

Hydroponics

Hydroponic lettuce production:

https://www.youtube.com/watch?v=6kUm_17bLYw

Hydroponics is the art of growing plants without soil, but in water enriched with nutrients and oxygen



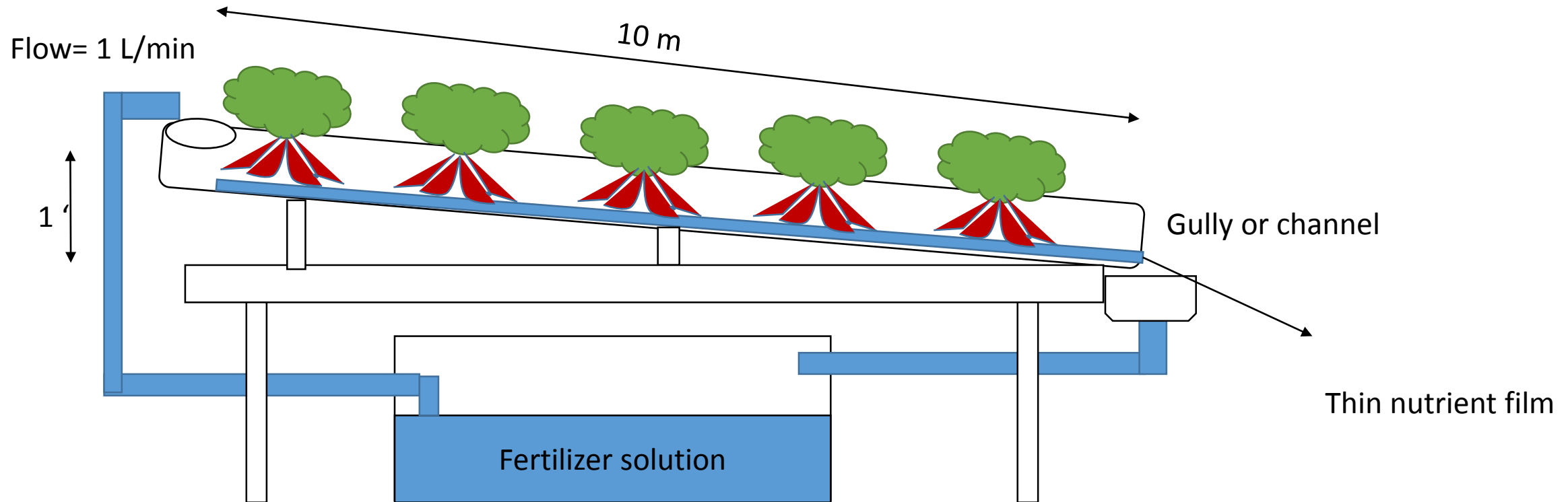
Many hydroponic techniques exist

1. Continuous flow nutrient film technique
2. Deep water hydroponic buckets/tubs
3. Ebb & Flow or Flood & Drain sub-irrigation
4. Aeroponics
5. Floating systems

Nutrient film technique (NFT) is a hydroponic **technique** wherein a very shallow stream of water containing all the dissolved **nutrients** required for plant growth is re-circulated past the roots of plants in a watertight gully, also known as channels.



