

Composite carp culture in Water Harvesting Structures

A package of practices for subsistence composite carp culture involving 3 Indian major carps (catla(*Catla catla*), rohu(*Labeo rohita*) and mrigal/nain(*Cirrhinus mrigala*)) and 4 exotic carps (silver carp (*Hypophthalmichthys molitrix*), bighead carp (*Aristichthys nobilis*), grass carp (*Ctenopharyngodon idella*) and common carp (*Cyprinus carpio*)) in watershed ponds and Water Harvesting Structures (WHS) suitable for western Himalayan agro-climatic situations has been refined. Improvement of WHS and farm ponds with net lined inlet and outlet and provision of at least 800 m³ water ha⁻¹ to top up water during summer or insufficient rainfall period ensure successful fish farming.

Stocking of grownup seedlings at 2 fish per m² during March-April, feeding daily with agricultural wastes like mustard oil cake, rice bran and poor quality wheat/paddy at 2-4% of fish biomass present in ponds and harvesting during Dec.-Feb. yield maximum fish and profit. Accommodative agriculture practices including minimum soil working, limited use of pesticides and fertilizers in catchments are emphasized. Application of lime (125 kg Ca(OH)₂ ha⁻¹) and industrial-grade potassium permanganate (KMnO₄, 0.5 mg l⁻¹) once in a week for 3 weeks, adding water (1000-1500 m³ ha⁻¹), thinning out fish density through partial harvesting and providing broad-spectrum antibiotic Septon-500 (100 mg kg⁻¹ fish feed) prevent and control occurrence of Epizootic Ulcerative Syndrome (EUS) effectively. Application of 50-100 kg lime ha⁻¹ during plankton death especially during sudden change of climate or occurrence of rainfall that may cause opaque water color in ponds improves water quality and fish production. Fish production of 3.5-4.5 t ha⁻¹ year⁻¹ is achieved for a net annual profit of about Rs. 90,000-1,00,000 per ha⁻¹.

The refined package of practices for carp culture is extended to State government's Fisheries department and other watershed organizations, NGOs and local farmers for the benefit of entire western Himalayas. It is noticed that disease incidence has greatly reduced in fishponds of the region. Consequently, local fish farmers could improve fish yields from mere 0.8 t ha⁻¹ year⁻¹ to at least 4.0 t ha⁻¹ year⁻¹. Besides, 40 new entrepreneurial farmers have adopted fish culture in Dehra Dun, Tehri-Garhwal, Haridwar and other nearby districts of Uttarakhand.



**Photo: Fish harvested in a watershed pond in Doon Valley:
Incentive for resource conservation**

