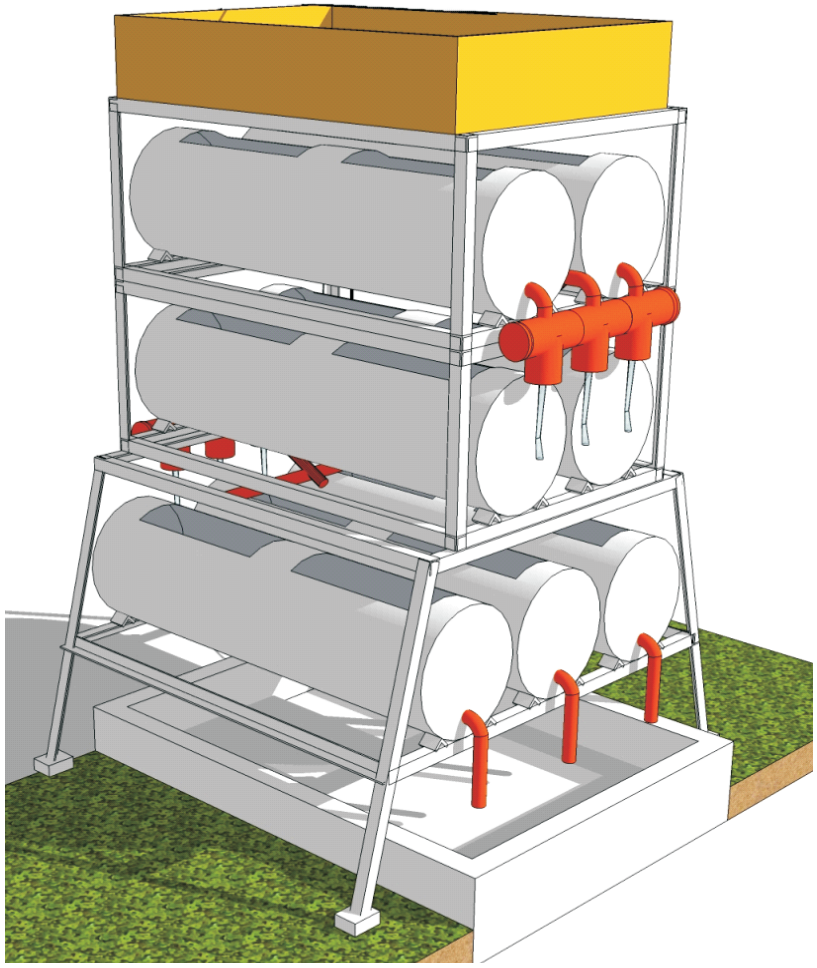

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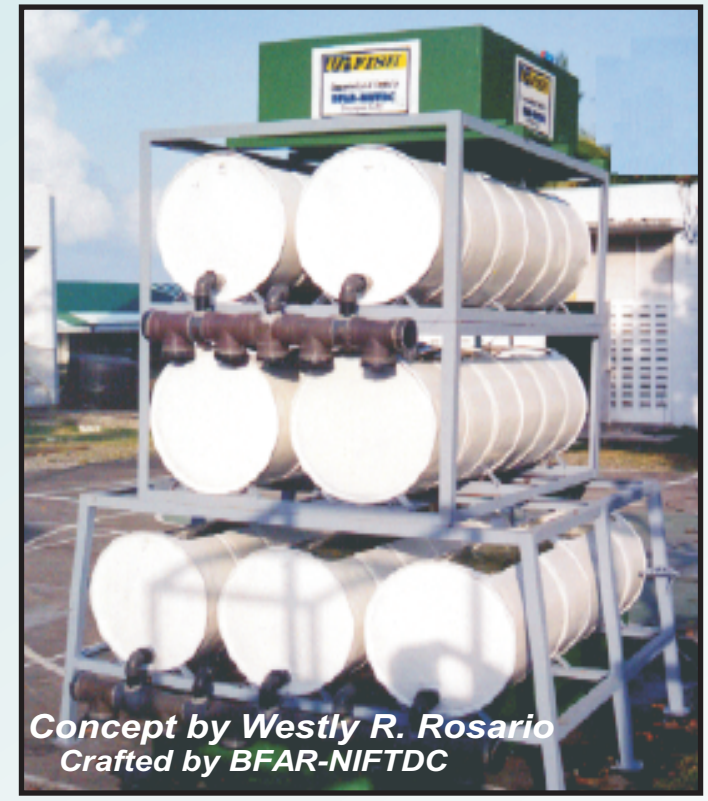
URBAN AQUACULTURE PROJECT

VERTICAL FISHFARMING

FISH CONDO

(African Catfish, *Clarias gariepinus*)



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Published by the ASIAN FISHERIES ACADEMY

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RAISING FISH IN 14 D FISH CONDOMINIUM

INTRODUCTION

Fish culture can be a hobby or livelihood activity. While many wanted to venture in fish culture, limited space is a major discouragement. Hence, this fish condominium model was conceptualized to enable urban fish hobbyists or aquaculturists to culture fish in their gardens or backyards with small-capital investment. The economic return from the system can be further appreciated when fish culture is integrated with vegetable garden, landscape or orchard.

