



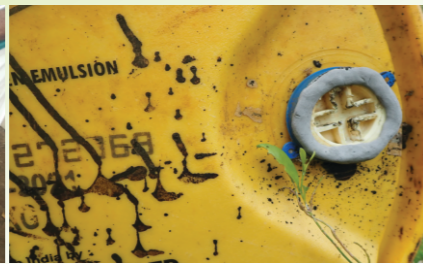
200 L barrels used as floats



Cleaning of barrel lids using thinner



Sealing of lids using M-seal



Sealed air tight barrel



Tying 200 L barrels in GI cage frame



Cage frame attached with floats

4. Service systems

- ❖ Used for operational and maintenance services like feeding, cleaning, monitoring or grading.



Cat-walk of bamboo poles



GI cat-walk installation



Use of cat-walk for fish seed stocking

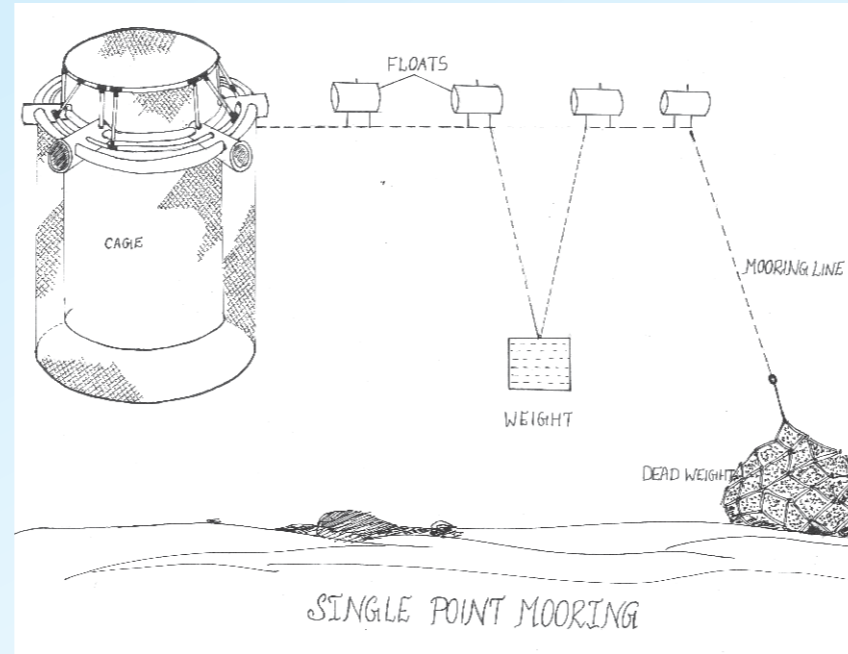


Two GI cages attached with GI extension services

5. Mooring system

- ❖ Mooring system joints the cage with the anchor system
- ❖ Function is to hold the cage in position
- ❖ Consist of sea steel lines, chains, reinforced plastic ropes and mechanical connectors

- ❖ Total length of the mooring line should be at least three times the maximum depth of water at the site



6. Anchor system

- ❖ Anchor system is connected to the mooring system by chains and ropes.
- ❖ A bag of sand or stones or a block of concrete or scrap metal could be used as an anchor



