Introduction to HydroCulture

HydroCulture is the practice of growing plants without soil. When compared with self-watering pots there are significant similarities and differences. Both systems ease the task of providing the plants with the appropriate amount of water but the HydroCulture system takes it a step further by replacing the soil with a more sterile medium [expanded clay].

In short, HydroCulture is very convenient in that it takes little effort to care for the plants and that plants grown in HydroCulture have a more positive impact on the environment than those grown in soil.

This form of plant care is tremendously popular in European countries. Why? HydroCulture is easy, clean and you have greater success in raising healthy house plants. You can tell at a glance when your plant needs to be watered. It’s simple! No more over or under watering therefore fewer plant losses.

Advantages of HydroCulture over soil

- Cleaner than soil and easier to clean up spills
- Less risk of staining furniture
- Non-allergic
- Odors free
- Good root aeration because pebbles do not compact
- Pest free - no centipedes, sow bugs, worms or other soil pests
- Fertilize just once every 4 - 6 months
- Water every 2 - 3 weeks (4 max.) and vacation worry free
- Water level indicator tells when plants need watering
- High and low water loving plants can inhibit same pot.
- Even nutrient and water supply yields healthier faster growing plants
- HydroCulture plants have smaller root systems and require less frequent transplanting
Equipment

Pots

The inner pot is where the medium and the plant grow while the outer is the water container. Using two pots like this eases maintenance (cleaning the container) and provides an easy way to check on root development. When using two pots there should ideally be a few millimeters between the two. An easy way to achieve this is to put a layer of the medium used in the outer pot as well.

As explained in the Aftercare section you should not fill the pot with more water than a certain level and you should not add more water until all the water has been drained from the pot. Most commercial systems feature an indicator which shows how much is left in the pot and to what level the pot should be filled.

Medium

The most commonly used medium is in the form of hydroleca (expanded clay). Other natural resources such as pebbles could also be used but they lack the water absorbing features of hydroleca.

Cultivation

Using cuttings

The best way to get a plant started in HydroCulture is by taking a cutting from an adult plant and water-rooting it. The procedure of water-rooting is extremely simple. Like with all cuttings you should cut approximately 10 centimetres (4") of the mother plant, cut the cutting below the lowest leaf and remove the lowest leaf. (To make it even easier for the cutting the terminal bud could also be removed.) The cutting is then put, on its own or bundled with a number of other cuttings from the same mother plant, into a glass of water. Put the glass somewhere light but not hot.

To prevent the water from going stale or the formation of algae the water should be changed every few days. It is also a good idea to cover the cuttings with a clear plastic lid of some sort. The bottom half of a plastic bottle is a simple and adequate solution. If the cuttings are covered the cover should be removed for a while each day to provide the cuttings with fresh air.

When the cuttings have formed roots long enough to reach at least two thirds down into the destination pot it is time to plant them in the medium and start them off in HydroCulture.
Transferring from soil

Plants that are already established in soil can also be moved to HydroCulture. The safest way for success is to not try to convert old plants, young and healthy plants makes the transition with little effort (although some leaves are bound to fall off). The plant should also have been watered thoroughly a day before repotting, to give it a good start.

When repotting from soil it is very important that all the remains of soil on the roots of the plants is carefully removed. This is easiest done under running water. It is easier to remove especially sticky soil from the roots if the roots are put in water for a day or two.

To inspire new growth most leaflets also suggest that the root of the plant being recultivated is trimmed.

TRANSPLANTING FROM SOIL TO HYDROCULTURE

1. Soak clay pebbles in water overnight to saturate.

2. Rooted cuttings or small plants transplant more easily than larger plants. Water plants to soften soil around roots.

3. Squeeze sides of pot or use a knife to loosen soil and remove plant from pot. Gently remove all loose dirt without damaging any roots.

4. Soak root ball in room temperature water until soil is soft (up to several hours). Wash all soil from roots in a pail of water. BE GENTLE TO THE ROOTS.

5. Rinse roots under the tap with room temperature water to remove the last bits of soil. Roots must be clean to prevent rot.

6. Remove all dead roots and prune back long ones to stimulate new growth. Keep roots moist.
7. Fill liner with clay pebbles and rinse under tap until the water runs clean.