Nutrient Film Technique Explained

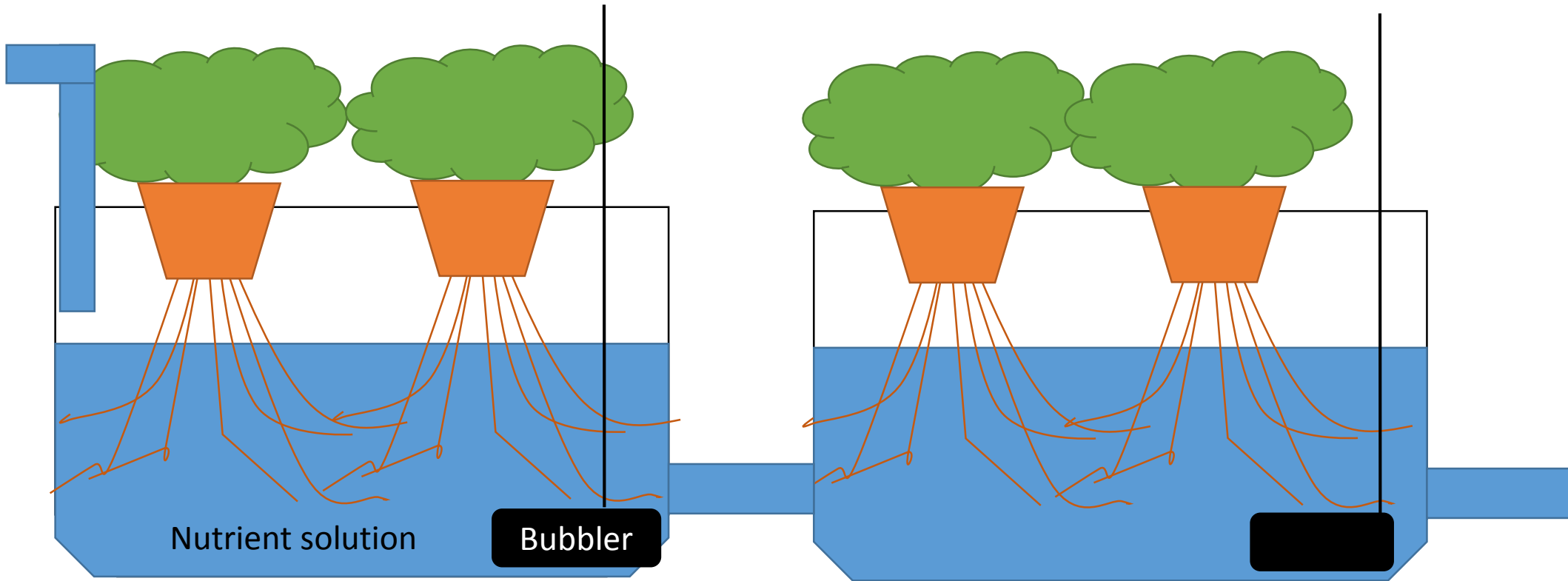


- Roots receive oxygen, water and nutrients
- Water and nutrients recirculated

- What about diseases?
- What about power outages?
- What about water temperature in pipes?
- Tomatoes, peppers and other big plants?

