

PERFORMANCE GROW MANUAL



Kit Assembly

Your kit will arrive collapsed, as you should store it, we strongly suggest a pre-rinse cleaning before you start your process of growing. Separate the pieces and identify the large tray with no grow sites and place it into position. This is your base/reservoir and can be filled with water about $\frac{3}{4}$ full. Next, you will place the mister assembly into the water and connect the pump. Now, you will place the propagation lid onto the base making sure to route your hoses and/or cord through the separation. The cloning collars can be placed directly into the sites or can alternately go into the net pots, which will drop into a site.

Placement

System placement is very important. You need to make sure that you have a proper spot for all your kits. Each kit needs to be placed on a sturdy structure that is strong enough to hold when filled with water. If you are not sure of what to put your system on, the floor works just as good as a sturdy structure.

Humidity Dome

Humidity domes are used on clones to allow the humidity to be steady. They are there to make sure the cuttings do not dry out too quick. It requires you to keep a constant eye on them to make sure your cuttings do not wilt and die. When its time to transport your cuttings, you must make sure you give them enough time to adjust to the air. You don't want to put your cuttings to go through shock, this leads to them possibly dying. When you have a humidity dome with a vent open the vent for 2 days and then remove the dome on the 3rd day to prevent shock. If you have a dome with no vent you want to remove the dome for a couple hours per day and then remove the dome on the 3rd day to avoid shock.

Proper Lighting

When dealing with hydroponic systems, these systems need to be placed where there is not any access to direct sun light at any time of the day. Since the system does not require sunlight it does require supplemental grow lights. The preferred lighting when starting out from roots is 105-watt 6500 kelvin light bulbs and should be about 8-12 inches from the root. Moving on to the vegetative state the lighting needs to be a 400-600-watt 5000 kelvin light bulb and should be about 4-5 feet from the plants to allow them to grow. The next step is the bloom state, which requires your lighting system to be at a 1100-watt 4700 kelvin light bulb. Make sure to put your lighting system on a timer so that the lights come on and go off at the same time each day. This allows for consistency when starting the growing process.

Water, Additives & pH

Once you have your kit properly assembled and the water pump is placed in the middle of the reservoir, you can start filling the reservoir up with water all the way to the bottom of the misters. You don't want to fill the water up over the misters, it could result in hindering the operation of the manifold. Having the most amount of water without going over the misters results in cooler water which means having a more stable pH level.

Note: Make sure when adding water to the reservoir you avoid using distilled water. Reverse Osmosis water is fine to use if your tap water is high in mineral or has excessive chlorine, but most tap water is sufficient to use.

Once your reservoir is filled with water you will add your preference of solution to the water. You will need to follow the solution directions that is usually located on the back of the bottle or box that is provided with the purchasing of a solution. After you have added your solution it is necessary to check the pH level. You have two options tending to the pH level. Since the pH level tends to rise over the course of 24-48 hours, you can keep an eye on the water until the pH is consistent. Meaning getting the pH level to stay between 5.8 and 6.2. Or you can go ahead and get your pH level down to about 5.2 and it will slowly rise closely between 5.8 and 6.2 over the 24-48-hour period. Having a pH meter will really help with detecting what the pH levels are throughout all stages of growth.

Water Maintenance

Water quality is very important, the water must be able to deliver dissolved nutrients to plants. If the levels of mineral salt are too high, then it is unable to dissolve the nutrients your plant needs. If the pH level is not between 5.8 and 6.2 then it can do the same thing, not allow the nutrients to dissolve. You can use chemicals to adjust the pH into the ideal range. Normal water temperature should be in the range between 65 degrees and 80 degrees to keep the plants thriving.

Daily Maintenance

For the most part your system does all the work, but there is still some daily maintenance that should be done. For starters make sure that your system is performing properly. Make sure its not flooding the plants or not getting enough water. This can happen if the tubing is clogged. Make sure that your water is below from when the cycle first began. You can add water if you notice it has evaporated some. Make sure to not add more nutrient solution as this could overpower the growing process and kill what has already grown. Make sure to keep the temperature the same and that its not fluctuating. It might help if you keep a log and look for changes, they might not be noticeable every day, but a log can tell you otherwise.

Starting Seeds

Seeds can be started in a coco or peat plug or rockwool. These are good at balancing moisture and oxygen, which provides a perfect middle ground to prevent over-watering or under-watering. Coco and peat have very little nutrition and rockwool alone has no naturally occurring nutrition, so once the seed forms roots it depends totally on the nutrient solution you give it.

Taking Cuttings

Stem cuttings are by far the most common type of cutting that growers take. It involves removing some stem from a plant that contains a healthy growth tip. For this example we're going to use tomatoes, but you could easily apply this method to virtually all softwood plants; however, we highly recommend that you research the particular plant your taking cuttings from.

Step 1: Take a clean scalpel or a very sharp knife and remove a healthy looking branch from your mother plant. The branch must contain at least one growth tip (i.e. the point from which new leaves and shoot emerge.) The sharper the blade, the cleaner the cut and the less tissue damage around it-meaning less chance of disease.

Step 2: Remove any excess stem. Many grow guides will tell you to take a cutting at a 45 degree angle, to increase the surface area of the exposed cutting to rooting stimulators; however, this really is not necessary! We prefer to take a 'square cut' then we like to quarter the tip, which will provide more uptake of the rooting hormone.

