

Ioponics™ 1-Gallon Instructions

Step 1: Collect Materials

- One-to-three-gallon clear plastic container
 - Recycled food containers (pickles, cheese balls, etc.) work great
 - Avoiding glass containers is safer
- Net cup (holds plant stems from falling in)
 - Can substitute Styrofoam or DIY container
 - When purchasing, measure diameter of container and match to net cup size (cheese ball = 6", pickle jar = 4")
 - Thick rimmed cups are best, even if they ride above container
 - If net cup is slightly too small, binder clips can be used to decrease hole diameter
- Pebbles or gravel (bottom of container to hide feces)
- Limestone fist-sized stone (balances pH by increasing alkalinity)
- Clay pellets (in net cup with plants, stabilizes plants)
- Plants (mixed with clay pellets and placed in net cup)
 - Most house plant clippings work extremely well
 - Can use agriculture crops like lettuce, strawberries, gogi berries, etc.
 - Roots will grow into the clay pellets and through net cup into water
- Fish (produce waste that turns to nutrients for plants)
 - Best choice for fish is Endlers (*Poecilia wingei*)
 - Other possibilities are:
 - Mollies (*Poecilia sphenops*)
 - Guppies (*Poecilia reticulata*)
 - Bettas (*Betta splendens*)
 - Tetras (*Paracheirodon axelrodi*)
 - Swordtails (*Xiphophorus hellerii*)
 - Possible additions are:
 - Snails
 - Shrimp
 - Crayfish



Net Cup



<https://hydrobuilder.com/hydroponics/net-pots-269.html>

Container



<https://www.amazon.com/Utz-Cheese-Balls-Barrel-Ounce/dp/B004CMDUH2>

Binder Clip



<https://www.officedepot.com/a/products/561339/Office-Depot-Brand-Binder-Clips-Medium/>

Clay Pellets



https://www.alibaba.com/product-detail/Hydroponic-Agriculture-Aquaponics-LECA-Hydroponic-Expanded_1600085581543.html

Endler



<http://www.fishtanklab.com/site/dbview/75/0/Poecilia-wingei>

Molly



<https://www.dreamstime.com/royalty-free-stock-photo-molly-fish-isolated-white-image38969115>

Guppy



<https://a-z-animals.com/animals/guppy/>

Betta



https://en.wikipedia.org/wiki/Siamese_fighting_fish#/media/File:Betta_splendens_male_doubletail.jpg

Tetra



<https://www.istockphoto.com/photos/tetra-fish>

Swordtail



<https://www.dreamstime.com/photos-image-fish-swordtail-fish>

Step 2: Prepare

- Place rinsed pebbles in the container

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- Place rinsed limestone rock in the center
- Fill container with water (any type works but distilled produces less scale)
- Place clay pellets into the net cup
- Place at least four plant clippings into the clay pellets
- Place the net cup into the neck of the container
- Refill the container so that water comes to the top of clay pellets
- Leave water-filled container sit for 4-6 weeks (refill lost water from evaporation and transpiration) KEEP water filled up neck of container
- Remove any dead plants and replace with another variety

Step 3: Add Animals

- Roots should have grown out of the net cup into the water
- Place fish in the container and feed for 2-4 weeks until feeding on roots
 - **DO NOT OVERFEED** (dandruff flake size is perfect for daily diet)
 - 1-2 fish is perfect for this size of container

Step 4: Maintain

- Fill water to the top as liquid evaporates and plants transpire
- Trim plants as they overgrow and hang from system
- Enjoy your micro-ecosystem!

