Potential of cage culture in coldwater lakes and reservoirs

Cage culture is an economically, socially and environmentally sound fish culture technology which efficiently exploits available water bodies, increases their natural productivity and thereby reducing pressure on other resources.

Directorate of Coldwater Fisheries Research
(Indian Council of Agricultural Research)
Bhimtal -263 136, Nainital (Uttarakhand)
Phone: 05942- 247280/247279, Fax: 05942- 247693
Email: director@dcfr.res.in, Website: www.dcfr.res.in

What is Cage Culture?

Cage culture is an aquaculture production system where fish are held in floating net cages. Cage culture of fish utilizes existing water resources but encloses the fish in a cage or basket which allows water to pass freely between the fish and the water body.

Site criteria for cage culture

Site selection is the most important part of cage culture. Proper selection of site will reduce the operational cost and most of the problems arise with cage culture. Lakes, reservoirs, ponds, quarries, rivers and streams can be used for cage culture provided that the water quality is suitable and there is adequate water depth beneath the cages to allow water movement as well as to keep the nets free of sediments. Good water exchange is also important in cage culture to replenish oxygen and flush away wastes.

Why coldwater cage culture?

At present aquaculture is gaining momentum in the upland regions of Himalayas. But due to scanty availability of ponds in this region fish farming is hampered. Around 20,500 ha natural lakes and 50,000 ha of reservoirs both natural and manmade and 2500 ha brackish water lakes in Indian Himalaya which have immense potential for aquaculture practices. The average yield of these water bodies is very poor and still leaving scope for enhancing fish yield through capture fisheries, including culture-based fisheries like cage culture.

Stocking with the right fish species, using seed of appropriate size and introducing it at the right time are essential to optimizing fish yield from lakes and reservoirs. Where fingerings are available, transporting them to reservoirs usually incurs high fingerling mortality. In this context, producing fingerlings in situ in cages will offer opportunity for supplying stocking materials, which are vital inputs towards a programme of enhancing fish production from Himalayan lakes and reservoirs.

Advantages and disadvantage of cage culture

Cage culture has some distinctive advantages and disadvantages compared to other fish culture methods which include:

Advantages	Disadvantages
Different types of water bodies can be used	Fish is vulnerable to external water quality problems
Low capital input can be installed in an existing water body	High energy diets are required
Harvesting is simple	Poorly placed cages may alter current flows and worsen sedimentation.
Observation and sampling of fish is simple	Unconsumed feed and fish faecal waste causes eutrophication
Better control of fish population	Probability of disease outbreak is more
Efficient control of fish competitors and predators	Navigational hazards
Effective use of fish feeds	Low dissolved oxygen syndrome Vandalism or poaching problem
Reduced mortality	
High stocking rate	
Reduces pressure on land use	
Less man power requirement	
Higher production per unit area	

In situ seed rearing: Initiatives taken at DCFR

Fishery enhancement in open water bodies like lakes and reservoirs are of important concern to increase fish productivity in these water bodies. However, protocols for *in situ* seed rearing upto advanced fingerling stage for stocking in coldwater lakes and reservoirs are not in place.

Hence, to address this issue, the Directorate has been taken initiative for developing in situ seed rearing protocols for fishery enhancement in coldwater lakes.




The in situ seed rearing in floating cages offer opportunity for supplying stocking material of appropriate sizes of the desired species which are vital inputs for enhancing fish production from Himalayan lakes and reservoirs.

Edited & compiled by

Dr. M. S. Akhtar, Scientist, DCFR
Dr. Debajit Sarma, Principal Scientist, DCFR
Dr. N. N. Pandey, Sr. Scientist, DCFR

Published by

Dr. P. C. Mahanta, Director, DCFR Bhimtal

हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

Agrisearch with a human touch