underside of any leaf in your garden and they will hatch and immediately begin preying on all insects in your garden.

TIP: Provide two to three small pans of water throughout your garden for your beneficial insects, including bees which pollinate your garden vegetable flowers and marigolds, and wasps (believe it or not), which eat all kinds of nasty insects that prey on your garden.

If you have mold issues, a simple spray made of lemon juice in water is an excellent antifungal agent. Just lightly spray infected leaves—the citrus of the lemon adds enough acidity to deter fungal growth.

“If NOT spray plants with soapy water when buds are present.”

You can also kill spider mites before bud stage by spraying soapy water on the plant—a few applications will kill them. A good organic pesticide would be to soak 1 pack of organic pipe or chewing tobacco in a 5-gallon bucket of water. Put the tobacco in a sock, tie the top and let it leach into the water. Then you can squeeze out the sock and add 1/8th cup of organic soap. Setting the bucket in the sun for at least 6 hours will make a good tea. Spray the tea on the plants till it is dripping off—using a pump sprayer does a good job of dispersing this product. This gives the bugs diarrhea and they die by getting dehydrated. You don’t want to use any chemical pesticides because it will kill the bees and other beneficial insects that you need in the garden. This mixture will also kill your ladybugs and praying mantises so only use it in case of emergency. Earwigs and spider mites can be a big problem and this tea is sometimes the only way to get rid of them if there is a huge infestation. When you are tying up the buds it is a good time to physically look for pests. Our grower has found a few bugs while tying up buds and just kills them as he goes. Do NOT spray the plants with the soapy water when buds are present.

Growing outdoors you may end up with a few pests no matter what you do. If a bud does get contaminated go ahead and clip it off and throw it away. If it turns brown and crumbly from some contaminant it is not good to smoke anyway. One final note: garden spiders are good to have around as they catch and kill flies and other insects in your garden so try not to kill them.

SUPER-CROPPING

Left to their own devices a natural indica would grow into a short fat bush with wide (fat) leaves, while sativas would be long tall bushes with skinny leaves. Although your plants may at first look more like one species than the other, you will be selectively pruning your bushes (this time by pinching branch tips rather than removing
branches) so that by the third week the plants will all be rounded, short and bushy. Your purpose in this type of pruning—called super-cropping—is to create more buds.

Plants have growing cycles: germination is when the seed begins to sprout; vegetation is the period when the plant is growing all of its leaves (leaves have the job of making food for the whole plant through photosynthesis); and reproduction is the flowering stage when the plants direct their energy towards forming male and female organs with the purpose of eventual fertilization\(^5\) and production of new seeds for the next generation. (But again, you are growing only female plants since the flower buds are where the THC is produced; un-pollinated buds—sensimilla—produce the most THC).

Meristems are unspecialized tissue that you can think of as growing centers. All new growth will originate from these centers and begin as tiny buds in the joint (axil) between branches and the main plant stem, and the tips (apices) of your branches and main stem. You are going to manipulate these growing centers by pinching away the buds at the branch tips of your plant to force the growth of two branches in the place of one. This keeps your stalks short and makes multiple new branches, thus multiple new growing centers. Eventually, when a shortened day length triggers a hormonal shift in your plant to produce flowers instead of leaves, these meristems will begin to produce your flower buds—the more meristems, the more buds...

You will start pinching buds at the tips of branches as soon as your babies have rebounded from planting—by the end of the first planting.

\(^5\) Fertilization in this context refers not to adding food to a plant, but the actual act of male pollen fertilizing a female ovum or egg in the female flower ovary. We don’t want this to happen in our female clones.
week of planting so long as they are looking healthy. You want to slightly damage the growing center of the branch tip, just enough to force it to split into two meristems. Some people say to use a knife or clipper and cut below the first node below your tip, but this will shorten your eventual buds. It is fine to gently pinch out the center of the growing tip between your thumb and forefinger nails. If you can’t see what you’re doing, try using a magnifying glass and tweezers. You don’t want to pinch too deep as it will take longer for the plant to heal. A shallow injury heals fast and results in a quick split into two branches. In ten days you can then split those new branches. While you are pruning your clones, check for pests. If you find any, use the appropriate remedy as described.

You will continue to pinch branch tips every 10 to 14 days until your plants are about three feet tall or until you have 32 branches.

