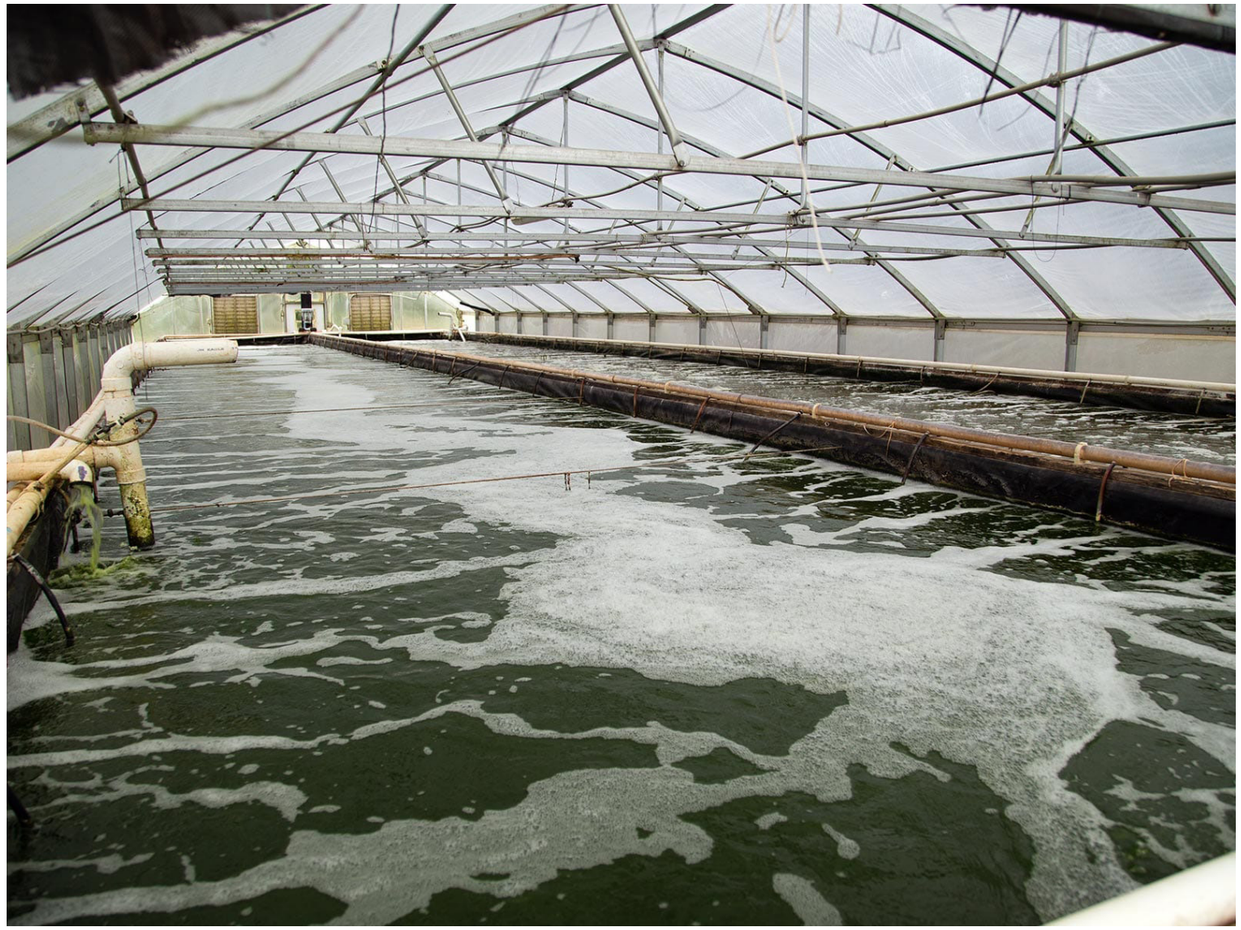
INNOVATIONS IN INDIAN FRESHWATER Aquaculture: EVOLUTION FROM BACKYARD ACTIVITY IN WEST BENGAL