Step 3: Remove any excessive foliage. The more foliage on your cuttings, the more 'life' it has to support. It makes sense, therefore, to remove any excessive foliage. Yes, some leaves need to remain but you're really after small, manageable cuttings that aren't going to crowd out your propagator or cloning machine. Trim the tips of larger leaves so that the cutting is no larger than the space it is going to be given. Also, make sure that small cuttings don't overlap each other so much, this significantly reduces the risk of mold.

Most growers aim for cuttings between three and five inches from top to bottom. The next step is to dip your cutting into some rooting stimulator. Though not essential, rooting times will be shorter, decreasing the chance of mold or stem rot. Several compounds can be used to promote the formation of roots. They work by signaling the activity of plant hormone auxins. Among the commonly used chemicals is indole-3-butyric acid (IBA) used as a powder, liquid solution or gel. You should pour a small amount of the rooting into a shot glass and dip into that. You need to clean the shot glass and your blade regularly, particularly if taking cuttings from more than one mother plant. You don't want to be transferring viruses between plants!

Step 4: It's time to fire up your cloning machine! A timely word of advice: it's important not to dawdle when taking cuttings! Remember, every second counts. After all, if you leave a cutting on your kitchen table, it will dehydrate and be well on the way to dying in a matter of minutes. So the sooner you can get your cutting into a propagator or cloning machine, the better. Preparation is key, especially if you are taking lots of cuttings.

Transplanting

When you see the emergence of more secondary roots and root hairs is a sure sign that your cuttings are developed enough to handle life outside of the cloning machine. If you're not quite ready though, don't worry; the cuttings will be quite happy to bathe in their nutrient mist for days, even weeks if required! Just be sure to change out the nutrients once a week and keep an eye on pH levels. If roots become very long you can always trim them -they won't mind!

A net pot is an ideal next stage for an aeroponic cutting. This gives you a chance to establish your cutting in the growth media of your choice. One common question about aeroponic clones is how to handle transplanting them into a pot of loose-fill media or hydroponic system. For instance, there is a common myth that aeroponic clones don't do well in soil or coco coir. This is simply not the case; you just need to take care. Ensure your chosen media is at room temperature and fairly moist. Also, remember roots hate light, so be kind to your cuttings and transplant them away from bright lights. Partially fill the pot with media, make a hole just

big enough to insert the rooted cutting, and gently back fill around it so all the roots are covered and your cutting is well supported. They will need a few days to adjust, so try to keep them under the same lighting for a bit. Ease them in gently under a 6500K T5 fluorescent or a 250W grow light.

Cleaning Between Uses

Your system requires proper care between uses for it to function at its peak performance. Once you have a successful cloning cycle simply empty the water from the reservoir. You can use bleach and water to simply clean out your system. Make sure to remove all the cuttings, pumps, misters, cloning collars, and water. You will then be able to fill up your reservoir with fresh water and add bleach with the specified ratio. Make sure you have all the debris cleaned out of your misters. Once you have all the debris cleaned you can now put your misters in a cup of bleach water taken from your reservoir as well. You can allow all of this to soak for 20 minutes. Place your cloning collars in a five-gallon bucket filled with fresh water and add one cup of bleach. To help keep your cloning collars submerged place a bucket with holes inside the previously filled bucket. This is only necessary if you are reusing your cloning collars. You can place your pump without the misters back to the center of the reservoir. Cycle the pump for at least 20 minutes with the bleach water solution to insure everything is getting properly cleaned. Once it has been going for 20 minutes you need to do the same thing with fresh water to make sure there is no bleach in the system. Make sure to rinse the mister thoroughly with fresh water. Once you have cleaned your system you are ready to start your next cycle.

Specified Bleach Ratio

For general cleaning with bleach, use a ratio of **1/4 cup of bleach per gallon of water, or one tablespoon for a quart.** That is a **1 to 68** ratio - not very much. Mix bleach with water and then dip a clean cleaning cloth in it, wring out the excess, and wipe down hard surfaces.



Aeroponic Growth Planner

UNITS: ML/GALLON

Week	pre-Root	Vegetative				Flower							
		1	2	3	4	1	2	3	4	5	6	7	8
KLN®	10	10											
Pro-TeKt®		5	5	5	5	5	5	5	5	5	5	5	5
Foliage-Pro™		5	10	10	10	5	2.5	2.5	2.5				
BLOOM™						5	10	10	10	10	10	10	5
Mag-Pro®				2.5	5	5	5	5	5	5	5	5	2.5
TARGET PPM	420	420	690	845	1000	1040	1215	1215	1215	1390	1080	1080	615
Environment													
Water PH	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Water Temp	80°F	68-77°F	68-77°F	68-77°F	68-77°F	68-77°F	68-77°F	68-77°F	68-77°F	68-77°F	68-77°F	68-77°F	68-77°F
Humidity	90-99%	60-70%	60-70%	60-70%	55-65%	50-60%	50-55%	50%	50%	45%	45%	40%	40%
Light Spectrum	6500k	5000k	5000k	5000k	5000k	4700k	4700k	4700k	4700k	3700k	3700k	3700k	3700k
Light Power	85-105w	00-600w	00-600w	00-600w	00-600w	1100w	1100w						
Light Cycle	24hr	18hr	18hr	18hr	18hr	12hr	12hr						
Light Distance	5-10"	24-48"	24-48"	24-48"	24-48"	16-30"	16-30"	16-30"	16-30"	16-30"	16-30"	16-30"	16-30"