Figure 22. Several clones with rounded bushy "super-cropped" habit; note the multiple branch tips.
CHAPTER THREE: Tying Your Plants and Harvest

Figure 23. This garden looks like a huge spider web has settled on top of the clones. Our grower has individually tied buds to a web of string line stretched across the garden—to protect plants from breakage in the event of strong winds or heavy rain.

TYING THE PLANTS  You’ve waited, watched, watered, fed, and babied your ‘girls’. They have finally begun to bud and now you need to protect them from breakage due to their increasing weight. Tying the heavy branches to a string-line web that you’ll build across the garden will provide all the support you need. You will establish poles on the outer corners of the garden and along the edges. Set the remaining poles no more than an inch in the ground around each plant; as long as they don’t slide around while you are tying they will be fine. Use 3 poles per plant and make a triangle around each plant. You can buy the green PVC-coated garden poles for about $5.00 each—they look like plastic rebar and they will last for years. Eight-foot poles are ideal but if you can only get 4- and 6-footers you can duct tape them together to make them longer—you want them tall enough to hold the web above your head, leaving you
room to still get in and care for your plants. Figure out how many you need by multiplying the number of plants you have by three. Use a colored string for visibility.

The idea of this string line is strength and flexibility. You want to crisscross the garden with the string, wrapping it securely around every pole it encounters on the way from one side of the garden to the other. You will be tying your individual branches loosely to the string line above them, NOT to the poles. As the buds grow you will have to adjust the tightness of each string to continue to support the individual branches. This “spider’s web” also provides a structure on which to drape a tarp if necessary. One of the hazards of growing outdoors is extreme weather. When severe weather threatens towards the end of your growing season, you do not want to be wiped out from strong winds or pounding rain. Tying tarp over this web provides great protection from wind, rain and light hail for your garden. (Nothing can save your garden from heavy hail or tornadoes...just saying.)

TIP: When you tie up the buds you want to tie the string to the branch at the base of the bud. If you tie directly to the bud it can grow right over the string and then break when you pull the string off during trimming.

“When you tie the buds you want to tie the string to the branch at the base of the bud.”

Figure 24. Tied buds are protected from breakage as they lengthen.
This table of photos reflects the time-consuming nature of this oh-so critical step in your ongoing marijuana-growing adventure.

**SECURITY**

As your plants mature and you’re getting close to harvest you need to start guarding your plants. Although having a locked privacy fence is useful for keeping your plants out of obvious view of passersby, *Cannabis* releases a very strong telltale smell at maturity. Anyone who knows the smell will figure out that you have plants ready for harvest. In addition, most of your girls are now at least six feet in height and visible to anyone looking. Most thefts consist of the simple act of culprits climbing over fences, yanking whole plants out of the ground and then climbing back out. Being proactive to protect your crop can include owning a watch dog, but mounting motion detector security lights, cameras, and alarms works even better. Having the cameras in plain sight will deter most thieves, but some will just put on ski masks before climbing your fence. The best protection for your plants is your being awake until sunrise. The majority of all thefts happen between 4 to 6 am when most people are asleep. Besides motion-sensor lights, our grower sets up a Wi-Fi camera and then stays up playing online poker all night. He keeps the live-feed camera window open in the corner of his computer screen while he plays in another window. (If he loses at poker he watches Netflix). If you catch thieves in the act—being a medical card holder and legal grower gives you the right to call police and get the intruders arrested. This is a much better option than using weapons to protect your crop. No plants are worth dying for or worth killing some teenage kid who’s being an idiot. In addition, if you shoot someone out of fear of theft you can be arrested for the use of lethal force or for

“No plants are worth dying for or worth killing some teenage kid who’s being an idiot.”
manslaughter; if you set booby traps you can be sued and again you could be arrested. ...Now if you have a dog that bites the intruder it’s all good... (So long as you have clearly posted “Beware of Dog” signage). Our grower usually waits until the thieves are right on top of the fence and then sends his dog after them—her hound-dog baying scares the crap out of them and they don’t usually come back the rest of the season.

Figure 25. Our grower posts motion-detecting cameras, lights, and alarm sensors in positions that cover his entire garden. Abby’s job is to bark loudly enough to hopefully topple intruders from the fence.

