CLONEX®

A Guide To Successful Cloning



The CLONEX® Propagation System

Since 1997, Hydrodynamics International has been the source for the very best products in plant propagation, plant nutrients and supplements for your hydroponic, soil, and soilless gardens.

The Clonex propagation line, as well as the plant nutrients and supplements available from HDI, help achieve success by consistently producing vibrant and healthy clones that will develop to their full genetic potential.

Whether you're growing in hydroponics or soil, HDI's product lines include everything needed to propagate and grow healthy and bountiful plants.

HDI™

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MotherPlant®

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The CLONEX® Propagation Guide

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The CLONEX® Propagation System

Why Should You Clone?

A clone is a small piece of plant cut from a donor (aka “mother”) plant that has re-established its own root system. Unlike plants grown from seeds that are genetically ***similar*** to the two sets of contributing genes supplied by the two parent plants, cutting and rooting a clone produces a new plant that is genetically ***identical*** to the unique plant from which it was taken.

Cloning is a proven method for continued success in growing crops at both the home garden and commercial scales. Once you have mastered the science and the art of cloning you’ll be well on your way to maintaining consistent production of your favorite genetics in a self-sustaining garden.

No more buying clones from questionable outlets or worrying about bringing in pests or other pathogens from someone else’s garden!

No more waiting for weeks while seeds germinate and grow, and only ***then*** being able to decide if they are genetically suitable!

This guide will take you through the steps to successfully root a cutting...


CLONEX

Getting Started - Mother Plants

A **mother plant**, sometimes referred to as a donor plant or stock plant, is a plant that has been grown specifically to provide cuttings for starting new plants (i.e. clones).

Because the cuttings will be genetically identical to the mother plant, you will want to choose a mother that is a healthy and strong grower, and that displays the characteristics of the genetics you want to maintain and cultivate.

Your mother plant should be watered a few hours before you plan to take cuttings. Taking this step ensures that the cuttings will be well nourished and hydrated, and prepares them for successful cloning. A good fertilizer for mother plants is one that limits excessive nitrogen and provides the important building blocks used in carbohydrate accumulation. The excess nitrogen contained in standard fertilizers will result in low carbohydrate reserves and the poor rooting of clones. Using a fertilizer formulated for the specific needs of mother plants, like MotherPlant brand fertilizer, is important for the successful rooting of clones.



MotherPlant fertilizer is formulated to strengthen the cell walls of plants, improve water holding capacity and increase stress tolerance. This results in energized cuttings that are better prepared to generate healthy new roots! For the serious grower that wants to successfully clone their favorite strain, or just keep their garden going, this is an important step.



It's also recommended to spray Clonex Mist on chosen donor sights on your mother plant a few days before you start taking clones. This will help to stimulate root development in your cuttings.

Getting Started - Supplies

With multiple techniques and products in the market for cloning, taking a clone can be as simple or as complicated as you want it to be! In this guide, we are going with a simple but effective method.

Once you have a healthy mother plant selected and ready to go, and you have prepared your workplace to be clean and organized, these are the items you will need to clone successfully with this guide:

- **Rubbing Alcohol for santization of workspace and supplies**
- **Clonex Rooting Gel**
- **Shot Glass**
- **Scalpel or Razor (*Scissors aren't recommended as they can crush delicate tissue)***
- **Root Riot Plant Starter Cubes and an insert/tray to hold them**
- **Humidity Dome**
- **Clonex Mist**


Growth Technology
CLONEX
Rooting Gel
Net Contents: 16 fl. oz. (473 ml)
CLONEX
CLONEX
MIST
Root
300 ml

Taking A Clone

Your mother plant is picked out and all your supplies are ready...now it's time to take some cuttings! It is important to remember that the best head start you can give your clones is to maintain a clean and efficient process when taking the cutting from the mother plant - the effort you put in here to avoid contamination by pathogens because of dirty equipment, or damaging tender plant tissues by prolonged exposure to air puts you on the path to success...***do not ignore the simple steps needed for being clean and prepared***!

Taking A Clone - Task 1: ***Sanitize***

Wash your hands, sterilize your blade (rubbing alcohol is an ideal choice for sterilizing), and make sure your glassware is clean.

Taking A Clone - Task 2: ***Prepare Your Work Area***

Have your items laid out and ready to go. A few things you'll want to do now include:

- Pour only the amount of Clonex Rooting Gel into your shot glass you will need to use, and reseal the container. Store Clonex Rooting Gel container in a cool, dry place. *Remember: To avoid contamination, do not pour unused gel from the shot glass back into the container.*

- Prepare your Root Riot Plant Starter Cubes (take packaging off of your ready-to-use propagation tray or place loose cubes in a tray).

