Standard Laboratory Operating Procedure #200

Set-Up and Maintenance of Aquaculture Systems

Laboratory: Biotechnology/Environmental
Location: Science Lab
SLOP prepared by: R. Sanders
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General: The term "food security" refers to the availability of food and one's access to it. Sustainable aquaculture is a part of the solution to the global food crisis. Aquaculture is the world's fastest-growing animal agricultural industry. Aquaculture producers are seeking more efficient and sustainable ways to cultivate healthy species to satisfy rapidly growing markets.

Safety: N/A

Materials:
2 1⁄2 Countertop Aquaponics Systems from R&D Aqua Farms
http://rdaquafarms.com/CTAAP.html
Chlorine free water
Fish (Tilapia)

Procedure

1. Construct the system per specifications from R&D Aqua Farms, then fill each tank with chlorine and chloramine-free water and allow to circulate for 1 week. Check pump components and be sure there are no leaks in they system.
2. Add fish at 20% of stocking density. Use the following to determine fish stocking density:
    1. Tank size = _____ gallons
    2. Total fish weight = _____ gallon X 0.25lbs. fish per gallon (recommended constant)
    3. Number of fish = _____ lbs. (total fish weight)/____ lbs. (final grow out weight of fish)
    4. Start up fish at 20% total capacity = Total number of fish X 0.2

    Example:

    Tank Size: 100 gallon
    Total fish weight = 100 gallon X 0.25 lbs. of fish per gallon = 25 lbs.
    Number of fish = 25 lbs./1.5 lbs. (grow out weight for Tilapia) = 17 fish
    Start up fish at 20% total capacity= 17 fish X 0.2 = 3 fish
4. Make sure that the temperature and dissolved oxygen levels are no more than +/- 2 points different from the fish shipping water to reduce stress on the fish.
5. Take the bag of fish and without opening it float it in the tank for a minimum of 15 minutes.
6. Open the bag and roll down the top edge of the bag two or three turns. This will help the bag float with the opening up. A small airstone can be placed in the bag at this point.
7. Now add water from the tank to the open bag. Over the next 10 to 15 minutes add one to two gallons of tank water to the bag.
8. Put the fish into the new tank by grabbing the bottom of the bag and turning the bag upside down.
9. Next, feed fish slowly, watching to see that they eat all that is offered. Refer to SLOP #202: Calculating feed amounts for growth rate of tilapia.
10. Monitor water quality to ensure proper levels for ammonia, dissolved oxygen, pH, nitrate, nitrite and temperature. Refer to SLOP #201 Maintaining Water Quality for Aquaculture System.

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