40 kg anchor used in backwaters



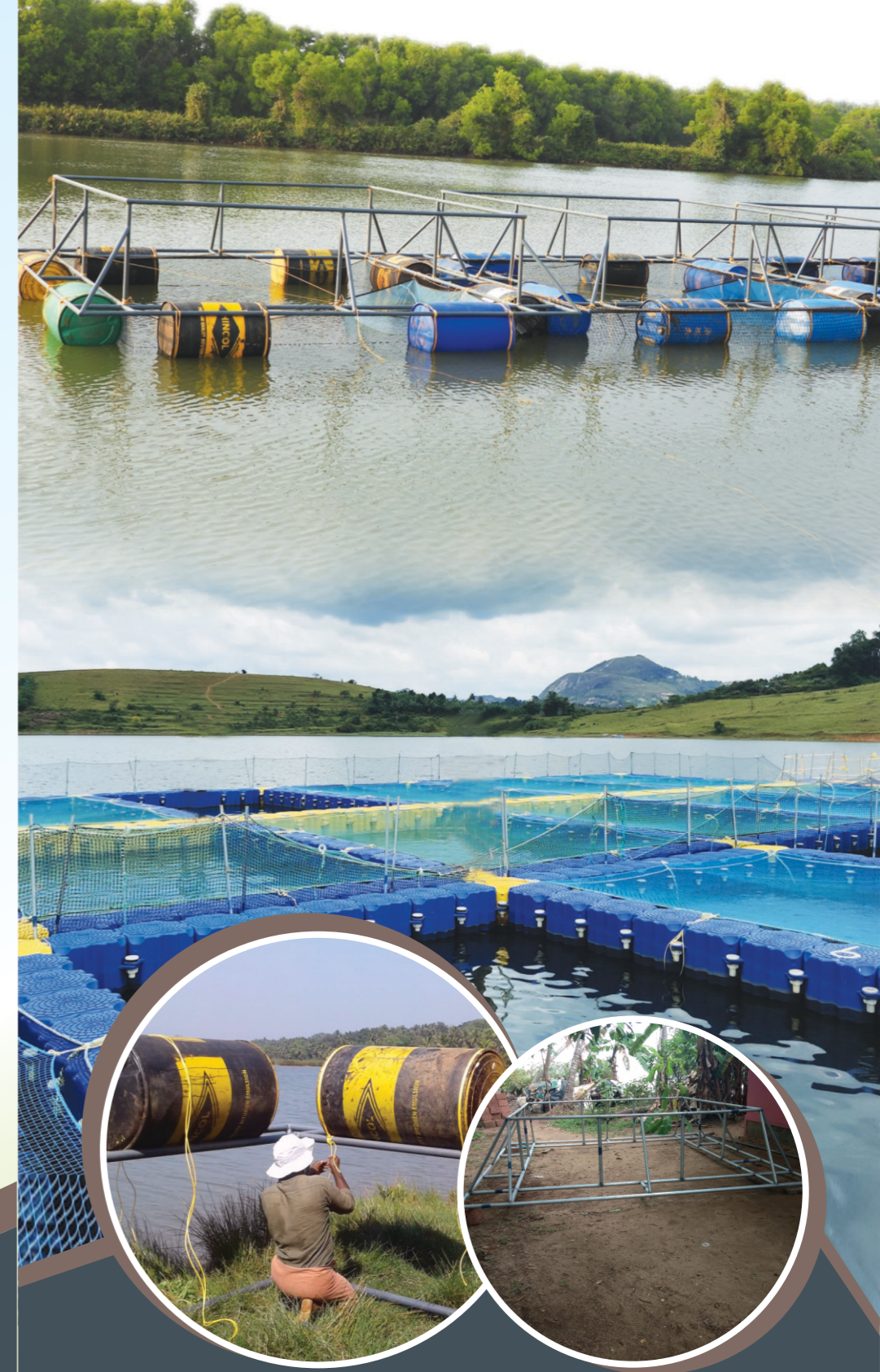
Installing GI cages using bamboo poles

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Cage Design, Fabrication & Installation