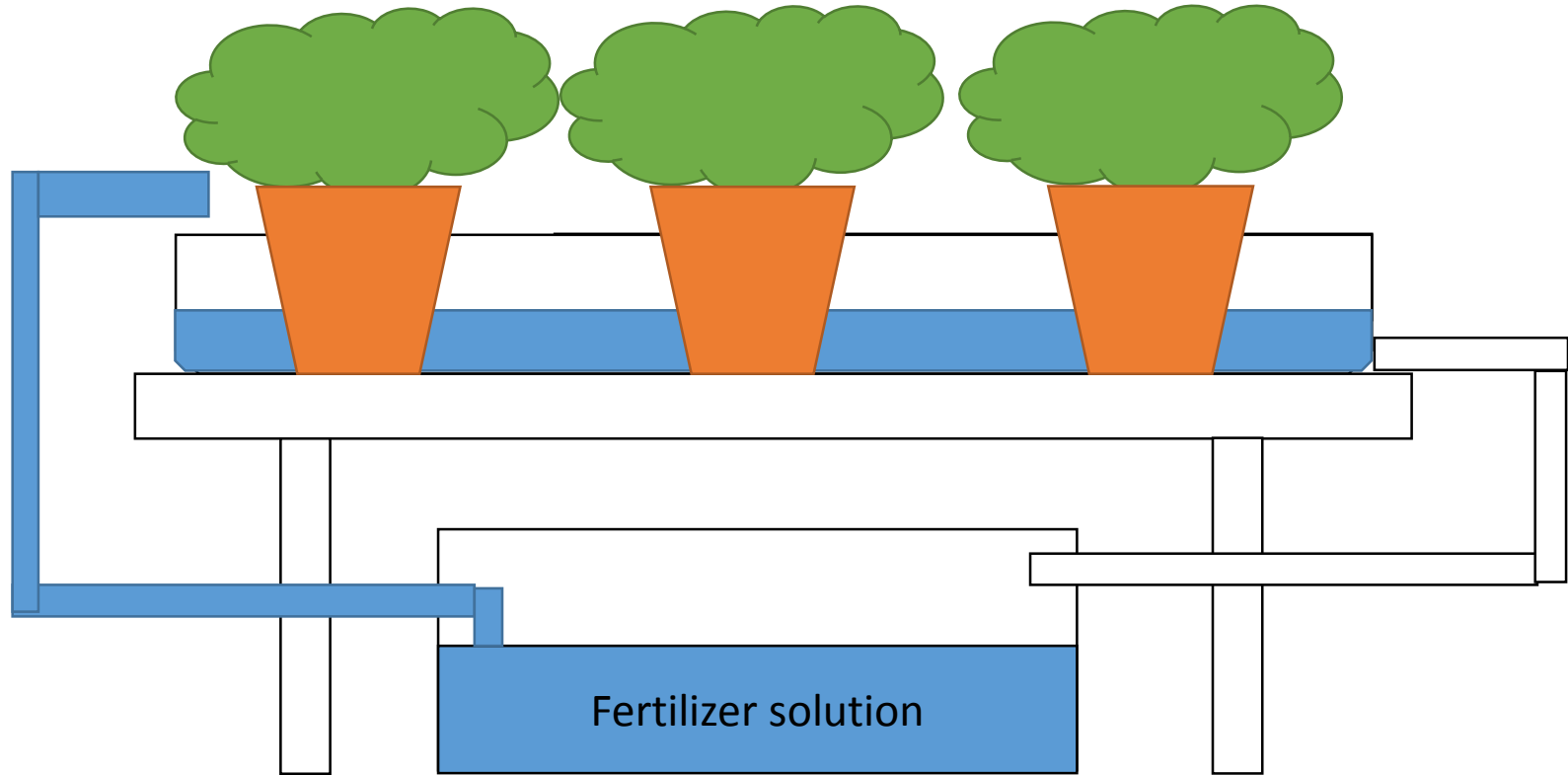


Deep water culture

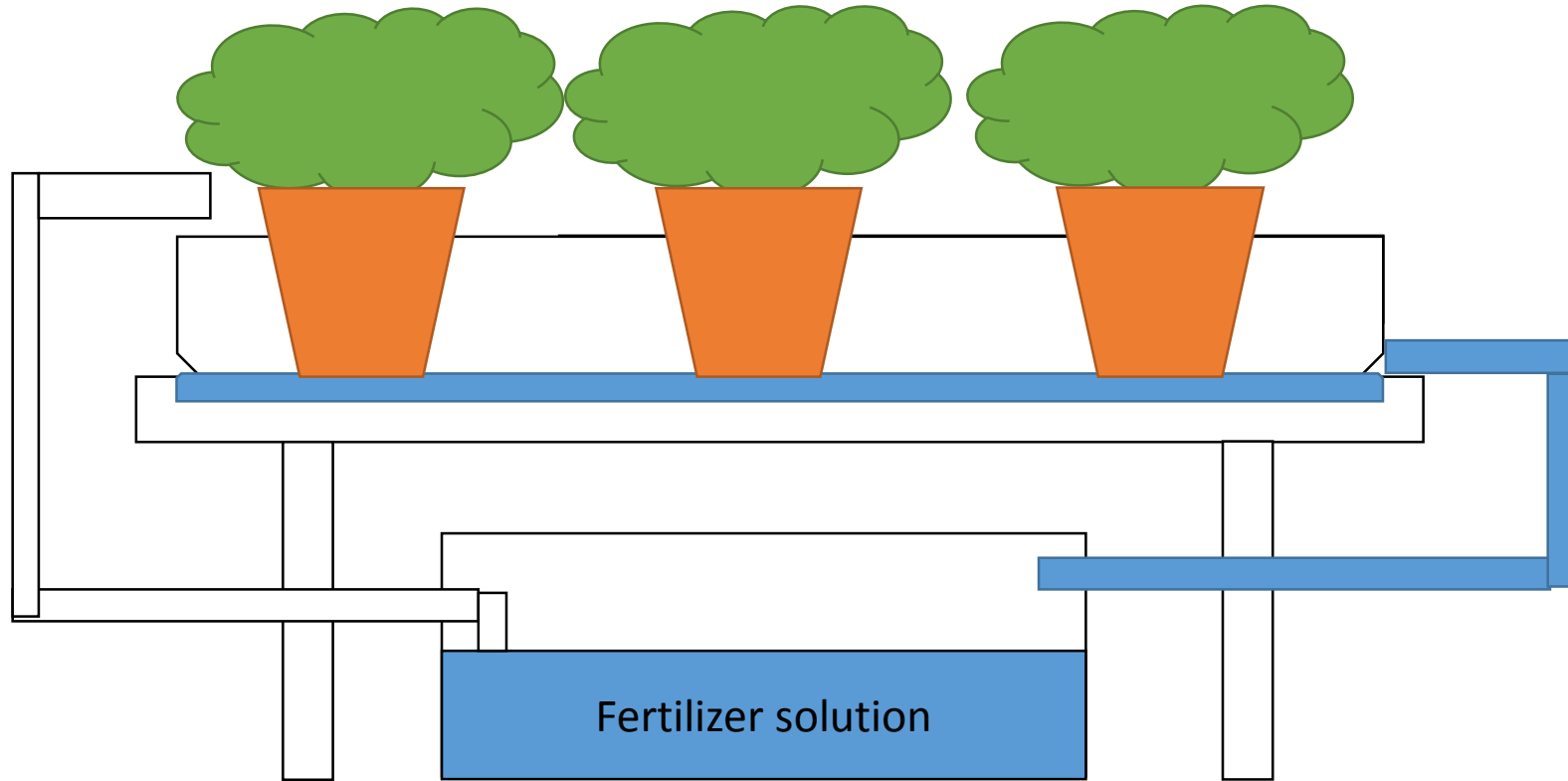


- Suitable for big size plants
- Better water temperature control
- Home hydroponics

Flood and drain system : Flood stage

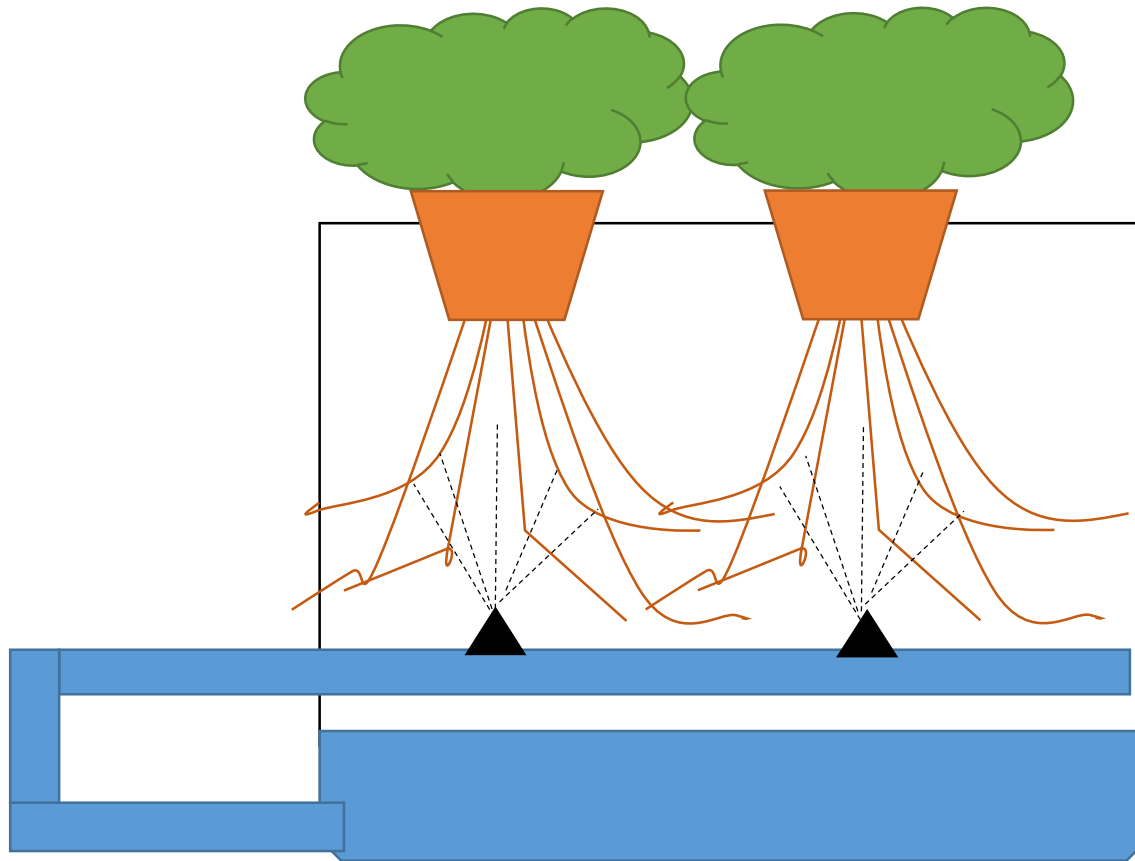


Flood and drain system : Drain stage



- Soilless media is used in containers
- Water is not supplied continuously
- Usually 50% less fertilizer concentration is used

Aeroponics



- Good supply of oxygen
- Disease free systems
- Good for research on root morphology
- Requires sophisticated mist systems

Floating systems: <https://www.youtube.com/watch?v=f4Y9X7ye7i8>