Taking A Clone - Task 3: *Identify Your Cuttings*

If you have been feeding and spraying your mother plant, you may have already identified the sites you want to take. Otherwise, at this point, you will want to locate branches on the mother plant that look healthy. Things you're looking for in a cutting are:

- Branches on the lower part of the plant
- Multiple nodes (leaf nodes are where the leaf connects to the stem)
- Strong growing tips

Taking A Clone - Task 4: *Take Your Cutting*

Once you've chosen a branch, use your scalpel to remove the cutting. You'll want to cut just below the node (the area from which leaves grow) at a 45-degree angle.



If you are taking a large number of cuttings, you can hold them in a glass of water until they are ready to be dipped in gel. This keeps air from entering the cut stem and will improve workflow for large batches of cuttings.

At this point you should clip the fan leaves, reducing the leaf area by 50%.

Taking A Clone

Taking A Clone - Task 5: *Dip The Cutting*

Dip the cut stem directly into the Clonex Rooting Gel you've added to your shot glass. Make sure the entire cut area and the surrounding stem is covered by the gel. This will stop air from affecting the cut surface area - prolonged air exposure at this point can cause air bubbles to be taken up by the newly exposed vasular system in the cutting - this may prevent your cutting from taking up water, which will eventually hinder the cutting's ability to survive and root.



Taking A Clone - Task 6: *Place The Cutting Into Your Root Riot Plant Starter Cube*

Once your cutting has been dipped in the Clonex Gel, gently insert the stem into the preformed hole in the top of your Root Riot Plant Starter Cube (depending on the size of the stem on your cutting, you may need to expand the hole with a tool of your chosing that has been sanitized!). After you have finished taking your cuttings and placed them in a propagation tray it's time to add your humidity dome. You do not want to have leaves pressed up against the dome walls or stuck between the dome and the tray. Make sure you have spaced your cuttings to avoid either of these from happening. Place tray under suitable lighting. Discard any gel remaining in your shot glass to avoid contaminating your reserve supply - do not pour unused gel back into the container!

Taking A Clone - Task 7: ***Spray Your Cuttings***



Spray your cuttings with Clonex Mist about every other day to ensure they don't dry out. Beyond that, leave the cuttings alone.

Observe the cubes to identify signs of dry down, and if necessary, re-wet the cubes with a solution of Clonex Clone Solution diluted in water to remoisten the growing media and ensure an appropriate envirionment for rooting to take place. Care needs to be taken, however, to not oversaturate the growing meida, as this can potentially "suffocate" the clone and delay or stop rooting from taking place.

Most plants will root in 7 – 10 days, but some could take up to 2 weeks or longer. When you see roots coming out of the cube then you're ready to transplant...

HDI INFOGRAPHICS SERIES

Explaining the steps to

STEP 1
Mother Plants & Nutrients

Mother Plants are specifically raised to provide clone cuttings. When propagating, one must start with a Mother Plant.





A clone is a "cutting" (a small piece of plant that's been cut off) that has re-established roots and is a genetic replication of the mother, or stock plant.

STEP 2
Cloning dos and don'ts



When starting a clone you should have the following supplies on hand: shot glass, sterile glass with water, scalpel or razor - NEVER SCISSORS, a propagation tray, and a humidity dome.

Doing your own cloning helps prevent pests and unhealthy cuttings.



STEP 3
Keep it clean...



When taking a cutting, you should ALWAYS WASH YOUR HANDS FIRST! A good tip is to use rubbing alcohol to sterilize your hands and your tools before touching the mother plant.



For over three decades Clonex has provided explosive root development that serious growers and plant nurseries depend upon for successful and profitable plant propagation.

ROOTED IN RESULTS **CLONEX®**

proper propagation...

STEP 4
Choose a healthy cutting...

When choosing your cutting you should look for a healthy branch. A healthy branch is located on the lower part of the plant, its stem diameter is approximately the same as your Starter Cube opening, it should have strong growing tips and multiple nodes where the leaf connects to the stem.



STEP 5
Dip, place and spray!



Take your cutting then dip it in Clonex Rooting Gel.

Place your cutting into the Root Riot Starter Cube, then spray with Clonex Mist.