**HARVEST**  As mentioned in chapter two, once you begin to harvest your buds, you will completely quit watering and feeding them. The big water leaves on the lower parts of your *Cannabis* bushes are drying out and yellowing, which is great. The styles sticking out of the flowers are beginning to turn brown and your trichomes are changing from clear to milky, and then to amber. The trichome stages let you know when to harvest. You will need a small magnifying loupe, or a handheld microscope to check the little glandular balls on the ends of your trichomes—these are filled with THC. You know your plants are still immature if they have clear trichomes—the cannabinoids have not yet fully matured. Once your trichomes turn

Figure 26. This branch tip holds a dense cluster of female flower buds covered in milky trichomes. Coincidentally the squiggly stigmas sticking out of the individual flowers are turning brown.
milky/cloudy you know they’re ready for harvest—the THC has matured. Or you could wait a little longer until the trichomes begin to turn amber—the THC is beginning to degrade to CBN, which some growers really like as it causes the ‘couch lock’ body high.

Trichomes are constantly being produced and may be in different stages on the same plant. This means you will need to daily check trichomes on multiple buds from different branches of each plant. Some dispensaries recommend harvesting sativas and sativa-dominant hybrids at the milky/cloudy stage, and harvesting indicas and Kush at a 60% amber stage to get specific effects. Sativas give the head high with mental acuity still intact, while indicas give the full body high. (For a full discussion of how to manipulate your high based on trichome stages see “beyond chronic” in the Resources at the end of this guide).

Whether you choose to harvest as soon as most of the trichomes on your plant are milky, or you choose to wait until a majority are amber—is up to you. Our grower harvests as soon as he finds a trichome turning amber on a plant. In the trimming stage the entire harvest from a given plant gets mixed, so his blend is approximately 5% clear, 10% amber, and 85% milky/cloudy—this is a great percentage ratio and he’s known locally for the excellence and potency of his weed. (His weed gives a combination head and body high with the indicas providing a more potent body effect).

Be careful when harvesting your buds—don’t let them hit the ground and get dirty. You can use the string lines to hold each branch safely above the ground while you cut it from the stalk; then hold the branch and use scissors to cut it free from the string line. Take three or four big branches at a time (see Figure 27) and place them on a surface where you can easily trim them down to little branches with lots of buds on them and a good stem for wrapping, and that will hang straight when curing (see Figure 28).

Figure 27. These big branches will be trimmed of their water leaves and then cut down to smaller branches.

**CURING** Your weed is not ready to smoke until it has cured for three to four weeks. The best way to do this is the same procedure for drying and curing culinary herbs—you will hang the buds. Harvesting and hanging are coincidental activities; you will be careful and methodical and harvest one plant at a time, bringing only a few branches at a time to prepare for hanging and curing. As you harvest your bushes and cut the string line tying up your plants in the garden, you can re-use the bamboo poles in the drying process. Our grower hangs the bamboo poles parallel to the rafters in his garage.
The first step in the hanging process is to thoroughly clean your curing room (or garage)—you don’t want dirt or animal hair in your bud. Then you need to seal all windows with cardboard or a heavy drapery as herbs cure best if kept in the dark (light degrades the THC). Hang your poles horizontally to the ceiling, tie the string to the top and let the ball of string rest on the floor. Hang one stem-full of bud at a time, starting at the top and working your way to the floor, spacing the buds about three inches apart. (Don’t let the bud touch the floor). The weight of the bud will hold it in place against the string with just a little loop. (But clothespins are useful for anchoring buds to the line if needed).

Our grower uses blue painter’s tape to mark the beginning of a particular plant on a given string line. He writes the number of the plant on the tape and then wraps it around the pole. After you fill the line, cut it close to the floor. Tie the next line four to five inches away, just to the point where the hanging buds of adjacent lines don’t touch each other, and repeat the procedure.

Don’t bring in too many big branches at a time; they’re heavy and will flatten. Take your time, and remove all the extra vegetation and big stems off them before cutting them into the smaller branches. Use a clean box to hold the smaller branches until the box is full, and then hang the branches as described. Repeat the whole procedure until you’ve hung every last bud. (Popcorn-sized buds can just be placed in a paper bag and allowed to dry there; mark the plant number on the bag).

Figure 29. Illustrations of hanging bud.

Note: The harvest and hanging can take a few days and you are not watering the remaining bushes in the garden UNLESS the weather is unseasonably warm. You won’t water unless the remaining plants begin to wilt.

As soon as the garden is harvested and in your curing room, you can lock it up and once again start sleeping at night. Document the days you hung which plants; in approximately three weeks you can check to see if they are ready to trim and smoke! They will shrink about 70% so by the time they’ve cured you’ll have a lot of space between the buds. To test whether your buds are dry enough to trim, you will check random stems by trying to snap them. If the stem snaps the bud is ready; if it bends it needs more time. Some of the tiny buds in the paper bags (our grower calls them Grunions) might be dry enough to smoke—you can finally check out your herbs!

