

The Basics Of Aquaponics

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Hydroculture

The growing of plants in a soilless medium.

Nutrients dissolved in and delivered by water.

- **Aeroponics**
- **Hydroponics**
- **Aquaponics**



Aquaponics Historically



Aquaponics Historically

Before You Build or Buy...

- **Decide what you want to grow, then build the system for that crop**
- **Greens & Herbs grow well in most systems**
- **Root crops probably Dutch Bucket or NFT**
- **Fruiting Crops Dutch Bucket or NFT**

Build or Buy?

- **If you have any mechanical / construction / DIY experience or desire, I say build it yourself**
 - **Start small**
- **You can spend thousands on pre-built systems**
- **We spent about \$1,000 on each aquaponic system**
- **But I know exactly how it works and how to tweak if necessary**

Things To Consider

- **If you want plants to thrive, you'll probably need to overcrowd your fish**
- **If you want to optimize tank / aquarium conditions for fish, your plants may not thrive**
- **Find your customers before you start**

Utah Department Of Wildlife

- Utah Division of Wildlife – Be sure to work with them
- <https://wildlife.utah.gov/aquaponics.html>
- <https://ag.utah.gov/wp-content/uploads/2021/02/APPROVED-Utah-Fish-Growers-2-2021.pdf>

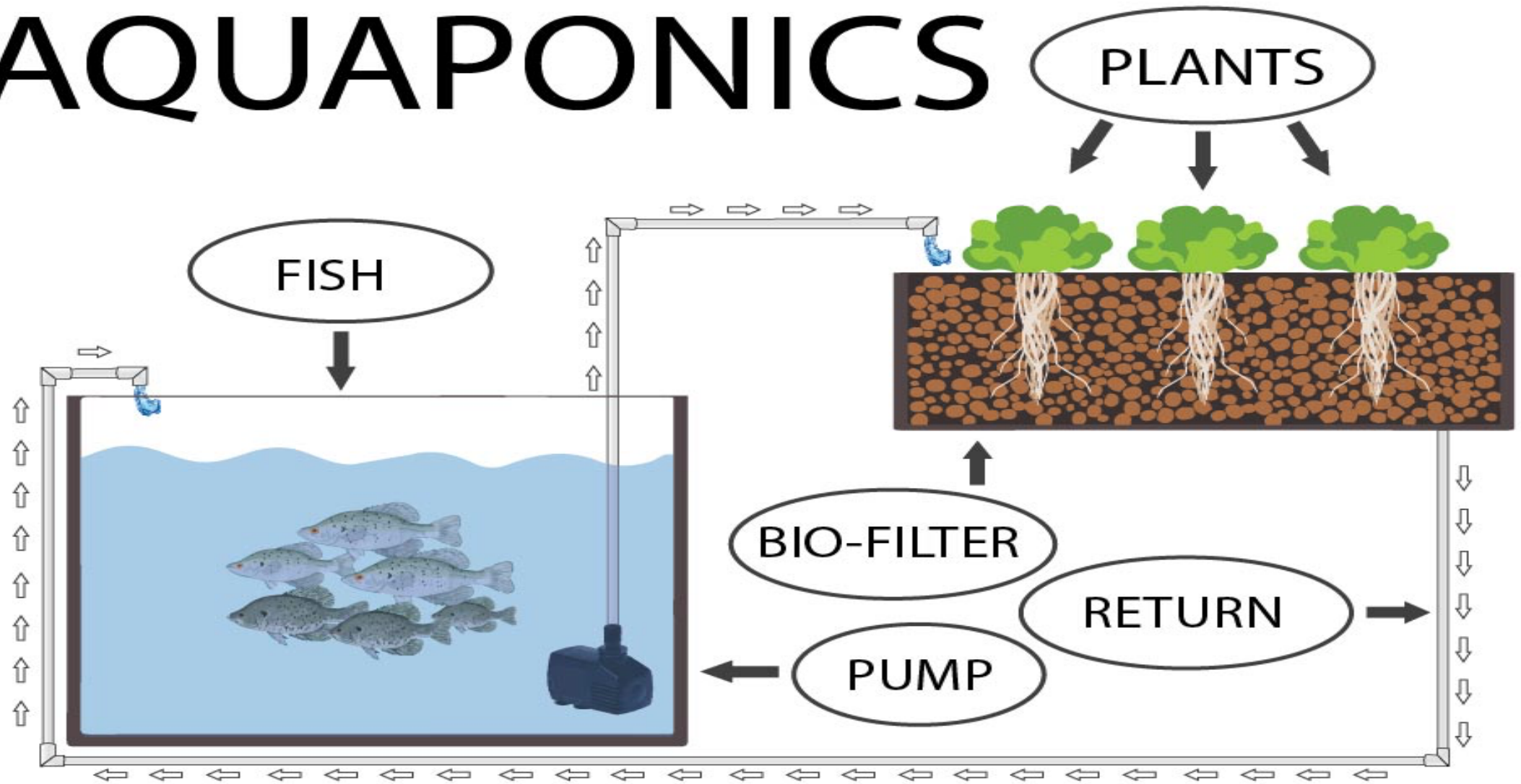
DWR Approved Aquatic Animals

- Bluegill
- Fathead minnow
- Hybrid bluegill (Bluegill × green sunfish)
- Black crappie
- Redear sunfish
- White crappie
- Green sunfish
- Rainbow trout
- Striped bass
- Cutthroat trout
- White bass
- Brown trout
- Hybrid striped bass (wiper)
- Brook trout
- Largemouth bass
- Tiger trout
- Smallmouth bass
- Walleye
- Channel catfish
- Golden shiner
- Yellow perch
- What's Missing?

Aquaponic System Components

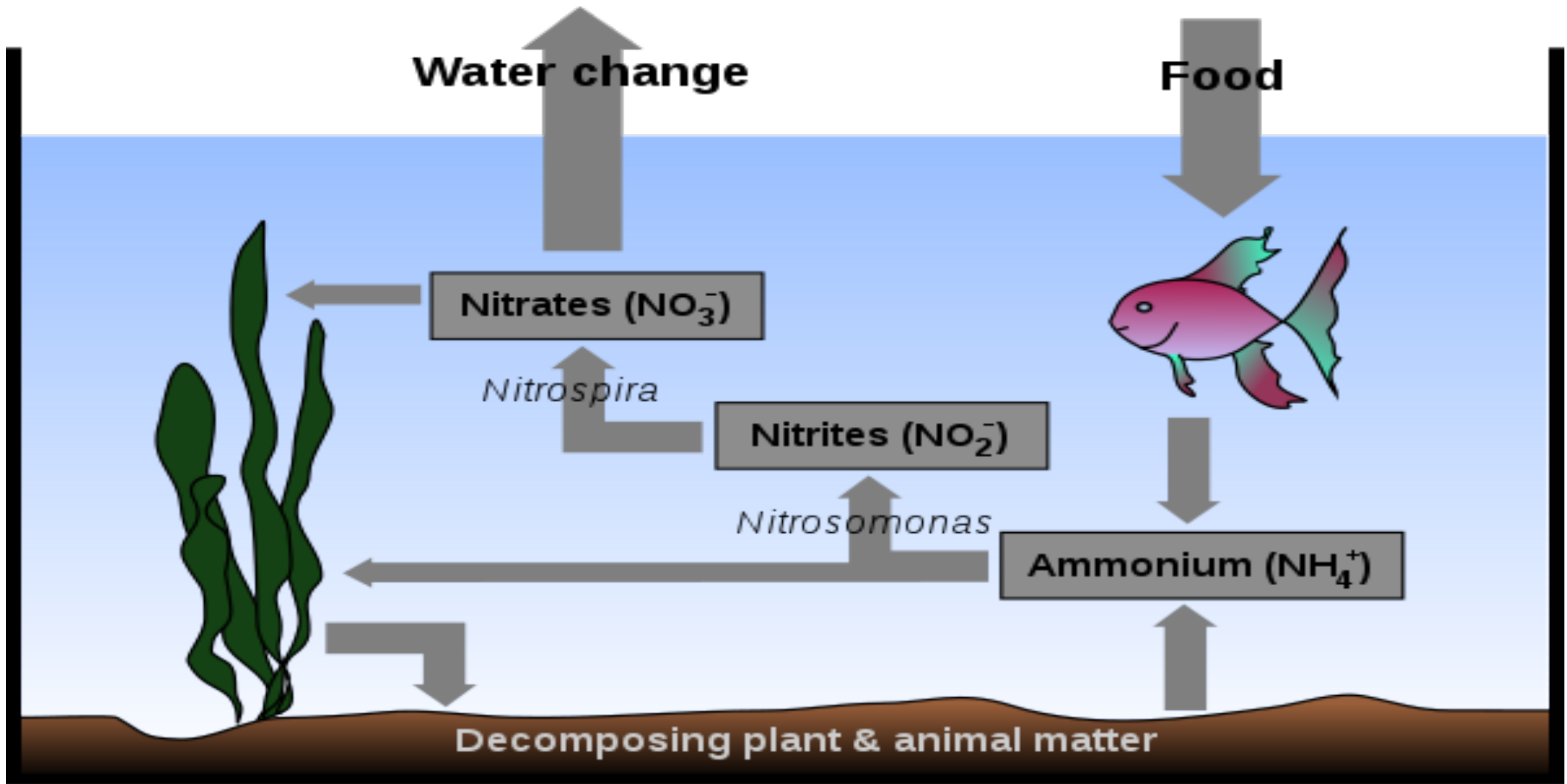
- The Grow Media (Rock wool, peat, perlite, coir)
 - Should be inert
- The Grow Bed - Bucket, Gutter, PVC ?
- Bacteria & Biofilter (aka Biological Filter)
- Solids Filter (aka Mechanical Filter)
- Plumbing, Pump, Aeration, Light ?
- The Plants