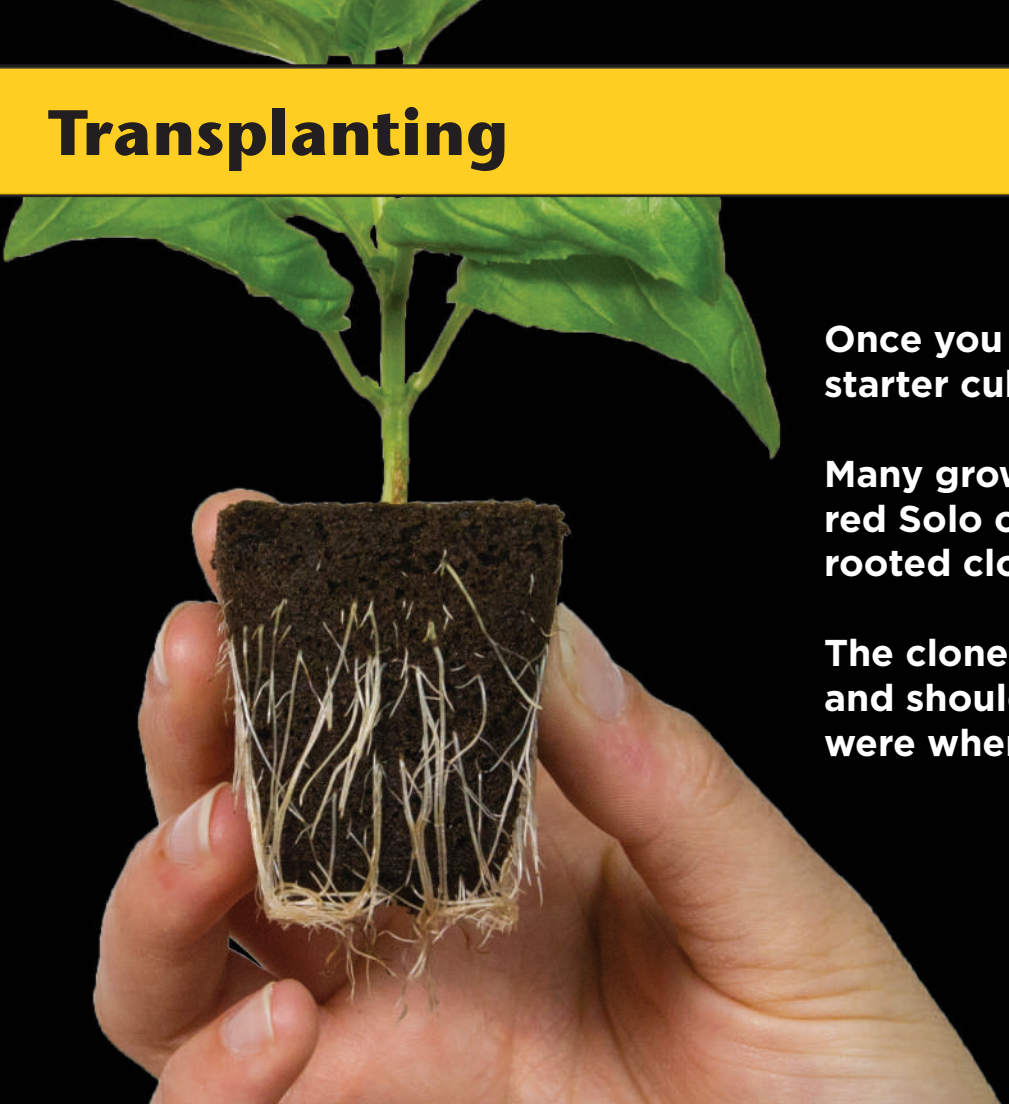
STEP 6
Transplant and feed...



Once your clone is sufficiently rooted it is ready for transplanting! Feed the rooted clone with Clonex Clone Solution.



Transplanting



Once you see roots coming out of your starter cubes, it's time to transplant!

Many growers use a cup (like the small, red Solo cups) to transplant their newly rooted clones.

The clones are still fragile at this point and should be treated the same as they were when they were cuttings.

Transplanting - Task 1: *Prep*

Fill your cup halfway with your chosen soil or soilless mix. If it is not already a component of your chosen growing medium, applying mycorrhizae to the exposed roots of the clone or adding it to your growing medium can also help extend the overall reach of your plant's roots as they grow. This means your plant will be able to reach water and nutrients that might not be available otherwise - basically, it helps the plant get more of what it needs to thrive!

Transplanting - Task 2: *Transplant*

Place your rooted clone in the center of the cup and fill in the remaining space with your soil or soilless medium, and pack it just over the top of the starter cube. The soil should be packed gently so as not to disrupt the delicate roots or stress the clone, but also tightly so that the clone will not tip over.

