

# Enhancement of Livelihood Security Through Aquaculture



**Aquaculture is alternate option to explore water and for generating employment to the people dwelling in hills**



## **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](mailto:director@dcfr.res.in), Website: [www.dcfr.res.in](http://www.dcfr.res.in)**



### **In Himalayan hilly tracts**

- Agriculture is the mainstay of the people living in the hills
- Average Land holding is very less in hill (700-900 m<sup>3</sup>) as compared to national average of 1370 m<sup>3</sup>
- Farmers have integrated type of farming practices
- Poor accessibility, difficult hilly terrain, lack of proper market
- Low productivity of agricultural land
- Growing disparity in the standard of living
- Major strategies for livelihood improvement involve intensification, extensification and diversification
- Water Conservation is a priority

### **Fish Farming in Poly/ Irrigation Tanks**

Plastics film lined ponds have been found very suitable for rainwater harvesting in uplands where scarcity of water becomes major bottleneck in agricultural production. These poly-cum-irrigation tanks are also used for fish culture. Production remain in higher side due to higher temp. and good natural food for growing fish.

- Water conservation
- Fish production
- Multiple use of water
- Integrated approach
- Livelihood security





This multi-tier model for fish culture was developed for which the poly-cum-irrigation tanks were used for fish culture. The ponds can be stocked with Chinese carps and were fed with rice polish and mustard oil cake @ 2% of body weight. The significant production was achieved of 0.7 kg/m<sup>3</sup> of water in comparison to 0.36-0.60 kg/m<sup>2</sup> in cemented and earthen ponds respectively. Water temperature was observed 2-6 °C more than the conventional ponds since polyfilm conserve the energy of sun light as well act as insulation between water and earth. The temperature helps in regulating the fish physiology resulting in more growth of fish compare to conventional tanks. Polyfilm lining also extends the growing period by reducing the lean period or no growth period in the winter months. Polyculture of Grass carp, Silver carp and Common carp can be taken as the fish farming practice for these polytanks. This technique is suitable for the mid altitudinal region (800-2000 msl).

**Species-** Grass carp, Silver carp and Common carp

**Species ratio-** 4-5:2-2.5:3-3.5

**Pond Size-** 50-100m<sup>3</sup>

**Stocking density-** 2.8-4 fish/m<sup>3</sup>





### Cost of production per m<sup>3</sup> volume of water

Seed-3 No. @ Rs. 1.5/seed	Rs 4.50
Feed-1.6 kg @ Rs. 15/kg	Rs. 24.00
Other charges such as medicine etc.	Rs. 02.00
<b>Total</b>	<b>Rs. 30.50</b>

### Income form fish production per m<sup>3</sup> volume of water

Average Fish production	0.69 kg
Gross Income @Rs. 120/kg fish	Rs. 83.00
Net Income [G.Income-Expenditure]	Rs. 53.00

#### Compiled by

Dr. Prem Kumar, Sr. Scientist (FRM)  
Dr. N. N. Pandey, Sr. Scientist (Aquaculture)

#### Published by

Director, DCFR, Bhimtal