

Center for Smart Agriculture

Hydroponics technology



Module 1: Prerequisites for hydroponics technology

Session 6 : Deep water culture, Ebb & Flow



2. Deep water culture systems

Deep water culture hydroponics are simply plants suspended in aerated water. Deep water culture systems, also known as a DWC system, are one of the easiest and most popular methods of hydroponics on the market. A DWC system dangles net pots holding plants over a deep reservoir of oxygen-rich nutrient solution. The plant's roots are submerged in the solution, providing it with perpetual access to nutrition, water, and oxygen. Deep water culture is considered by some to be the purest form of hydroponics.





Pros of deep water culture systems *Low maintenance:

Once a DWC system is set up, there's very little maintenance required. Just replenish the nutrient solution when needed and make sure your pump is running oxygen to the air stone. ***DIY appeal:**

Unlike many hydroponic systems, deep water culture systems can be made cheaply and easily at home, with a quick run to your pet store and local nursery to pick up the air pump and nutrients.



Cons of deep water culture systems *Limitations

Deep water culture systems are adept at growing herbs and lettuce but they struggle with larger and more slow-growing plants. DWC systems are not ideal for anything that flowers.

*****Temperature control

It's important that your water solution does not exceed 68°F and does not go below 60°F. In a DWC system, the water is static and not recirculating, so it can be more difficult to regulate temperature.



3. Ebb and flow systems





Pros of Ebb and flow systems

*****Versatility:

With an ebb and flow system, you can grow much larger plants than in most other hydroponic systems. Fruits, flowers, and vegetables alike respond very well to ebb and flow hydroponics.

*****DIY appeal:

There are hundreds of ways to construct your own ebb and flow hydroponic system at home. A visit to the hardware store and pet store will provide you with all the supplies you need to construct an ebb and flow system.



Cons of Ebb and flow systems

Pump failure:

Like any hydroponic system reliant on a pump, if the pump ceases to work, your plants will die. You do have to monitor your ebb and flow system to ensure that the system's performance is not compromising the health of your plants.

*Rot & disease:

Sanitation and maintenance are essential to an ebb and flow system. If the bed is not draining properly, root diseases and rot can set in. A dirty ebb and flow system can grow mold and attract insects. If you neglect cleanliness, your crops will suffer.



Thank you....