Physical Description of the MODEL

Seven culture chambers made up of two 200 liter - metal drums each are welded together ensuring water tightness. From 14 drums, seven culture chambers are made. They are stacked in three levels like a pyramid on a fabricated metal frame. There are three chambers arranged in parallel at the first level. Two chambers are arranged in each of the second and third levels. The whole set-up is equipped with mechanical cum biological filters in the outlet piping system. A settling trough made of concrete or painted plywood is installed in the ground level, and a wooden filter box is installed on the topmost level. A continuous flow of filtered or recycled water using 0.5 hp submersible pump, serves as life support system for fish.

Water spinach "kangkong" (*Ipomea spp*) and "gabi" (*Colocasia spp*), are common vegetables that can be planted in the settling trough. It is a anchored in the gravel or planted in the nearby area. They are excellent plants in harvesting nutrients in the water. The system can be similar to "aquaphonics".

Economic Analysis

Catfish
(4 months culture)

	Unit 1	Unit 2	Unit 3	Unit 4
Capital Outlay	45,815.00	45,815.00	45,815.00	45,815.00
Production Cost	18,650.00	14,755.00	19,500.00	22,950.00
Total Harvest (kg)	344	267	365	382.5
Total Cost	64,465.00	60,570.00	65,315.00	68,765.00
Sale (Fish @ Php 90/kg)	30,960.00	24,030.00	32,850.00	34,425.00
Sale (Assorted Veggies)	2,500.00	2,500.00	2,500.00	2,500.00
Gross Sales	33,460.00	26,530.00	35,350.00	36,925.00
Profit	14,810.00	11,775.00	15,850.00	13,975.00
ROI	0.23	0.19	0.24	0.2
Payback Period	4.35	5.14	4.12	4.92

Culture Techniques

There are two ways of raising fish in 14D Condo Model:

1. **Single species – Same-age fish.**

The method is the culture of only one species from a single age group. The practice can be adopted for commercial or semi-commercial operation since harvesting is done once.

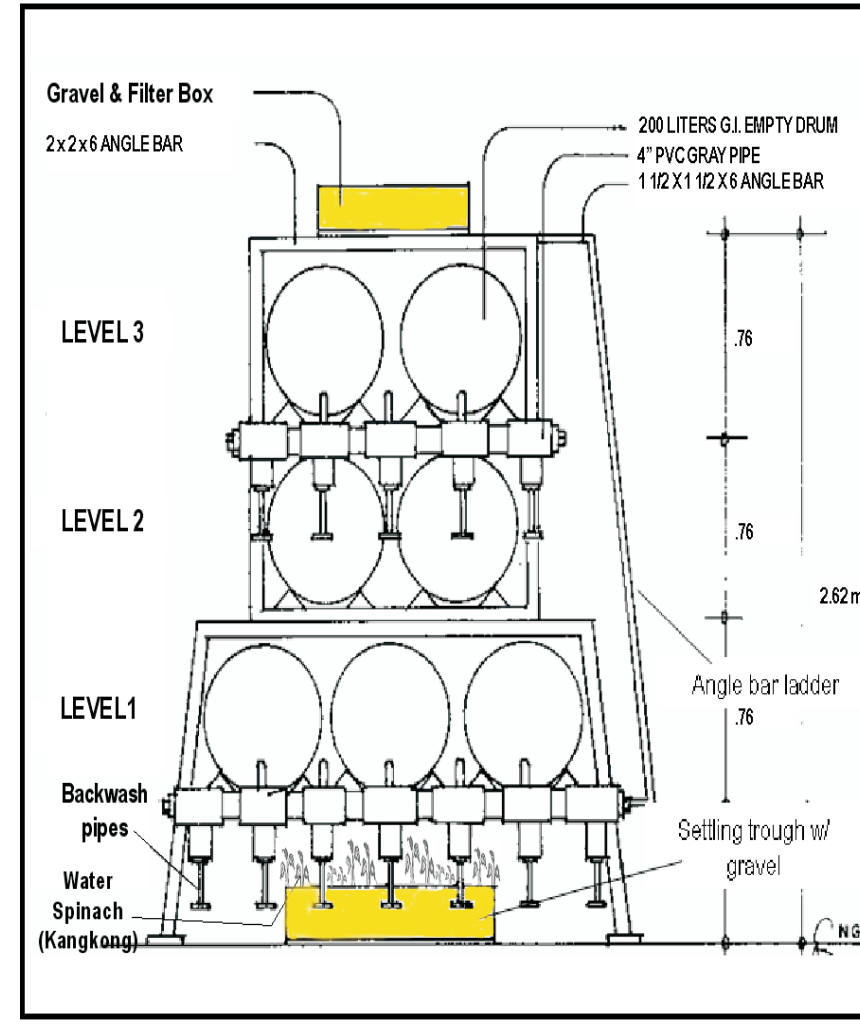
2. **Single species – Multi-age fish**.

