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ER TEMPERATURE ON THE GROWTH PERFORMANCE
ED CONVERSION RATIO OF *LABEO ROHITA*

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ABSTRACT

This study was conducted to investigate the effect of different water temperature ranges on growth performance, total length and feed conversion ratio of *Labeo rohita*. The three temperature ranges were 20-22, 22-24 and 24-26°C. Two replicates were followed for each water temperature range. The feed was offered at the rate of 4% of wet body weight of the fish twice a day. *Labeo rohita* attained significantly higher body weight (11.650 ± 0.212g) and total length (10.485 ± 0.191 cm) under water temperature range of 24-26°C. This was followed by 10.803 ± 0.003g body weight and 9.720 ± 0.003 cm total length under water temperature range of 22-24°C and 10.356 ± 0.062g and 9.335 ± 0.078 cm for body weight and total length respectively for the water temperature range of 20-22°C. The fish r temperature between 24-26°C showed the best FCR value (2.270 ± 0.050), followed 22-24°C (2.680 ± 0.146) and 20-22°C (2.970 ± 0.073). It was concluded that wa from 24-26°C seemed to be the most effective for rearing of *Labeo rohita*.

Key Words: Water temperature, growth, FCR, *Labeo rohita*.

INTRODUCTION

Being cold-blooded animal, fish i.e. affected by the temperature of the surrounding water which influences the body temperature, growth rate, food consumption, food conversion and other body functions (Hoshihan *et al*., 1993; Britz *et al*., 1997; Azevedo *et al*., 1998). Therefore, water temperature is a driving force in the fish life because its effects are more than any other single factor. Growth and livability in fish are optimum within a defined temperature range (Gadowski and Caddell, 1991). Although short-term changes, such as weather conditions, may influence a fish for a day or two, but temperature has more predictable and seasonal effect.

Each fish species has an ideal temperature range within which it grows quickly. However, fish move into more favorable areas of a stream to regulate their body temperatures. In warmer environments fish have a longer growing season and faster growth rate but tend to have a shorter life span than in cool water. High water temperatures increase the metabolic rates, resulting in increased food demand. Although, fish can generally function in a wide range of temperatures, but they do have an optimum range, as well as lower and upper lethal temperatures, for various activities (Beschta *et al*., 1987).

Freshwater fish have an optimum growing temperature in the range of 25-30°C (Anonymous, 1983) at which they grow quickly. During winter, temperature falls, thus influencing biological functions in fish. *Labeo rohita* is an important freshwater fish cultured in Asia, particularly in Pakistan and India. There and other cultured freshwater fish decrease during the low water temperature period.

Keeping in view the information given above, it can be envisaged that by understanding how temperature affects the performance of fish, particularly during winter season, a farmer can maximize his profit by exploiting maximum production potential of local fish species. However, information regarding the effect of water temperature on various species of fish in Pakistan is limited. Therefore, a project was designed to investigate the effect of different temperature ranges on the growth performance and feed conversion ratio of *Labeo rohita*.

MATERIALS AND METHODS

Six weeks experiment was conducted in six glass aquaria in Fish Nutrition Laboratory, Department of Zoology and Fisheries, University of Agriculture, Faisalabad, Pakistan. One hundred *Labeo rohita* finger-lings obtained from a local Fish Seed Hatchery were acclimatized on experimental diet for two weeks in the glass aquaria. After the acclimatization, 10 fingerlings were randomly stocked in each aquarium having water at three temperature ranges of 20-22, 22-24 and 24-26°C. Two replicates were followed for each water temperature range. The average initial body weight of the fingerlings was 8.65g.

An experimental diet having 30% crude protein and 4.6 Kcal/g gross energy was prepared by mixing

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