



**Albuquerque Hydroponics and Lighting**  
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## **Operating your Grow Room**

- 1. Starting seeds.** Seeds can be started in soil, rockwool cubes, or a 50/50 mixture of perlite and vermiculite. Keep the media evenly moist and fairly warm (70-80 degrees). A propagation mat with a thermostat will help seed germination greatly. Seeds should be started under fluorescent lights that are placed about 1-2 inches above seed, plant or humidity dome. Seedlings can be moved under HID lights when they have developed the second set of "true" leaves. Keep the HID light about 2 feet away from the seedling or clone for the first 2-3 days after transferring from the fluorescent to give it time to adjust to the stronger light.
- 2. Preparing Your Media** After starting your seeds it's time prepare your media for planting. If using a common potting soil you can supplement the available nutrients by mixing in organics like earthworm castings or bat/seabird guanos. Fine dolomite lime will also help stabilize pH (add approx. 1 oz of lime to 1 gal.soil). Remember to fill soil containers loosely, don't pack the dirt. If you will be growing hydroponically with growrocks, then rinse them before the first use and sterilize them between harvests with a 5% bleach solution (6 oz bleach per gallon water) and rinse again before use. If you will be growing in the coconut coir fiber you will want to reconstitute the solid brick by adding 1 gallon warm water. The brick will break down to at least 2 gallons of usable medium. If growing in rockwool (cubes, slabs, or loose) remember that it must be conditioned first. This is done by soaking the rockwool in plain water that has been adjusted to a 5.5 pH. Leave the rockwool to soak in this acidic water for 12-24 hours, then drain. Rockwool only needs to be conditioned once, after that always pH adjust your water to 6.3 pH.
- 3. Planting Seedlings.** Once your seeds have sprouted and roots are visible outside the rockwool cube or a good size root bundle can be seen growing through your media then your seedlings are ready for transplant. Avoid breaking up the root mass, keep this as intact as possible. If plants are started in rockwool cubes, then they are inserted into the holes made for them in the larger 3" and 4" cubes. When transferring rockwool cubes to a growrock media make sure that the cubes are buried below a layer of growrocks to help maintain moisture. If plants are being transferred to soil or a similar hydro media they should be buried deep enough that their first set of leaves is about 2 inches above the ground line.
- 4. Watering Cycles/Nutrients** How often you water is often determined by your media. When growing in soil, one inch of dry soil should be found at the top of your soil container. Water the container only until water can be seen running out the bottom of the container. If growing with rockwool in a hydroponic system the pump timer should be set to deliver no more than 3 thirty minute watering cycles per day while the lights are on. If growing hydroponically in the growrock media this should be increased to 4 waterings per day. There are two stages of nutrient formula: grow and bloom. When plants are first started it is called the grow or vegetative stage. Plants require a nutrient solution which is high in nitrogen. When they begin to flower and produce fruit this is called the bloom or flowering stage. At this time the plants nutrient needs change. They need much less nitrogen and much more phosphorus. A bloom formula nutrient solution follows these needs. Your nutrient formula should follow your light cycle. Vegetative stage/18 hours light=grow formula. Flowering stage/12 hours light=bloom formula.

- Light Cycles** Plants in the vegetative stage of growth typically receive 18 hours of light. A Metal Halide light is the best light for this stage of growth. Most plants are photosensitive and need to have their light cycles shortened to trigger flowering and fruit production. This is done by changing the light cycle from 18 hours to 12 hours of light. This simulates the short day length of winter and triggers the plant to produce flowers and fruit before the season ends. When growing indoors, plants should be triggered for flowering once they have reached 1/4 of their desired overall height. For example, when growing sunflowers to 3 feet high at harvest, they should be triggered for flowering at 8-10 inches in height. Most plants will continue to gain in height even during the flowering stage. To optimize your flower and fruit production during the flowering stage add a High Pressure Sodium HPS light. This produces more light in the red end of the spectrum, which plants need during flowering. If you only have a MH system you can buy a "conversion bulb" which runs off your MH system but puts out light which is more red like the HPS.
- Environmental Controls** Controlling your grow room environment can optimize your plant growth and yield. Temperature should range between 70 and 80 degrees and your humidity should be between 40-60%. Most often a vent fan is needed to expel the excess temperature and humidity. The fan should be mounted above your head because heat rises. Often growers will have an intake fan near floor level bringing fresh air in and an exhaust fan blowing hot air and humidity out. There are thermostats and humidistats to automatically turn fans on when temperature and humidity rise above the preset limits. Another important environmental factor is carbon dioxide (CO<sub>2</sub>). This is the fuel that powers the plant. In a closed room with no fresh air circulation your plants can use up all the available CO<sub>2</sub> in about 3 hours. Once the CO<sub>2</sub> is used up, the plants stop growing. There is normally about 300 ppm CO<sub>2</sub> in the air. As the CO<sub>2</sub> levels are increased to 1500ppm the plants growth rate also increases. Adding CO<sub>2</sub> to your growing environment can increase your yield at harvest by 30% (some rose growers claim 70% increase). A CO<sub>2</sub> Enrichment system can be added to your grow room to automatically maintain a high CO<sub>2</sub> level to increase your growth. This system hooks up to a CO<sub>2</sub> tank and delivers the CO<sub>2</sub> through a line to the air just above your plants. You can also run the CO<sub>2</sub> line to an oscillating fan which then blows the CO<sub>2</sub> around the room. By keeping your temperature and humidity down and your CO<sub>2</sub> levels up, you can increase your growing success.