8. With the liner half full of pebbles fan out the roots and place on pebbles. Gently fill liner to top with remaining pebbles.

9. Water until the indicator reads optimum. DO NOT fertilize until next watering.

10. After planting, rinse the pebbles once again to remove the last traces of soil and dust. Install indicator in liner. Place this assembly into the outer shell.

11. To keep the humidity high, you can cover pot with a clear plastic bag until plant gets started.

GENERAL PLANT CARE

Re-Watering
For good root aeration DO NOT re-water until the indicator reaches the minimum setting. Wait 3-4 days then add water to bring the indicator up to the optimum mark.

Only water above this mark during extended absence. In order to check low water levels, tip planter and watch response of indicator. NOTE: Do NOT use artificially softened water.

Fertilization
First fertilize the new transplant after it has used up it's initial watering. Following directions add the proper amount of Time Release Fertilizer (or other) to the reservoir and water to the Optimum mark. You will not need to add any more fertilizer for 3-4 months. Turn the dial on top of the indicator to the month you need to fertilize next.
General planting hint

When planting rooted cuttings or established plants in HydroCulture the plant should be put as deep as it would have been if using regular soil. Start by filling the bottom of the pot with the medium, then put the plant in and fill the rest of the pot with medium. Once the pot has been filled you could either shake/wiggle the plant by the stem or "knock" the pot to make the medium fill the gaps between the roots.

Once the plant has been potted it needs special nursing during the first month, before it is accustomed to its new habitat (e.g., have formed the special water-roots). This is slightly similar to rooting cuttings. Since an already established plant does not really have the ability to suck up the water and rooted cuttings have lost their ample supply of water they need to have the humidity of the surrounding air increased. This could be done by either spraying the plants a few times a day while there is still enough light left to dry the leaves (to prevent growth of mildew), by covering the plant or by putting the entire pot on a large plate (or similar) with a layer of water.

You should not add any nutrients before the plant is established in the HydroCulture. This takes somewhere between 3 and 6 weeks, I normally start feeding them after a month or when I see that the plants are producing new growth.

Repotting

Plants grown in HydroCulture still need repotting, the difference is that it is less messy to repot a HydroCulture plant than a soil plant. It's time to repot the plant when there are lots of roots growing through the holes of the inner pot.

Aftercare

After a plant has established in the HydroCulture there is really not much to it. It obviously is going to need a fresh refill of water and nutrients every now and then but apart from that the only thing to worry about is when to repot the plant.

You should use the same kind of water you use for regular soil plants, that is, not directly from the tap or extreme in any way (high/low pH, etc.). There should also be two water levels marked on your indicator, one optimal and one maximum. Normally you would only fill the pot up to the optimal mark which is about one third of the inner pot but you could, if you are going to be away for a few days, fill it up to the maximum mark which is about two thirds of the inner pot. Do not refill the pot unless it is empty. If you do, pour out the old water that is left in the pot.
Providers of commercial HydroCulture systems also provide nutrient tablets which slowly emits the nutrients at the same speed as the plant absorbs them.

One interesting thing that I've noted is that none of the plants I've grown in HydroCulture shows any sign of nutrient deficiency, they simply stop growing if there aren't any nutrients.

There is however one minor task of maintenance that has to be performed every second month or so (or when changing nutrient-tablets). The outer pots have to be cleaned, there will most likely be a layer of medium-dust in the bottom of it. It is also a good idea to wash the medium in the inner pot to get rid of the dust that has settled on and in it. This is done by pouring water through the medium while it (and the plant) is still in the pot, there’s no need to take the plant out of the medium.

**Bonsai**
Growing and pruning a Bonsai is a lot easier using HydroCulture because the task of pruning the roots is made easier with the use of expanded clay as its growing median.

**What plants like HydroCulture?**
Most plants do. At least when in comparison with how they like growing in soil. This, naturally, is in much depending on who is nursing them

Some very common plants that thrive in HydroCulture are species of the Ficus and Dracaena geneses, members of the Cactaceae family (cacti) the Amaryllidaceae family (Amaryllis species and the common Clivia Miniata). But there are lots and lots of more plants which like being grown in HydroCulture.

A rule of thumb is if cuttings can be water-rooted the mature plant could also be successfully grown in HydroCulture.