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BACKYARD RECIRCULATORY AQUACULTURE SYSTEM

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What is RAS

The Recirculatory Aquaculture System (RAS) is an aquaculture technique in which water is filtered and reused after suspended matter and metabolites are filtrated and separated. The system is used for the high-density farming of different fish species using a minimal land area.

Objectives

- To inspire small-scale farmers and women in household backyards to take up fish farming.
- To increase the production and consumption of fish on a regular diet.
- Promoting the production of income from small-scale fish farming and improving livelihoods.

What is required to set up an RAS unit

- Land of approx. 100 sq. m land
- Good water source
- Source of Seed and Feed

What fish to culture

- Most suitable for Monosex Tilapia and Pangasius
- Fingerling size (> 2gm)

Tilapia (*Oreochromis niloticus*)

Pangasius (*Pangasius pangasius*)

What & how to feed the fish

- Pellet feed with 28-30% protein
- 2-4 times a day
- Manual broadcasting

Who will construct and install the system ?

The National Centre for Aquatic Animal Health (NCAAH) will support farmers in the building of fish tanks and will produce and build the whole system, including cages, pumps, aerators, filters, etc.

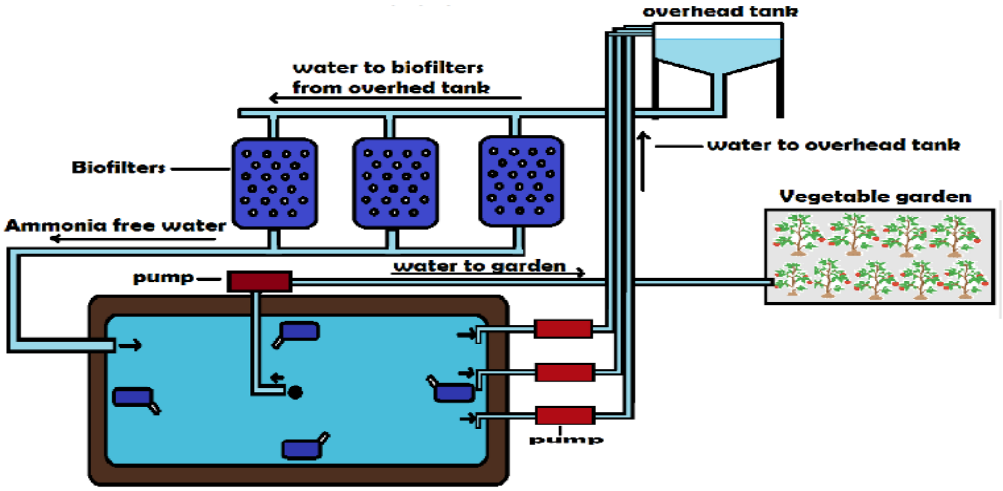
Desirable water quality to maintain

Temperature	:	26-30 ^{0}C
Dissolved Oxygen	:	4-6ppm
pH	:	7-8
Alkalinity	:	120-150ppm
Ammonia	:	<0.5ppm
Nitrite	:	<0.5ppm
Nitrate	:	<5ppm
Hydrogen Sulphide	:	Nil

What are the project Components?

- Awareness Workshop to applicants by AOC (Aqua- One Centre)
- Setting up by NCAAH
- Training for the farmers by AOC
- Input for culture by Farmer
- Advisory & Service delivery by AOC

Model Design



How much is the project Cost?

Setting up (Rs. 5.6 lakh) Tank Construction (excavation-1day)	:	Rs. 1.0 lakh
Procurement & installation of pumps, filters, cages, aerators, water-testing kit (9days)	:	Rs. 4.6 lakh

Details for setting up an RAS Unit		
Tank Dimension	:	6.7 m x 6.7 m x 2 m
Water Volume of the Tank	:	90,000 litres each
Nos. and Volume of cage	:	3 cages of 30,000 litres each
Pond Bottom with Central slurry pit	:	Conical with 18o slope
Water Depth at deepest point	:	3.3 m
Effective water depth	:	2 m
Pump	:	0.5 hp centrifugal pump
Aerators (Venturi system)	:	4 systems in a pond
Biofilter	:	Trickling, Nitrifying Bioreactor

How to calculate fish yield and Income		
Culture period	:	5-6 months
Stocking	:	1500 fish per cage; 4500fish per unit
Harvest size	:	450 gm
Expected survival	:	80%
Target harvest/ yield	:	1600 kg per unit/cycle
Crops per Year	:	2
Market Sale price	:	Rs.130/Kg
Gross income/yr.	:	Rs. 4.6 lakh
Gross profit/yr.	:	Rs. 1.36 lakh
Profit earnings/month	:	Rs. 11,300

Conclusion

Recirculating aquaculture system is the key to the future of aquaculture. Its merits outweigh its disadvantages. It allows sustainable use of water supplies, and in areas where high quality water is scarce. Although it has high costs for the establishment, the scale of the RAS is huge.