



## PORTABLE FRP CARP HATCHERY

Breeding and hatching of carps are undertaken traditionally using bundhs, hapas and recently by cement circular hatcheries. Once installed, the cement structured hatcheries can not be shifted from place to place. The innovation of portable FRP carp hatchery is adding a feather to the blue revolution in the country by producing fish seed at the farmers' field. The transportation of seed from different far off places to the farm site involving substantial cost is getting reduced by introduction of this hatchery.

Carp hatchery fully made up of fibreglass reinforced plastics (FRP) has been suitably designed and developed by AICRP on APA, CIFA, Bhubaneswar and the technology got commercialized for first time in 2006 and for second time in 2013. The system is so designed that it creates the environment suitable for fish breeding in the field conditions for 20-24 kg of carps (male to female ratio and weight to be approximately equal) in one operation. In one run 1.0-1.2 million spawn can be produced from the system. This hatchery can also be used as a tool for fish biodiversity conservation. In lean season the system can be used for ornamental fish rearing or common carp breeding or water storing. The unit can be operated by unemployed youth, Grampanchayat and Cooperative Society on self-operational / rental basis.

### The system has the following benefits:

Portable in nature, Easy to install and operate, Low water consumption during fish breeding and spawn (fish seed) production, Easy to repair, Requires less space for installation, Less weight, Durability of the product for 15 years.

### Product description

The system consists of four major parts *i.e.*, Breeding/ spawning pool, Hatching/ incubation pool, Egg/ spawn collection chamber and Overhead storage tank/ water supply system.

#### Breeding/ Spawning Pool

- The breeding pool is cylindrical in shape with 2.15 m diameter, 0.9 m height and 3,409 l capacity (operational capacity 2950 l).
- The bottom of the pool is with uniform slope (1:22) towards outlet at the centre. The wall thickness varies 4.2 – 6.0 mm.
- To provide water circulation/ flow, 5 numbers of 15 mm diameter rigid PVC elbows are fitted at the bottom of the sidewall at equal spacing. Five numbers of rigid PVC nipples 15 x 75 mm are fitted with elbows in the same direction. A single point water inlet of 25 mm diameter is also fitted at the sidewall of the bottom.
- All the water inlet pipes are interconnected and fitted with individual full-way valves to control the flow of water.
- One- shower is also provided at the top of the tank to sprinkle and aerate the water.
- The water supply to the pool comes from the overhead tank placed at a minimum height of 3.3 m.

- The system is suitable for breeding 20-24 kg of carps (male to female ratio and weight to be approximately equal) in field conditions.
- The flow rate during egg collection is maintained in the pool at 0.35-0.42 l/ sec. depending on species.
- For one complete cycle of operation of the breeding pool total water requirement in full capacity is 7954 l (2950 l initial filling + 1980 showering for 5 hours + 3024 l flow through duck mouths for 2 hours during effective spawning).

### **Hatching/ Incubation Pool**

- The pool is cylindrical in shape with 1.4 m diameter, 0.98 m height and 1,200 l net egg incubation volume (water volume of the pool 1275 l).
- It consists of egg incubation chamber, FRP inner chamber, water supply system and accessories.
- The FRP inner chamber of the tank is with 0.4 m diameter and 90 cm height, covered with nylon bolting cloth of 0.25 mm mesh to filter the excess water to the drain.
- Six numbers of RPVC (15 mm diameter) duck-mouths are fitted at the bottom of the hatchery at 45° in between outer and inner chamber at equal distances to get required water flow for the eggs.
- It also has drainage outlets fitted at the centre and at the outer chamber for draining and cleaning purposes.
- The eggs hatch out in 14-18 h and remain in the pool for 72 h.
- The spawn is collected from the hatching pool through PVC hose pipes/ spawn collection tank. It has the capacity of hatching 1.0-1.2 million eggs per operation.
- Flow rate in pool during operation is maintained at 0.3-0.4 l/ sec.
- For one complete cycle of operation of the pool total water requirement in full capacity is 103.7 cu m (flow through duck mouths is for 72 hours).

### **Eggs/ Spawn Collection Tank**

- This is a rectangular tank of size 1.0 x 0.5 x 0.5 m with capacity of 250 l.
- Its wall thickness is 3 mm and it is reinforced with MS angle of 25 x 25 x 5 mm at all sides from the bottom in a height of 0.35 m.
- The water level in the tank is maintained at a height of 0.45m (net water volume 225 l).
- To drain the excess water, PVC pipe of 63 mm diameter and 150 mm length is fitted at a distance of 38.7 cm from the bottom. Cotton inner hapa of the tank size is fixed inside it to collect eggs/ spawn from breeding/ incubation pool, respectively.

### **Capacity of hatchery operation**

Hatchery of one million spawn production means one breeding pool associated with one hatching pool. Similarly, hatchery for two million capacity means one breeding pool with two hatching pools and three million capacity includes one breeding pool with three hatching pools. In the case of one, two and three million spawn capacity hatcheries 1.0-1.2 million spawn can be harvested in 4<sup>th</sup>, 2<sup>nd</sup> and everyday respectively.

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