Remember that careful record keeping throughout the process will help you determine at the end of a season which plants were most productive versus which had troubles, and perhaps—which methods require some tweaking next season.
Figure 30. This is a demonstration of wrapping a loop of string around the stem of a bud and allowing its own weight to hold it in place. Moving three inches along the string the process is repeated.

**FINAL TRIM** Dispensaries require very clean buds without stems, bracts, or water leaves; in effect, they want the weight of your product to reflect THC. Even when preparing your own medicine, trimming your bud in this manner not only produces excellent clean medicinal bud, it produces the ‘bud trim’ that you can use for making butter, infusions, tinctures, hash, or just for rolling joints.
Summary of Curing and Trimming Process:

1. Cut large branches into smaller branches with stems attached
2. Hang the smaller branches with numerous buds on them.
3. After curing, cut the branches into smaller buds, removing big stems.
4. Use small manicure scissors for the fine trim.
5. Cut off any small stems and three-leafed bracts.
6. Voila’—the final result.

TIP: While you are doing the fine trim, you will notice that your plants are sticky from THC; your fingers and scissors will get gummed up. Keep your tools and hands clean; remove the resin with 90% rubbing alcohol or Goo Gone® (some people like to wear gloves).

Additional trimming notes: Our grower initially trims up as much bud as possible for sale to local dispensaries. After four weeks he removes all the remaining buds from the long stems and packages the untrimmed bud in gallon freezer bags to finish trimming later. He puts five ounces of untrimmed bud in each bag after labeling the bag with the name and number of the plant. The trimmed weight of these bags is generally a quarter-pound per bag. The gallon bags hold a half-pound of trimmed bud if packed pretty tight, so two 1-gallon bags of trimmed bags equals one pound. (Squeeze out all air from the bags when packing).
Figure 31. What a satisfying feeling to wrap up a successful season of growing chronic. Shown here is Maui Berry; one plant produced over two pounds of this beautiful trimmed herb!
CHAPTER FOUR
BLACK BUTTER

INGREDIENTS
¾ lb of bud-trim
2 lb unsalted butter
~ ½ quart of water (added as needed)
Crock pot
Cheesecloth
Wooden spoon
Strainer
Bowl
Small jars or tubs with lids—plastic is recommended for long-term freezer storage.

Figure 32. Dispensaries want trimmed bud—that is, buds with stems and excess sepals and bracts removed. The lower right circle encloses some untrimmed bud while the plastic container at the upper left of this photo holds the trimmed Cannabis. The leaf-like bracts of the bud trim that was cut off are loaded with THC crystals that we will extract in this process.
METHOD

1) Make butter in well-ventilated area, such as a garage; (it stinks!).

2) Use low heat for the entire process. Melt butter, add the trim and stir in until thoroughly moistened. Add water to point of saturation and heat for 12-36 hrs. Stir occasionally to check moisture saturation and add water as needed.

3) Once the butter is green ‘black’ you know it’s ready to strain.

4) Wash your hands for the next stage in this process.

5) Line the strainer with cheesecloth and begin transferring the soggy mixture from the crock pot to the strainer.

6) Press the trim hard with the wooden spoon to squeeze the butter through the cloth into a bowl. Be thorough as you don’t want to waste any butter!
7) After squeezing as much of the butter through the cheesecloth as you can with the spoon, you need to re-squeeze the mixture through the cheesecloth using your hands.

8) At this point you might choose to strain one more time to remove any small pieces of trim.

9) Pour the liquid black butter into your jar (tub) and place in your freezer for several hours. Any water in the butter will rise to the surface and freeze; you can just pick off the little ice cube and throw it away.
If all of the water has cooked off in the crock pot cooking process, there will be no ice.

**CAUTIONARY NOTE:** This is very concentrated—you have to dilute it in your recipes.

Provided next is a delicious cookie recipe. When trying any edible, be sure to test the potency carefully rather than willy-nilly ingesting large amounts. For example, with cookies, try one and wait two hours to see what your effects are before increasing your dosage.

Figure 33. Our grower squeezes out that last bit of precious oil.

Figure 34. We used a glass jar to collect the butter here, but we had to be careful not to leave it too long in the freezer.

