

# SEED STARTING & TRANSPLANTATION

## Suggested Items:

- **Nursery Tray & Dome**—10"x20" Tray w/ 7" dome and insert
- **Seedling Heat Mat\***—10"x20" \*Thermostat available
- **Glass Thermometer**—Aquarium type
- **pH Tester/Meter**—pH testers can range from cheap paper strips or shakers to digital meters with remote probes.
- **Root Riot or Rockwool Plugs**—Root Riot is a ready-to-use plug formed from composted organic materials and are inoculated with micro nutrients and biologically active ingredients. Rockwool is derived from spun rock and is all natural, but requires pre-treating with a pH down solution.
- **pH Up & pH Down**—For adjusting the pH of your water. Soil 6.3-6.6/Hydro 5.8-6.1.
- **Heavy Roots**—Heavy 16 Roots is an excellent root promoter and stress reliever. A great way to start your seeds off right!
- **Heavy Foliar**—A great foliar spray packed with micro nutrients and pre-formed photosynthates.
- **Heavy Veg A & B**—2-Part complete Veg Nutrient, great for feeding seedlings when used at 1/4 strength.
- **Great White**—Soluble blend of 16 different species of mycorrhizal fungi, 14 different species of beneficial bacteria and 2 species of trichoderma, all in one product! It is a very fine powder that should be mixed into your soil and delivers spores directly to the roots for immediate germination. Highly recommended for rapid root growth.
- **Fluorescent Lighting**—Cool or "daylight" bulbs are preferred
- **LED Clone Strip**—We recommend the **Luxe Lighting 18 watt LED clone strip**

*\*You don't need every item on this list. We recognize that there is more than one way to start seeds and you can do it any way you want, but this is what has worked well for us.*

## Starting Seeds

To start with, it is a good idea to soak your seeds in water for 8-12 hours to make sure that they have all the moisture that they need. It's also a good idea to start more seeds than you will actually use, just in case some don't make it. Next, you will put the seeds into **Root Riot** or rockwool plugs. **Root Riot Plugs** are nice because they are made from composted organic materials and are ready to use. If using rockwool plugs, they need to be soaked for 8-12 hours in water with a pH between 5 & 5.5 to bring the pH of the rockwool to usable levels. Tear a pinch of rockwool off of your plugs and use it to cover the hole with your seed in it.

Next, put your plugs into your nursery tray and cover them with the dome. Place your tray onto the seedling heat mat. The ideal temperature inside the dome ought to hover between 75°F and 80°F. This will create the heat and humidity that your seedlings need. You can monitor the temperature by placing a thermometer inside your tray and dome. If temperatures inside the dome get too hot, using a thermostat or a layer of cardboard between the heat mat and tray should help to control the temp. When watering, make sure that you are always using water with a pH near 6 and that your plugs go from wet to "barely moist" before watering them again. Never let the water in the bottom of the tray exceed the height of the grooves, yet there should always be some water at the bottom of the tray for increased humidity.

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## Providing Light

Depending on conditions and seed type, it will generally take anywhere from 2-14 days or more for your seeds to sprout. Once sprouted, your seedlings will need light. Even before your seeds sprout, it is a good idea to have them under light—this will give signals to the plant telling it which direction to grow (some seeds may need a period of complete darkness before they sprout. Follow the directions on your seed packet for best results).

You may use a simple fluorescent shop-light, a full-spectrum fluorescent, a compact fluorescent or a T-5 high-output fluorescent. Choose “cool” or “daylight” bulbs if given a choice. 8” - 12” is a good distance for lights, unless using T5’s, in which case you will want to keep them about 12-16 inches above your plants. You may use HID lighting if it is kept high enough from the plants (four feet or more), but why waste the electricity?

If using LED light, a clone LED strip is ideal for nursery applications large and small. The **Luxx 18w clone LED** strip is 67% more efficient running off 18 watts, fully waterproof, and is rated for 54,000 hours. These can be spread out width-wise on a clone rack where you would normally need a 4x4 T5 fixture. This adds immense versatility while saving you money in the long run!

## Feeding of Seedlings

Seedlings will require only water until the first set of “true” leaves (not baby leaves) develops. Afterwards your new plants will begin to need some nutrients. We suggest using any grow nutrient (such as **Heavy Veg A & B**) at ¼ strength (or about 300 ppm)—any more and you risk over-fertilizing and damaging your plant. We also recommended that you add a product like **Heavy Roots** to speed root development. You may also want to add small amounts of **Great White** or other beneficial microbe product to protect those newly developed roots from pathogens. You should mist your plants everyday with water. We recommend using a foliar spray with micro nutrients like **Heavy Foliar**. You can remove the dome now to help your seedlings harden and acclimate to their new atmosphere.

## Transplanting

Soon your seedlings are ready for transplant. They will be between 2” and 3” tall, will begin to show roots coming out of the plugs and will have some new top growth. To alleviate stress and shock during transplant, we recommended that you use both **H16 Roots** and **Orca Liquid**. These products provide your plants essential B vitamins, hormones and amino acids and will help your plants bounce back more quickly from their transplant shock. If you are transplanting into soil you will want to use Mycorrhizae in the form of **Great White** or **Mykos WP**—this will help to explode your roots out. Put your seedlings into their new home—either soil, coco, hydrocorn, rockwool or some mix of your own.

## Vegetative Stage

Your seedlings are now ready for the vegetative or growth stage. Your plants should be moved under HID lighting—either Metal Halide or High Pressure Sodium—still keeping the lights high so as not to harm the plants with too much heat or light intensity. You can bring the lights down about 6” per day until they are about two feet from the plant tops. Your lights will stay on for 18 to 24 hours per day during this period.

If you are moving your plants outdoors, you may want to put them in the shade for a couple of days, then move them into partial sun for a couple days and then they will be ready for full sun. This is called *hardening off*. Too much light too soon will adversely affect your plants. If your plants are in soil you will want to keep the pH between 6.3 and 6.6. If you are in a hydroponic system your ideal pH is between 5.8 and 6.1. The amount of nutrients to use will range from 500 - 700 ppm for early vegetative growth and up to 1000 ppm during later vegetative growth. Don’t be too alarmed if your plants are looking a little sad for the first few days as it takes time for them to adjust to their new environment. Soon they will pick up and perk up and will be well on their way.