Culture chambers are stocked with fish of different age groups. The technique allows the more efficient use of the life support system and water change. More fish or higher daily growth performance can be attained. Fish supply for a family can be sustained on a regular basis (weekly or even daily). Using this technique

<u>When integrated with crops/landscape/garden or orchard</u>

Used water can be utilized to irrigate plants using the same pump used to recirculate the water of the fish condo. Old water contains fish excreta and other organic matter and other activities beneficial to the plants. New or fresh water is added to the fish condo to ensure good water quality for fish culture in the system.

The number of culture chambers or levels of the Condo Model can be adjusted or increased according to the requirement of the farmer. Additional culture chambers can be used such as 28 drums which will allow culture and production of more fish using same energy cost such will upscale profit.



Advantages of the 14-D Condo MODEL

The Condo Model has the following advantages:

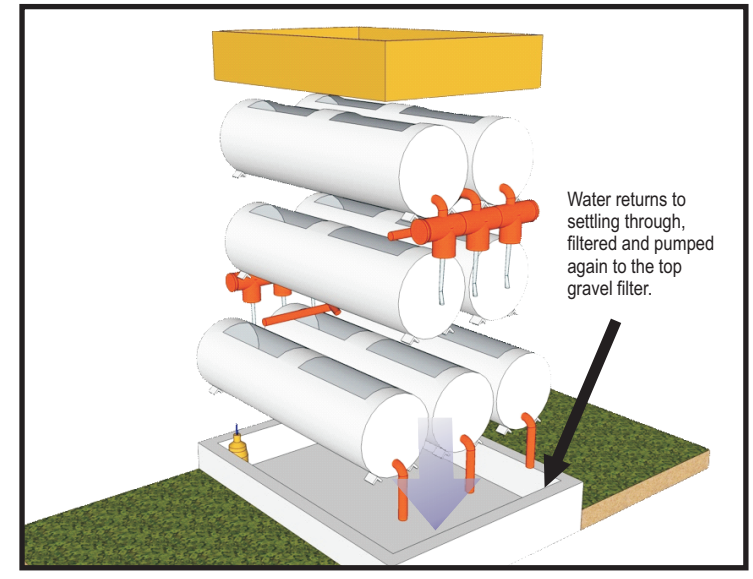
1. The equipment requires a minimum floor area of 2.30 x 1.80 m and a height of 3.0 m. The culture chambers are fastened vertically and has a total production water volume of about 2,800 liters.

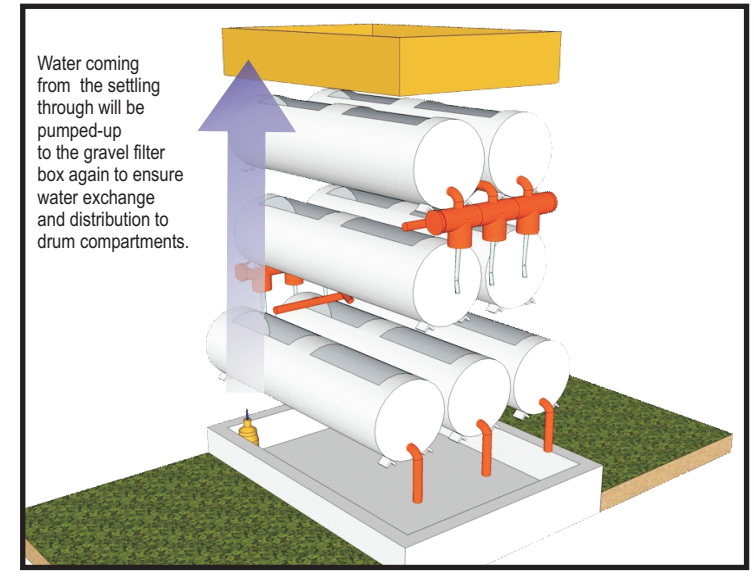
2. The shape of the culture chamber (drum) allows effective water circulation and easy removal of wastes by siphoning. Vertical water distribution and filtration is also enhanced by the engineering design of the model.