Figure 35. Excellent results are shown here—great consistency and no ice. Let’s make edibles!
PEANUT BUTTER AND GINGER CANNABIS COOKIES

INGREDIENTS
½ cup sugar
½ cup packed brown sugar
7 tablespoons unsalted butter, room temperature
1 tablespoon ‘black’ butter, room temperature
1 cup peanut butter, chunky
1 egg
1 teaspoon vanilla
1 ¼ cups flour
¾ teaspoon baking soda
½ teaspoon baking powder
¼ teaspoon salt
1 ½ teaspoons ginger

METHOD

1) Beat the butter until creamy—two minutes.
2) Add the sugars and beat two more minutes.
3) Mix in the peanut butter, vanilla and egg and set aside.
4) In a separate bowl mix together the dry ingredients – flour, baking soda, baking powder, salt, and ginger.
5) Stir the dry ingredients into the sugar-butter mixture.
6) Preheat the oven to 350 degrees.
7) With your hands, roll each cookie into a 1 ¾-inch ball.
8) Add ¼ cup of sugar and ⅛ teaspoon of additional ginger to a bowl.
9) Lightly roll each cookie ball in this mixture, then place on greased cookie sheet.
10) Flatten in two directions with a fork, and then bake in oven for 12 minutes.

Delicious! Don’t eat too many before testing the dosage as described above!

NOTE: If you enjoy this recipe, more recipes are available for download from our website:
http://www.cannabisoutdoorgrowing.com

Figure 36. This ball of cookie dough is being rolled in the sugar-ginger mix--it looks like an egg!
APPENDIX
JOURNAL

CLONES LIST

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Note: Don’t plan to grow more than 9 to 10 plants unless you have help; this is a lot of work.
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|      | Picked up clones  
(See page 1 for strains) | |
|      | First day setting clones outdoors  
(Note how many hours in the sun and how many in the shade) | |
|      | Prepared the garden plot  
(Note what hours in full sun/shade, whether level or any slope) | |
|      | Made new soil and filled holes  
(Note your mixture) | |
|      | Planting Day!!  
(Note any comments or details that may be relevant later) | |
|      | First day of pinching buds  
(Note how many branch tips and for which plants) | |
|      | First day of (half) fertilization  
(Note how much and which plants) | |
|      | Second chicken pellet\(^6\) application  
(Note how much and which plants) | |

\(^6\) Or equivalent general organic fertilizer
GARDEN GRID FOR MAPPING YOUR PLANTS

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SUMMARY OF GARDEN MAINTENANCE

In the provided journal table on the following pages, jot down the activities below as you complete them, including the date and all relevant details

- Thirty days after planting, reapply ½-amount soil inoculants -- Date_________________
- Every thirty days after planting, reapply chicken-pellets -- Date_________________
- Daily watering (note how much to each plant) -- Time of Day__________________
- Weekly fertilizing (note how much to each plant) -- Day of Week_______________
- Add ladybugs and/or mantis eggs to your garden (which and when); note any other pest treatments
- Pinch Buds every 10 to 14 Days until 32 Branches or three-foot bushes (note dates, number of bud tips and which plants)
- Remove lower branches for ease of watering and access (which plants and when)
- Change fertilizer from Age Old Grow to Liquid Bloom once female pistils and trichomes begin to appear in your growing centers. (Note the date this happens for each plant)
- Start tying up your buds (Adjust daily as necessary)
- Add Flavor enhancer to your fertilization treatment
- Switch to just watering your plants last two weeks
- Check trichomes daily for 85% milky stage
- Harvest plants as they are ready –note plant numbers and names as you harvest
- Stop all watering and fertilizing of your plants once harvest begins
- Hang and cure harvested plants for three to four weeks; label them and date when hung
- After three-to four weeks of curing of individual plants, cut down and Trim (document)
- Weigh and document the dry, trimmed total bud harvested for each individual plant
- Document any butter you make and what concentration (how much bud trim)
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**GLOSSARY**

**Acidic**—is the condition of having a relatively high number of Hydrogen ions; indicated by a pH below 7.

**Algal bloom**—is a rapid increase or accumulation in the population of algae (typically microscopic) in any aquatic system, usually an indicator of an unnatural change in the environment.