AQUAPONICS



The Biofilter & Cycling Very Important Study and Learn This Process

- Name can be confusing
- Is really just an abundance of surface area on which Nitrifying Bacteria to grow (lava rock, ceramic, other inert porous material)
- If you have aquarium experience, you know how important this is
- Cycling your system – Process of building up the bacteria. If you don't have enough bacteria built up, the excess ammonia will kill your fish.
- Buy your bacteria! It's the easiest, fastest way to do it!



Additives

- Chelated Iron
- Acid / Base to adjust Ph
 - Nitric or Phosphoric Acid
 - Baking Soda
- Reverse Osmosis Water













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• Adaptable, Cuts & Handles Easily
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• Interior & Exterior
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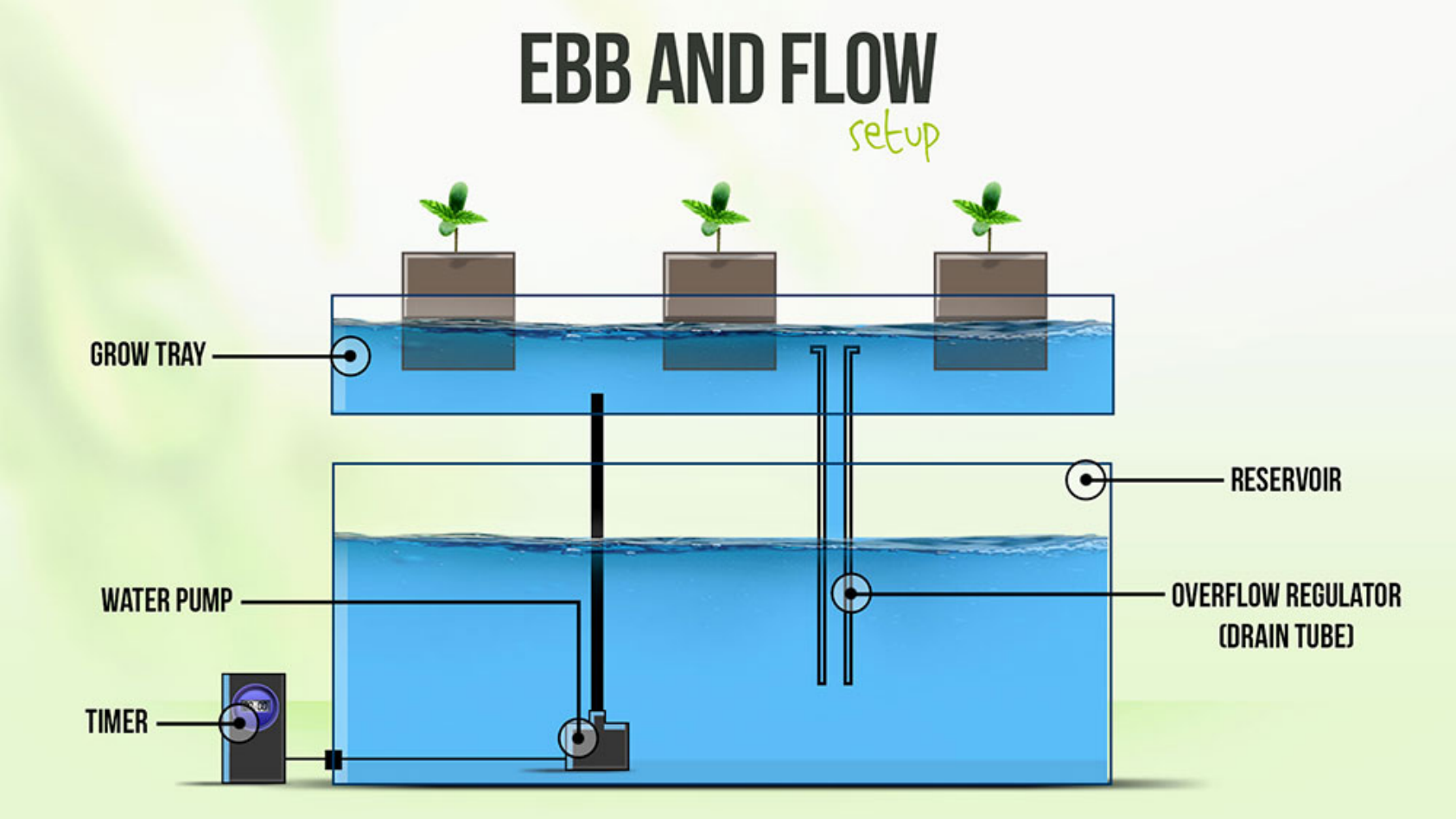
Is it worth it?