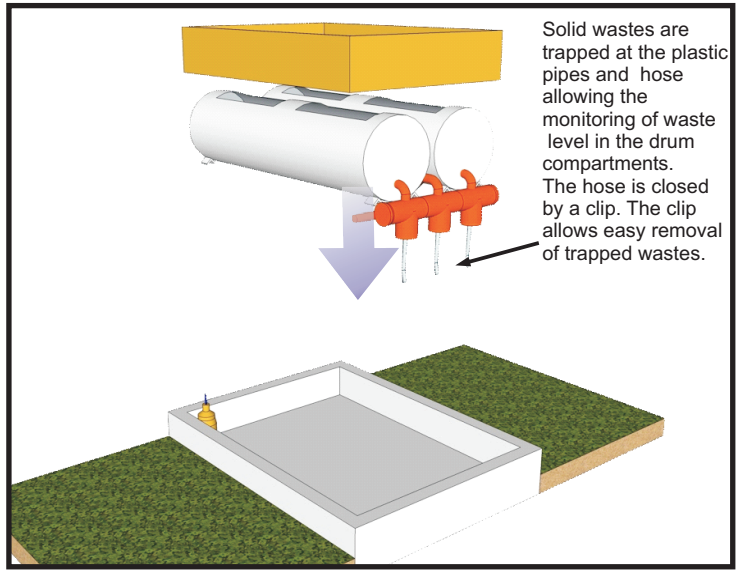
3. When water management is efficient, the Condo Model, can accommodate greater volume of fish compared to the horizontally arranged models.

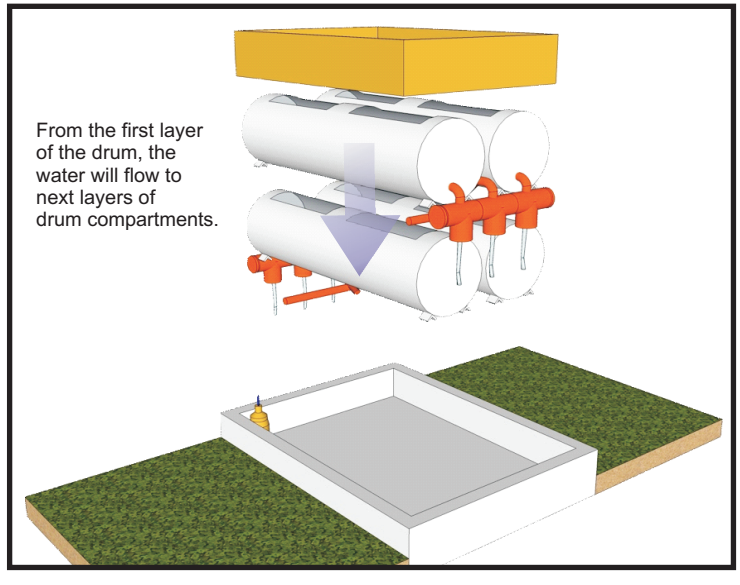
4. Different aquaculture commodities can be raised because one unit consists of seven separate culture chambers. Culture of different fish species and age-groups for year-round harvests can also be adopted using the Model

5 . When expansion of production is desired, additional drums can be welded in each culture chamber so that



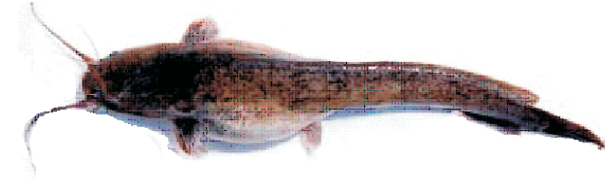






each chamber can consist of four drums (total of 28 drums). No modification in the water distribution or filtration is required. The same pump can be used, without additional energy cost.

Culture of Catfish



Catfish is a very popular table fish. They can be grown at very high stocking density since they utilize atmospheric oxygen. Life support system (pump or aerator) may not be critical in the culture system especially during power failures. Catfish eats anything like kitchen refuse, old bread, fish or animal entrails and fish feeds. The African catfish or *Clarias gariepinus* hybrids (*C. gariepinus* x *C. macrocephalus*) grow very fast. Catfish is a convenient species for family consumption. The stocking density for catfish is 1 fish/liter of water or 400 to 600 fishes per culture chamber. Stocking size is “cigarette size”. They maybe harvested after four to five months of culture. In 14-D Condo Model, 2100 catfish can be cultured. The number of fish can double when using 28-D Condo Model.

FISH CONDO OPERATION