Transplanting - Task 3: *Feed*

Using a regular grow nutrient formula can burn your plant at this transitional stage, most likely resulting in a stunted or dead clone. Water your clone with Clonex Clone Solution, a nutrient specifically formulated to provide the appropriate nutrition for your newly rooted and transplanted clone!

The CLONEX® Propagation System

Hydrodynamics International has been helping growers successfully clone for more than two decades. ***Billions of clones and counting!*** - proof of the effectiveness of using the Clonex family of products for your propagation efforts...



Clonex Rooting Gel contains a unique proprietary formula of the hormones needed to promote root cell development in a tenacious gel which will remain in contact around the stem, actually sealing the cutting's delicate tissue to provide the necessary environment for successful rooting.



It is manufactured under strict pharmaceutical laboratory conditions and is, consequently, years ahead of old fashioned hormones and powders. Clonex Gel is recommended over powder rooting agents as it is not dusty and will not blow around, will not wash off when the cutting is watered, and it does not contain talc, a carcinogen.

Clonex Gel is EPA registered in all 50 states plus Washington D.C. and Puerto Rico. This means it's approved for use on all crops, including food or ingestible crops. It's also the only rooting gel approved by the Colorado and Washington Depts. of Agriculture for propagating medicinal plants.

Root Riot Plant Starter Cubes are ideal for rooting plant cuttings! Made from naturally composted and finely milled Canadian peat moss, Root Riot cubes are pH balanced and pre-moistened so they are ready to use right out of the bag or in the tray. The spongy texture of a Root Riot cube retains the perfect air/water ratio for healthy, rapid root growth, and they are stable and hold their shape, which takes a lot of the stress out of handling and transplanting tender, newly-rooted cuttings.



The CLONEX® Propagation System



Available in a Ready-To-Use spray bottle or as a liquid concentrate, **Clonex Mist** is formulated to boost the health and vigor of both mother plants and clones while promoting robust root development and the elongation of root hairs.

Independent trials showed that the use of Clonex Mist to mist cuttings resulted in rooting up to 10 days sooner, 30% longer roots and more than 150% greater volume of overall root production compared to just misting with water alone!



A newly rooted cutting or tender seedling can be damaged by the application of a nutrient that was formulated to feed an established mature plant. **Clonex Clone Solution** is a plant nutrient specifically formulated for clones and seedlings that provides an appropriate level of nutrient for a young plant while also encouraging rapid root development.

Additionally, Clonex Clone Solution contains a specific blend of micro-nutrients and the highest quality mineral components formulated to initiate and nourish new root cells in your cuttings. Used with Clonex Rooting Gel, it encourages rapid root development while helping to minimize stressors to tender cuttings and seedlings.

Clonex Clone Solution can be used in aeroponic cloners, fed directly to seedlings and developing clones as part of your watering regiment, absorbed through a plant's leaves as a spray...whatever method you choose to fit your propagation efforts!

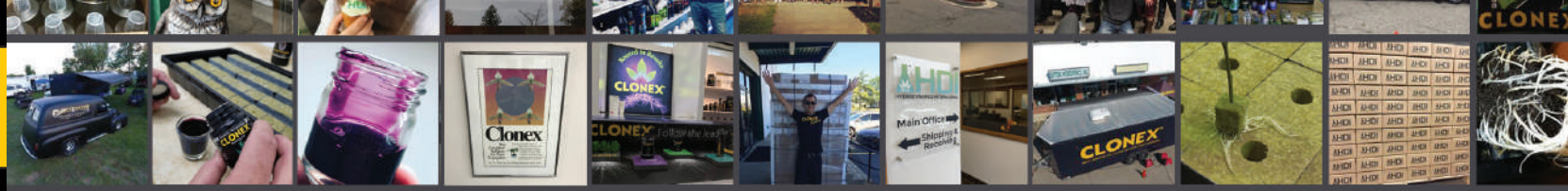


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MotherPlant Nutrients is a two-part nutrient formula created to supply the specific needs in feeding your mother or stock plants, but can be used throughout the vegetative cycle of your plants with impressive results.

It contains the perfect diet for mother plants without excess nitrates, and rich bio-organics are added to improve the uptake of nutrients and strengthen the plant's natural immunity, giving you a crop of strong, vibrant clones!





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Plus, you can visit us at hydrodynamicsintl.com to learn more about our product lines, review our feed schedules and a whole lot more!

Here's a glimpse into what we have been sharing...



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