- If you're considering it as a business, I believe you can make money.
- High Value Fish – Ornamentals? Koi?
- Find customers first – Ask what they want

Popular Types of Aquaponic Systems

- Nutrient Film Technique (NFT)
- Dutch Bucket
- Deep Water Culture (DWC)
- Ebb and Flow (Flood and Drain)

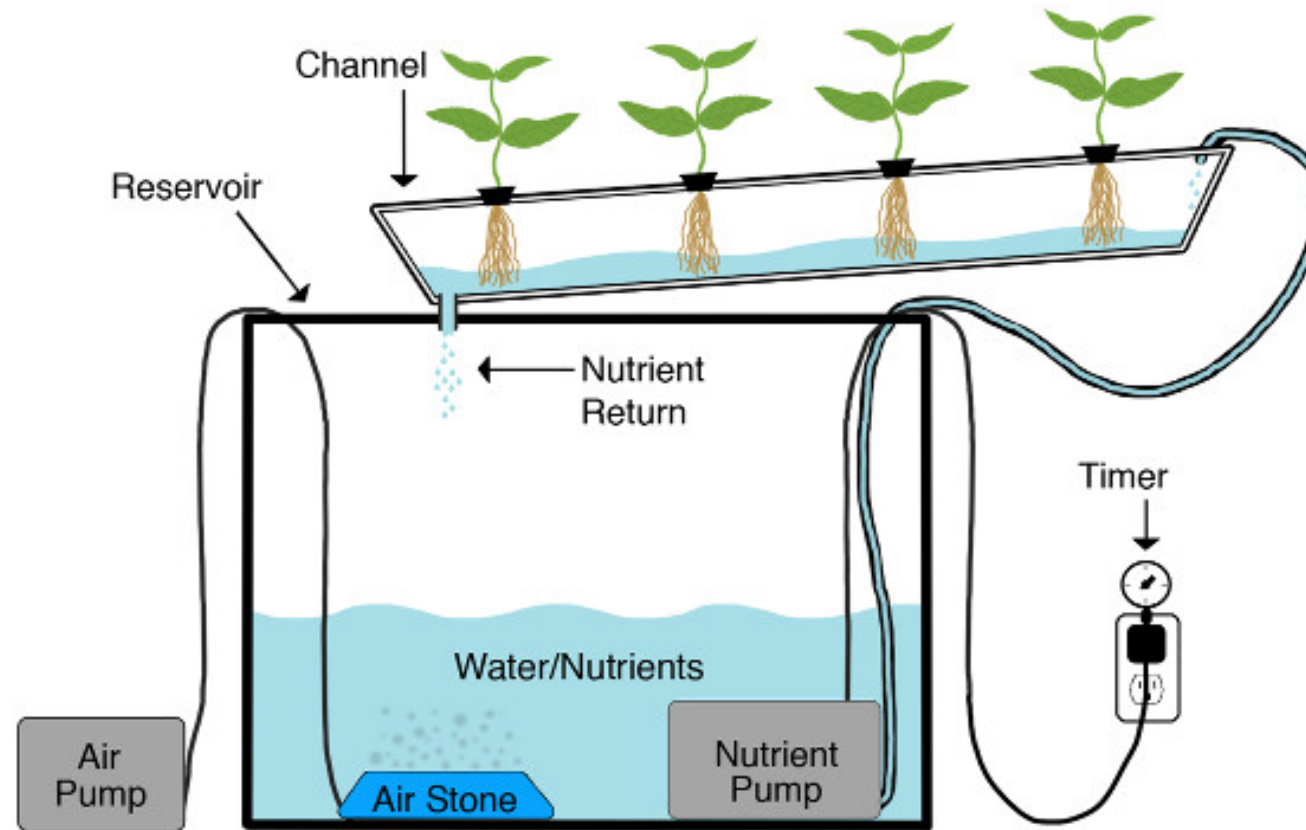
Ebb and Flow (Flood and Drain)