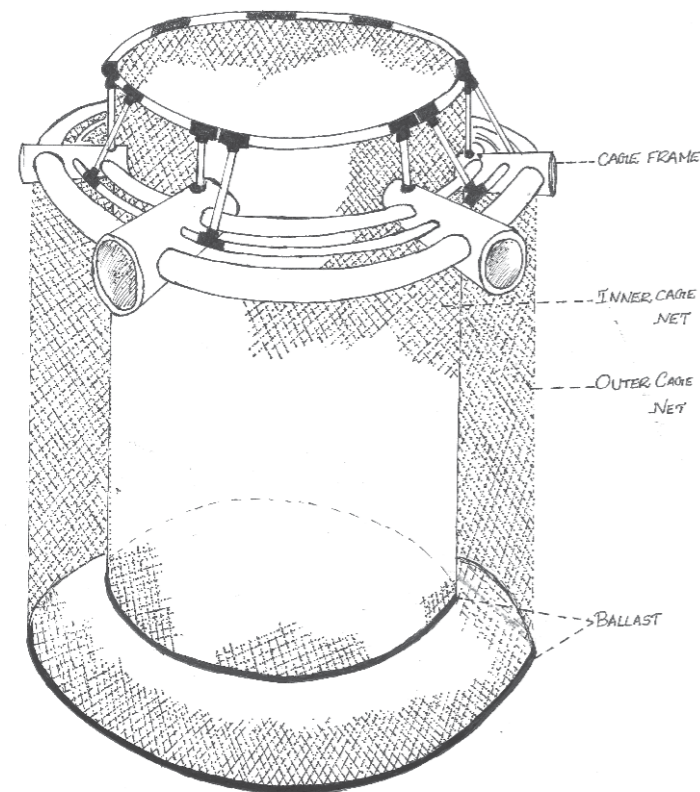
Components of a cage

The major components of a cage are

1. Cage bag
2. Frame
3. Floats
4. Service system
5. Mooring system
6. Anchor system

1. Cage bag

- ❖ Cage bag is made of synthetic nylon or polythene fibers
- ❖ Comprise of an inner net (for fish culture) and outer net (to protect the fishes from predators)
- ❖ Bird net is provided at the top for protecting fishes from birds
- ❖ Main function of cage bag is to protect the fish stock against harmful external influences and to allow free water exchange
- ❖ Circular cage bags are better in terms of utilization of space than rectangular bags
- ❖ Nets of bag are stretched vertically with weight (sinkers)
- ❖ Cage bag depth of 3-10 m is ideal



CAGE STRUCTURE WITH ALL COMPONENTS

Cage net mesh size requirements for different size groups of finfish species

Species	(18 mm mesh) Fish size (mm/g)	(25 mm mesh) Fish size (mm/g)	(40 mm mesh) Fish size (mm/g)	(60 mm mesh) Fish size (mm/g)
Cobia	100-200/10	200/70	200-300/500	300-400/>1kg
Pompano	20-30/2	40-100/35	100-200/500	
Seabass	20-100/15	40-200/300	200-400/1500	
Grouper	20-100/15	40-200/300	300-400/1000	

2. Frame

- ❖ Cage frame is made using High Density Poly Ethylene (HDPE), Galvanised iron (GI) pipes, PVC pipes etc
- ❖ HDPE pipes are highly flexible used for circular cage frames
- ❖ GI frames have less life span compared to HDPE frames
- ❖ Cost effective epoxy coated Galvanized Iron (GI) frames are recommended for small-scale fish farmers



PVC Cage frame



Rectangular GI cage frame



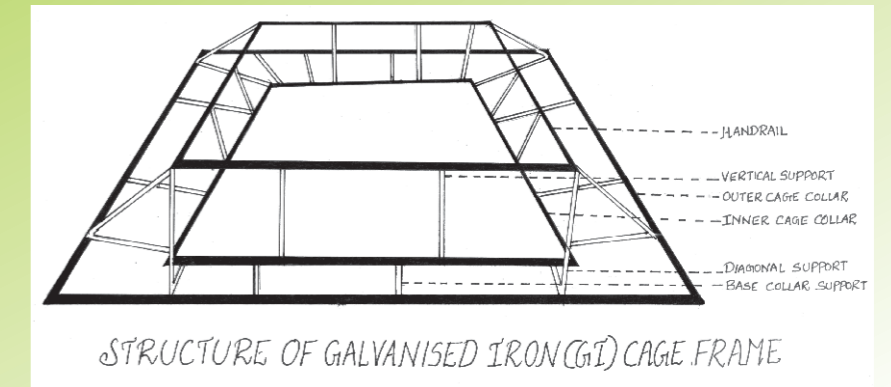
Circular GI cage frame



Circular HDPE cage frame

Technical Specification of 4×4 m dia GI cage frame:

- ❖ Outer and inner cage frame (1.25 inch GI B grade pipe)
- ❖ Hand rail (1.0 inch GI B grade pipe) placed 0.9 m height above from the base collar frame
- ❖ Vertical, base and diagonal supports (1.0 inch GI B grade pipe)



STRUCTURE OF GALVANISED IRON (GI) CAGE FRAME

Fabrication of GI cage frame:



1.25 inch GI B grade pipe



Fabrication of outer cage frame



Fabrication of inner cage frame



Welding at the corner joints



M-seal sealing at the welding joints



4×4 m GI cage frame



Coating of anti-corrosive paint



Battery of 4×4 m GI cages

3. Floats

- ❖ Used to provide buoyancy, holds the shape of the cage structure and cages at a suitable water level
- ❖ Common floatation materials used are metal drums, plastic drums, HDPE pipes, etc