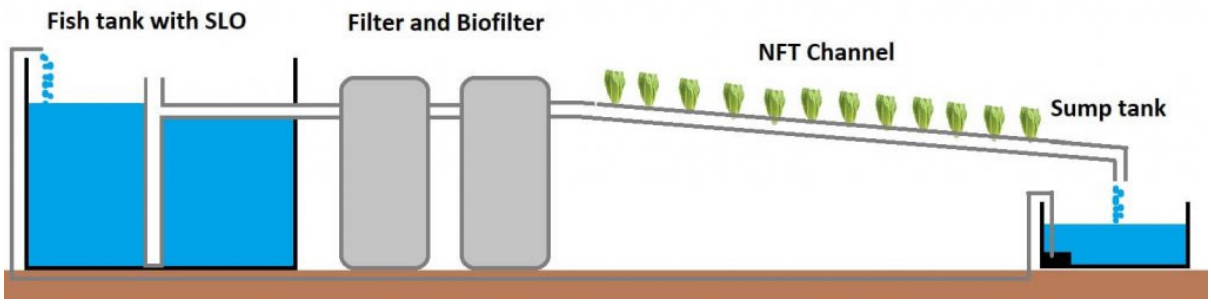
MERCHANT'S GARDEN

CLIMATE-SMART URBAN AGRICULTURE

Supporting Historically Underserved Producers

WHAT IS NUTRIENT FILM TECHNIQUE IN AN AQUAPONICS?

Nutrient Film Technique or, (NFT) systems allow for plants to be grown in channels, with a thin layer of water contacting roots. These channels are placed at an angle to utilize gravity, thus the water travels flowing past each plant before draining into the sump tank. The aquaponic water that is pumped into the channel comes from stocked tanks, that has been filtered through a solids filter and processed through a bio filter.



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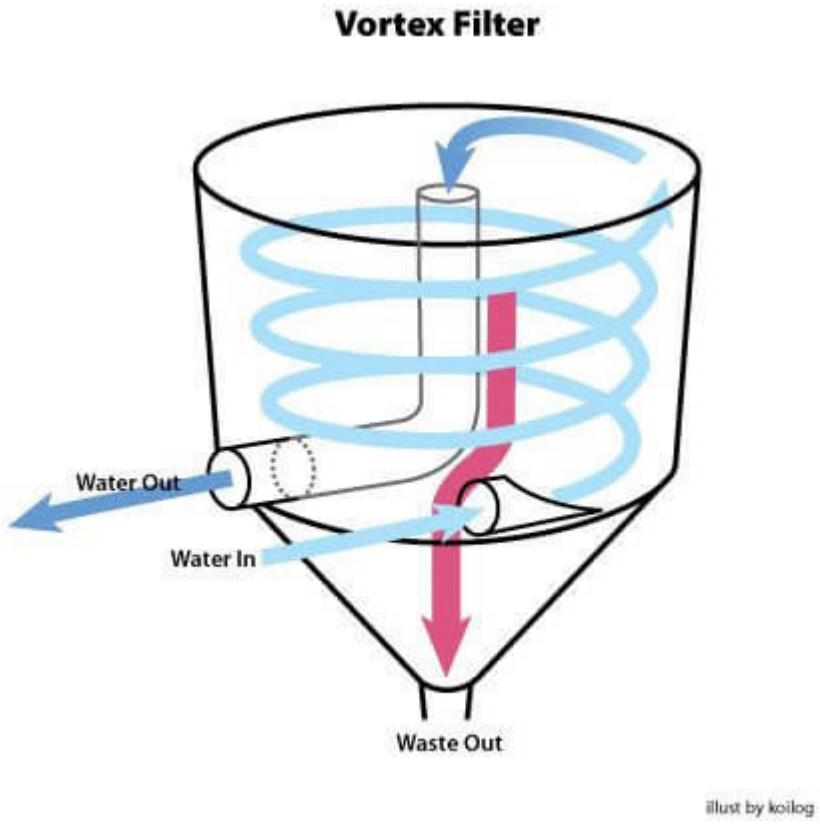
WHAT IS A SOLIDS FILTER?

Solid waste from fish needs to be removed before being utilized in a Bio Filer. There are many kinds of solid filters to separate solid waste from aquaponic water. Swirl filters (vortex), clarifiers, radial flow separators, solid filters, raft filters, netting, and screen filtration just to list a few all aim to remove the heavy solids (Brooke, 2018). The most common used solids filter is the swirl filter and is a simple design that hobbyists and commercial growers may utilize. Water-in enters at a lower point than water-out, thus the heavy solids fall to the bottom and the clean water swirls to the piping exiting the swirl filter. The waste then can be flushed out from the bottom of the system when it settles.



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WHAT IS A BIO FILTER?

A bio filters main purpose is to utilize natural bacteria in the process of converting ammonium from fish waste into usable nitrogen for plants to use. Again, there are many kinds of bio-filters that accomplish this, with the most used being the moving bed filter. Inside a moving bed filter beads or small circularly shaped pieces collect bacteria. These pieces maximize the surface area of the bacteria, accelerating the processes that convert nitrite to nitrate. It is important to keep these tanks aerated to move beads and keep bacteria alive.

Best Practices

In combination, a solids filter and bio filter provide good water quality and readily available nutrients that can be delivered to a NFT channel. NFTs provide additional water filtration as solids are slowed and trapped by roots in the channel, delivering even cleaner water back to the sump. Make sure to transplant into the NFT channel when seedlings have roots long enough to touch the water stream or risk roots drying. Popular transplanting practices utilize net cups, or other slotted cups that sit on top of the NFT channel. These cups are slotted so roots can hang through the cup into the water stream. Aquaponics NFT systems provide a great way to grow for hobbyists and commercial growers. All these components can be constructed at home or ordered online for a larger scale operation. There are only a few drawbacks, firstly roots often clog the channel so the plants must be regularly replaced. Secondly, NFTs are largely immobile making transplanting and harvesting more difficult on a larger scale, compared to using other methods such as deep-water culture.

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