

**ORL-F&HN-10**  
**Fish Nutrition in Aquaculture**

Madhab Bahadur Pantha

Former Director  
Directorate of Fisheries Development  
Kathmandu, Nepal  
mbpant@hotmail.com

The scientific nutritional investigation of aquatic animals started only around the mid of 20<sup>th</sup> century, with high value carnivores fishes. Later on with an increase of income of the people, had created higher demand for fish, resulted into an expansions and development of intensive pond fish farming. Although semi-intensive aquaculture, particularly in the tropics, accounts for nearly 70% of the finfish production in the world, mainly from few important cyprinids such as Chinese, Major Carps, and Tilapia. Therefore an aquaculture is the only hope to meet the demand of fish for the people. To produce more fish in the artificially ponds or in the controlled environment intensively it is highly necessary to feed fish with nutritionally balanced feeds based on fish species or life cycle stages of fish for higher growth at low cost.

An intensive fish farming emphasized to produce fish feed at nationally balance level. In the culture practices the endogenous food supply is known to play a major role in early life cycle stages, while the exogenous food supply is very diverse which often range from simple mixes of ingredients to pellet feeds (sinking to floating) of various forms. All carnivorous fish demand high protein and balanced diets produced at low cost. Fish need energy which is obtained from various nutrients to maintain basic metabolic activities and to support growth, reproduction, activity, and health. These nutrients are: Proteins (includes ten essential amino acids), carbohydrates, lipids (essential fatty acids as Omega-3 and others) and the micro nutrients in terms of essential vitamins, minerals and other organic ingredients all cumulatively provide necessary energy for the fish's healthy growth. In the process, nutrients get absorbed, transferred, released and reabsorbed. Apart from functional constituents in food other essential nutrients (such as probiotics, prebiotics and immuno-stimulants) are also currently being considered in fish nutrition aiming to improve fish growth and/or feed efficiency, health status, stress tolerance and resistance to diseases.

Nevertheless, the knowledge on fish nutrition still need to be given priority to assist in the continuous improvement of sustainable practices of aquaculture giving emphasis on nutrition requirements of fish, feed ingredients and their evaluation, and the low cost formulation of fish diets that promote higher fish production maintaining natural environment and fish health.