Ebb and Flow (Flood and Drain)



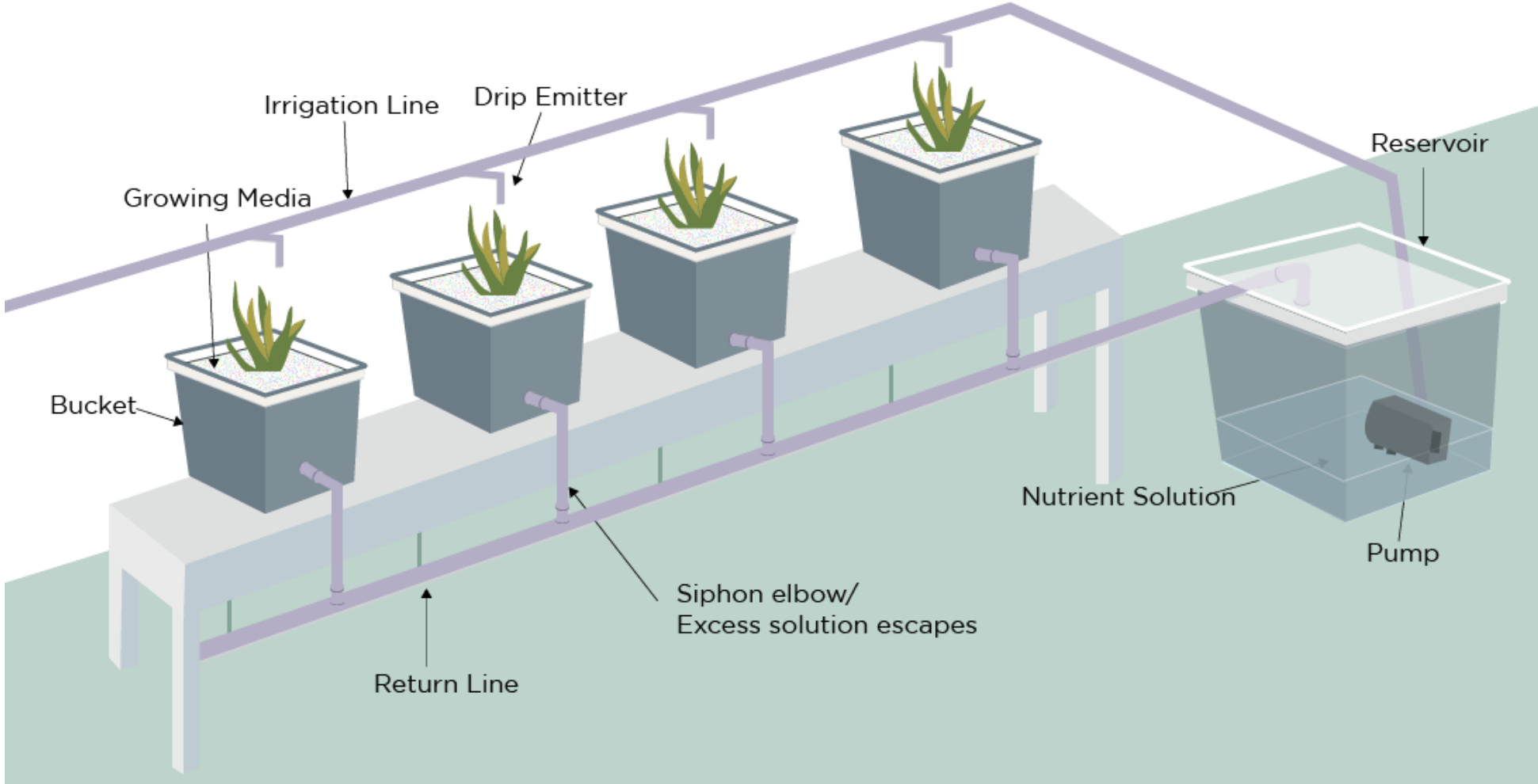
NFT (Nutrient Film Technique)