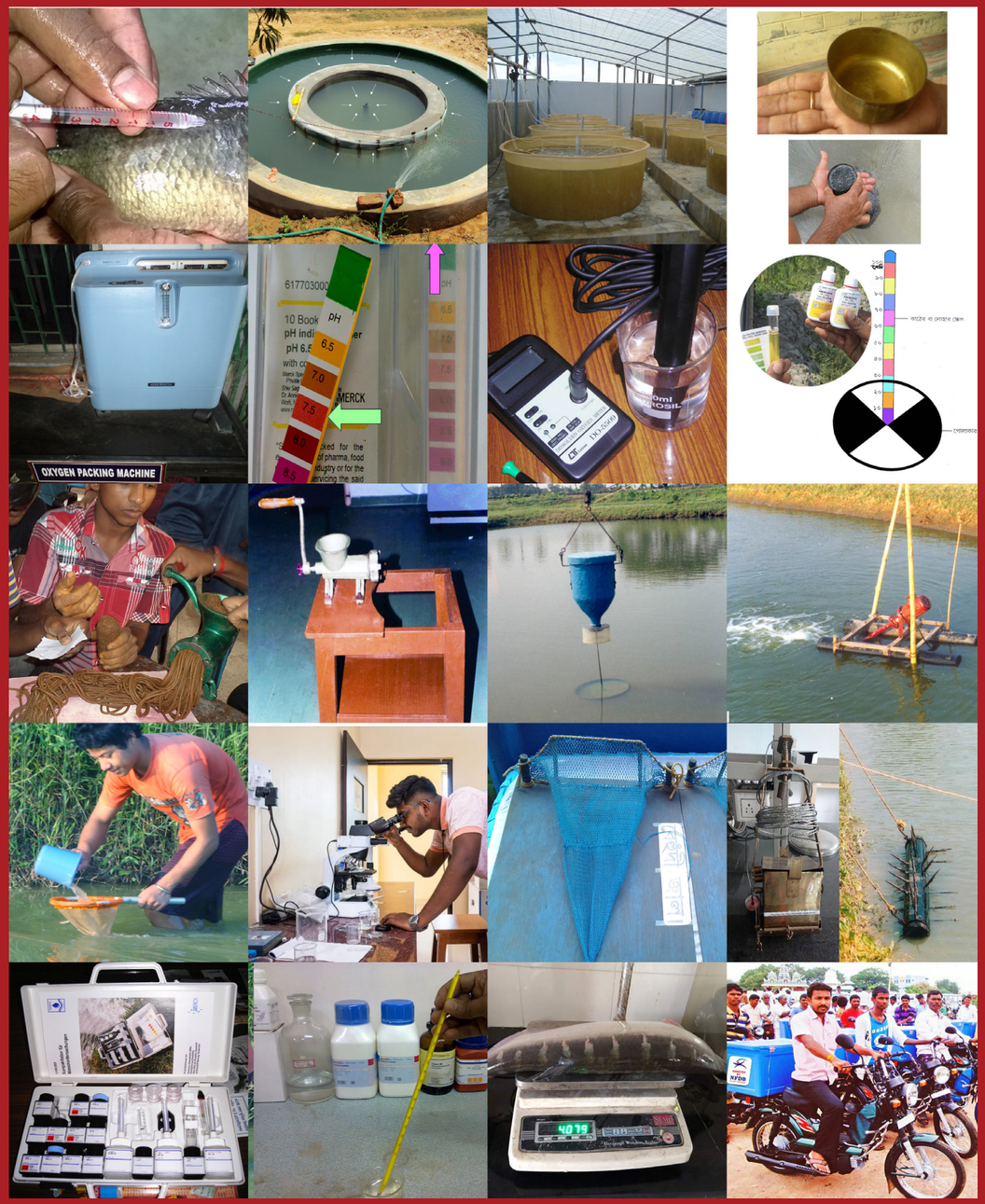
Dr. Pratap Mukhopadhyay
Retired Principal Scientist, ICAR-CIFA

Earlier, in the absence of precise knowledge on aspects of fish breeding and reproduction, fish seed, the primary input in aquaculture, used to be collected from riverine sources and then stocked in ponds for farming. This was then followed by gradual epoch-making innovations. Stocking of induced bred fish seed was developed in 1957, aiming at quality fish seed production through hatchery operations, brood fish husbandry in captivity, and seed transportation in oxygen-filled polybags for fry/fingerling production followed by grow-out culture. The importance of water quality, application of lime, and periodic pond fertilization and manuring are included in providing a congenial environment for fish growth and wellbeing. Pre-stocking pond preparation practices and rearing management have become the norm. Stocking of fish seeds in specific proportions depending on their habitat in ponds like surface, column, and bottom regions for efficient utilization of the entire natural food resources available leads to the development of a composite fish culture system. Stocking of fish seed in such polyculture systems should be with due consideration of the carrying capacity of well-designed ponds, needs for oxygenation, quantification of plankton species, provision of supplementary feed, the record of voluntary feed intake, regularly for better nutrition, growth, and health of cultured fish.

Feeding strategies were developed, such as what to feed, how much to feed, when to feed, how frequently to feed, a suitable form of feed, and its storage in the warehouse. Brood stock management and larval/spawn rearing techniques were introduced. The three pond rearing system, for example, spawn to fry rearing in nursery ponds, fry to fingerling in rearing ponds, and fingerling to adult rearing in stocking ponds, are applicable mostly to major Indian carp species.



IMPLEMENTS USED IN FISHERIES



Preventive measures for control of disease caused by protozoan parasites, bacteria, and fungus include fish health monitoring on a regular interval. Single stocking with multiple harvesting and multiple stocking with multiple harvesting systems of farming were introduced. The compensatory growth effects in carp species have become known.

Introduction of selected mechanisation procedures in aquaculture, including feed delivery systems, mechanical netting, and application of engineering principles in aquaculture, including use of tools and components. Selective breeding for higher growth rate, improved feed utilisation efficiency, and disease resistance standardised for a few key species Water budgeting and wastewater recycling in aquaculture and fish culture in a flow-through system In situ culture of preferred natural food sources (zooplankton) like rotifers followed by chlorella culture to be used as food for rotifers and selected nutritional enrichment of fish food organisms.