

What is ebb and flow hydroponics and how does it work?

Ebb and flow hydroponics is a method of growing plants hydroponically that is known for its reliability, simplicity of operation and low cost of investment. Pots or a flood tray are filled with a grow media such as gravel, clay pellets, lava rock etc. These do not function like soil or add nutrition to the plants but will anchor the roots and will function as a temporary reserve of water and nutrients. The hydroponic solution floods the system four to six times a day and is allowed to drain away in between flood cycles.

With this system a water tight flood tray or pot, containing either clean gravel, clay pellets or lava rock is used as the rooting medium. The system is then periodically flooded for short periods of time (5 to 15 minutes) with a nutrient solution pumped from a reservoir. By placing the reservoir below the flood tray, with a over flow drain, the nutrient solution can drain back by gravity through the pump with the same line that supplied the water and nutrients during the flood cycle. Our favorite media is lava rock with this type of system. Lava rock drains quickly and traps air and will not leave a clay residue if using clay pellets, which can clog the water pump after time. Lava rock also contains slight trace minerals that are beneficial to the plants. You can read an article on the advantages of using lava rock for growing plants on our website, modularhydro.com.

Aeration of an ebb and flood system is one of the most important things of the system. Let me explain, when the system floods it is in a deep water culture mode. Your reservoir may contain an air delivery system such as a air stone to keep the water saturated with oxygen and eliminate a pathogen problem. During the flood cycle the oxygenated air is pumped into the tray or bucket for 5 to 15 minutes. During this 5 to 15 minute period there is no additional air and oxygen being supplied to the tray or bucket. So even though you are now in deep water culture mode your plants are not receiving the amount of air and oxygen as if they were in a deep water culture system. The reason why is a deep water culture system has air constantly pumped into the reservoir 24 hours a day in which the roots are submerged. During the ebb cycle, or draining of the tray or bucket, air is now pulled down into the grow media supplying oxygen to the plants. At this point until the next flood cycle the roots again are being deprived of fresh air and oxygen.

Drawbacks to Ebb and flood hydroponic systems: **1.** Pathogens in reservoir, flood tray or pot due to stagnated water during drain time which can contaminate the entire system due to the shared water source. **2.** Limited amount of oxygen available during flooding of tray or pot. **3.** Limited amount of oxygen available while in the ebb or drain stage.

Is there a solution to the problem above? The good news is yes. By adding Air Injection Technology manufactured by modularhydro.com you can upgrade any ebb and flow hydroponic system to help eliminate the problems above. By adding Air Injection Technology at the very bottom of the media in your current flood tray or pot you will eliminate the drawbacks to a ebb and flood hydroponic system. You will also increase the plants growth rate and have healthier plants. **1.** Pathogens in the flood tray or pot are eliminated because there is a constant supply of oxygen 24 hours a day weather in the flood stage or drain stage. **2.** Constant supply of oxygen during the flood stage just like true deep water culture. **3.** During the ebb or drain stage there is constant air being delivered to the plants roots 24 hours a day weather in the flood or drain stage. This will bring your current ebb and flow hydroponics system up to date and will allow you to take full advantage of your ebb and flood hydroponics system at minimal cost.