NFT



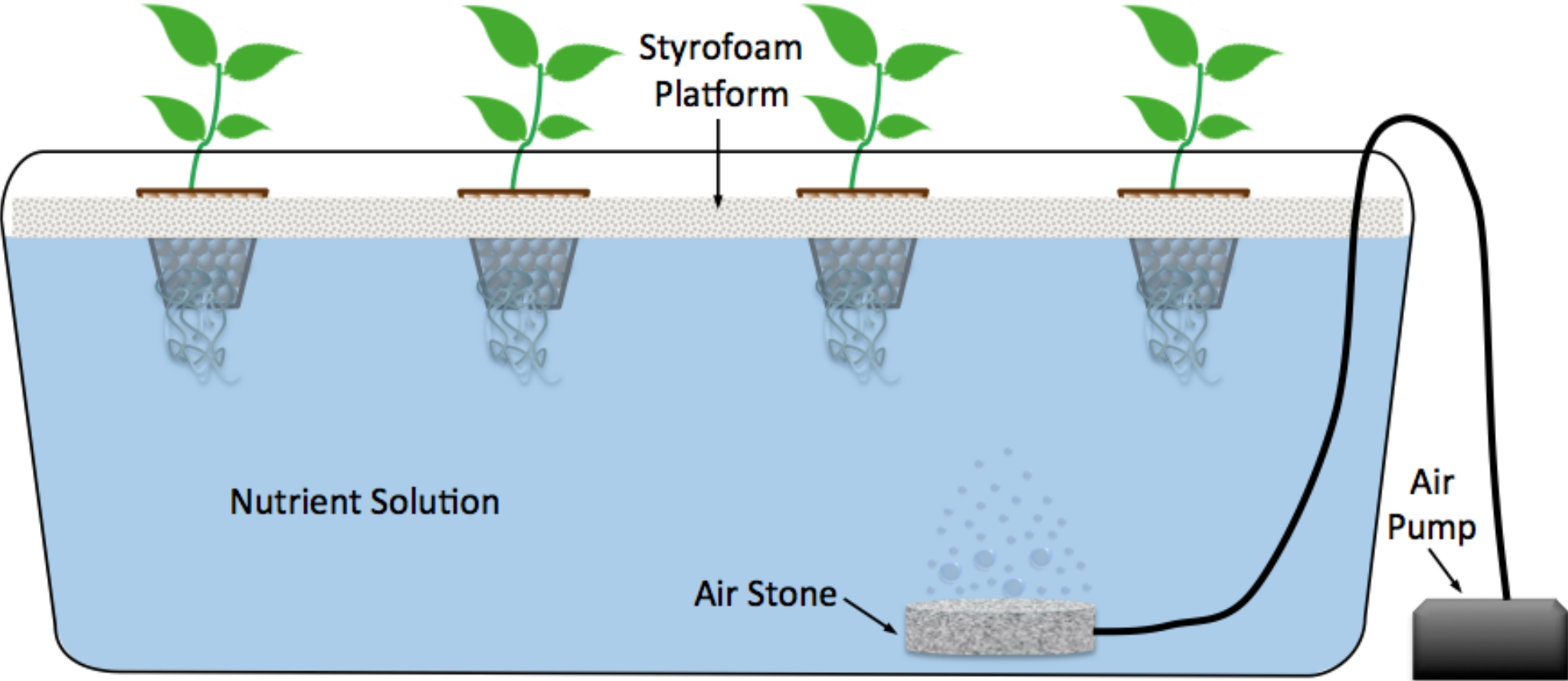
Dutch Bucket



Dutch Bucket



Deep Water Culture (DWC)



Deep Water Culture (DWC)



Thank you!

USDA



Questions?

I'm very willing to help and provide as much info as I can. Contact me with questions.

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