**Alkaline**—is a condition of having a relatively low number of Hydrogen ions; indicated by a pH above 7.

**Apex (apices-pl.; apical-adverb)**—is the growing tip of a plant shoot or root.

**Axil**—is the angle between the upper side of the stem and a leaf, branch, or petiole.

**Calyx**—collectively, the sepals are called the calyx; this is the outermost whorl of parts that form a total flower.

**Diameter**—is the full width of a circle, through the center and ending at the edges.

**Feminized seeds**—are produced through a chemical procedure that forces gender. These are not guaranteed; a much more reliable method to insure female plants is to use clones.

**Germination**—is the process by which plants emerge from seeds and spores, and being growing.

**Habit**—is the form or characteristic appearance of a plant when it’s growing.

**Hermaphrodite**—a hermaphrodite flower has both male and female organs (stamens and ovary with pistil); a hermaphrodite plant has both male and female flowers.

**Indica**—one of three species of marijuana, this species is known for its mind high and lanky growth habit.

**Inoculate**—means to insert. **Inoculant**—is the item being inserted.

**Lateral**—means ‘side.’ A lateral meristem forms the buds on the periphery or side of a plant.
**Meristem** – is the tissue in most plants consisting of undifferentiated cells (*meristematic cells*), found in zones of the plant where growth can take place. This tissue forms the buds for leaves or flowers.

**Morphology**— in this context, is the form and structure of an organism.

**Node**— is that part of a plant stem from which leaf or flowers buds grow. An **Internode** is the distance between two nodes.

**Photoperiodism**— is the developmental responses of plants to the relative lengths of the light and dark periods.

**Photosynthesis**— is the chemical pathway in which plants can harness sunlight and water to make their own food.

**Pistil**— According to Greenmanspage, “Pistil has developed a special meaning with respect to *Cannabis* which differs slightly from the precise botanical definition. This has come about mainly from the large number of cultivators who have casual knowledge of plant anatomy but an intense interest in the reproduction of Cannabis. The precise definition of pistil refers to the combination of ovary, style and stigma. In the more informal usage, pistil refers to the fused style and stigma. The informal sense is used throughout the book since it has become common practice among Cannabis cultivators.” ([http://www.greenmanspage.com/guides/botany.html](http://www.greenmanspage.com/guides/botany.html)) Like the Green Man, this guide also uses the informal definition of pistil.

**Pruning**— is a horticultural practice involving the *selective* removal of parts of a plant, such as branches, buds, or roots. Reasons to prune plants include deadwood removal, shaping (by controlling or directing growth), improving or maintaining health, reducing risk from falling branches, preparing nursery specimens for transplanting, and both harvesting and increasing the yield or quality of flowers and fruits. **Super-cropping** is a specific type of pruning of female *Cannabis* plants to increase the yield and quality of the flower buds.

**Sativa**— one of three species of marijuana, this species has a muscle relaxant quality and reduces headaches and alleviates depression.
**Sepal**—is a component of the outermost whorl of a flower. Flowers consist of four whorls; from the outermost inward, these are the sepals, petals, androecium (male reproductive organs) and gynoecium (female reproductive organs). In reduced flowers one or more of these whorls may be missing. Collectively, the sepals are called the calyx. Female marijuana flowers are reduced structures with a fused calyx and the gynoecium.

**Stigma**—is the receptive tip of a carpel, or of several fused carpels, in the female reproductive structures of a flower. The stigma receives pollen at pollination, which moves down the style into the ovary to the seeds.

**Style**—is the long tube connecting the receptive tip of the carpel (stigma) to the ovary in a female gynoecium (reproductive structure of the female flower).

**Symbiont**—is an organism living in symbiosis. **Symbiosis** just means “living together.” This can be mutually beneficial (mutualism), beneficial to only one but not harmful to the other (commensalism), or beneficial to one while harming the other (parasitism).

**Tracheids**—are elongated cells in the xylem of vascular plants that serve in the transport of water and mineral salts.

**Trichome**—on plants is an epidermal outgrowth of various kinds. Cannabis trichomes are glandular hairs with little balls on them—they produce the much-desired THC and other cannabinoids. (See [http://www.cannabisculture.com/content/inside-trichome](http://www.cannabisculture.com/content/inside-trichome) for awesome photos)

**Xylem**—is one of the two types of transport tissue in vascular plants (phloem being the other). Its basic function is to transport water, but it also transports some nutrients through the plant as well.
REFERENCES


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http://www.cannabisculture.com

http://www.greenmanspage.com/guides/botany.html

http://www.montanabiotech.com


RESOURCES


Any questions, please contact us at support@cannabisoutdoorgrowing.com
“Black Domino” bud from 2009, photo by Tim Mullenniex