

HOW AND WHY TO DO A PROPER FLUSH

And test my Run-Off

Why Bother Flushing?

Flushing is an integral part of growing healthy happy plants. Flushing a system and plants will remove any excess salts that have built up over time. Flushing will also help restore an even CEC (Cation Exchange Capability) balance to a medium. Most mediums hold on to salts and release them back into the root zone over time, or attract more salts to the salts that have already begun to form, promoting an ever downward spiral towards "nutrient lockout." Put another way, the more salts in a medium to begin with, the greater the potentiality of attracting ever-more salts until eventually the plants can no longer pull any water (or nutrients for that matter) up at all. Lock out can easily be avoided by Flushing from time to time. Some mediums need flushing more than others. A list of mediums and their unique flushing needs is presented below.

How do I Flush?

Flushing is fairly easy to do. First drain your Reservoir and then refill with FRESH Reverse Osmosis (or purified) water. Add a Flushing Agent like **Final Phase** and / or pH the solution (always pH - never forget to pH - always pH last - right before watering your plants.) Run at least 3 times your normal watering amount through the plants. *Example:* if your plants normally take up 3 gallons of water in a watering make sure to Flush 9 Gallons of water through them. (If running a recirculating system, make sure to run for at least 2 waterings.) Then Drain the Reservoir and Re-up the Nutrient solution as normal. You can either wait to feed until the next scheduled time or feed them right away (watching the water running off to ensure that it comes out "dirty" on the bottom; the nutrient run off should be coloring the water.

Checking the Run-Off can be a very useful tool to dialing in your Grow Medium

By testing the runoff that is coming out of your drain before it hits the reservoir (after a Flush has been running) one can tell what the pH and TDS (ppms) of the medium is resting at. Ideally, whatever the water is going in should measure the same as the water coming out. An example would be as follows: Fresh Water Flush solution "going in" has a pH of 6.0 and a TDS of 0-50ppms (R.O. / Purified Water.) The pH of the drain water coming out should be 5.8-6.2 (0.2pH slide in either direction). The TDS of the drain water coming out should be within 50-100ppms (50ppms off from the Fresh Flush water coming in).

Now for the Fun Part - Adjusting the pH and/or ppms to equal the Water Coming in:

If the ppms of the water coming out the drain are higher by more than 50ppms of the water coming in from the reservoir (Ex. 50ppms going in, 100ppms coming out) then continue to Flush until the ppms are down to their appropriate level. This is the easy one. The pH is a little trickier. If the pH of the Flush solution going in and pH coming out (of the run-off being collected at the drain) match (at 6.0 as per our example) then we are sitting pretty. If the pH does not match the pH of the solution going out (through) the drain than we need to play with the solution going in until the pH coming out matches. Back to our example: The pH going in is 6.0, lets say the pH coming out is 7.0; then the medium must be around 8.0. If for example the pH is 6.0 going in, and the pH coming out is 5.5, then the medium is around 5.0. The concept is what is important to understand here. . .So, in order to correct the pH in the first example (pH going in is 6.0 and pH coming out is 7.0), one would need to lower the pH of the solution going into the system to say 5.0 or even 4.5 and run a good amount of water into the medium and test the run off until the water coming out is the pH we would want it to be (in this example it would match the original water going in at 6.0). Once the pH of the water coming out (down the drain) matches the water solution coming in, one final test is necessary. Flush again with the water going in (in our example 6.0 pH) and make sure it lines up and is equal to the pH of the water coming out.) This last step is necessary because the water coming out is not necessarily where the actual medium is at. Once the pH of the water coming in matches the pH of the water coming out, you are done and the medium is "set".

Different Mediums and their Flushing Requirements

Rockwool - Flush every other week. Holds salts with a low CEC. Fairly easy to adjust pH of medium.

Coco (Coir Fibre) or Soiless Mixes with Coco - Ideally Flush every week (can Flush every other week). Make sure to Flush with 300ppms (150ppms of Cal/Mag + 150ppms of Nutrient Solution). Low to Medium - Low CEC. Sometimes has a Buffer (think in terms of armor or shielding) that needs to be broken through before pH will adjust. (Flushing can be long and arduous at first, until buffer is "broken".)

Hydroton - Flushing medium once a Month is enough. Virtually no CEC. Super easy to adjust pH of medium.

Soil - Varies on the soil. Usually, the method of Feed, Feed, and then Flush is applied for soil growers. This breaks down to once a week Flushing (because most soils as the plants start growing faster and faster need water every other day). Soil has a Medium to High CEC. Sometimes has buffer which needs to be "broken before pH can be adjusted.

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