



EVALUATION OF GROWTH PERFORMANCE OF COMMON CARP (*CYPRINUS CARPIO*) USING SUPPLEMENTARY FEEDING IN POLY-LINED POND UNDER TEMPERATE CONDITION

*Ghanshyam N Jha, A.S. Charak and N. Paul
KVK-DODA of SKUAST-J, Bhaderwah, Doda, J&K-182 221
*Corresponding author email: ghan_shark@yahoo.com

ABSTRACT

A sixty-day experiment was carried out to evaluate the growth performance of Common carp (*Cyprinus carpio*) using supplementary feeding in poly-lined pond under temperate condition. Six hundred fry of nearly 5g weight each were randomly distributed (200 fry in each pond) into three ponds (whereas T₁ was a single pond and there were no supplementary feeding, while T₂ was in duplicate and there was supplementary feeding using mustard oil cake and wheat flour (50/50) with 2% vitamin mineral mixture). The effects of supplementary feeding with oil cake and wheat flour on Common carp were evaluated in terms of growth parameters such as weight gain (%), specific growth rate (SGR%), food conversion ratio (FCR) and survival. Supplementary feeding increased weight gain % and specific growth rate (SGR %) when compared to control group (T₁), while the FCR data decreased and it was recorded 1.6 for T₂. There was an inverse relationship observed between SGR and FSR. With increase in specific growth rate, values of food conversion ratio decreased. The results obtained in present study indicated that cheap and easily available feed supplements like mustard oil cake and wheat flour in equal proportion leads to better growth performance in common carp in temperate condition. Decreased FCR leads to lower the fish production cost.

KEY WORDS: Growth performance, Common carp, Supplementary feeding, SGR, FCR.

INTRODUCTION

The Common carp (*Cyprinus carpio*) is a widespread freshwater fish and is widely available in lakes and rivers over the globe. This fish is introduced to culture system in every part of the world except poles. In India, it is widely cultured under composite culture system as well as in mono-culture system. In India, fisheries have always been playing a pivotal role in the food and nutritional security of people, especially in rural areas (Sugunan, 2002). In an aquaculture system, natural food is not sufficient to sustain optimum production. Hence it is vital to provide a nutritionally balanced diet for optimum aquaculture production (Sarma and Jha, 2010). Nutritionally balanced diet contains carbohydrate, fat, protein, minerals, vitamins, etc. in sufficient quantity for proper growth (Jha *et al.*, 2010). In wild, fishes are getting quality food required for their proper growth, but, in captive condition, lack of nutrients bearing substance, results in retarded growth of the fish (Jha *et al.*, 2018).

Doda (coordinates-33°08 45 N75°32 52) is a district in eastern part of Jammu Division of the Indian UT of Jammu and Kashmir with an area of about 2625 km² and population of 409,936 (2011 census). The district have population density of 160/km², sex ratio of 919. Though, the people of the district are educated and uses several modern technologies of agriculture, horticulture, *etc.* however they are having lack of knowledge and interest in aquaculture

even though the district having vast potential of fish production. The carp culture (Chinese carp) practice can be seen at initial stage without any supplementary feeding practice, hence very less income, farmers get from fish farming. With all above backgrounds, KVK-Doda framed on farm trials (OFT) to evaluate the growth performance of Common carp (*Cyprinus carpio*) using supplementary feeding in poly-lined pond under local condition and show the results to the farmers so that their profitability can be increased. We conducted this trial of supplementary feeding using locally available ingredients like mustard oil cake and wheat flour in equal proportion in farmer's pond.

MATERIALS & METHODS

Fry of Common carp (*Cyprinus carpio*) of the average weight of about 5g were collected from the Department of Fisheries, Indian UT of J&K, transported in poly bags with sufficient aeration, to the experimental sites situated at different villages of Doda district of J&K and were acclimatized to the experimental rearing conditions. Thereafter, fishes were transferred to the experimental poly-lined (with bottom soil lining of about 6') ponds (200 nos of fishes in each pond). There were three ponds of almost equal size. The first pond was ideal and there were no supplementary feeding, while the second and third were the experimental pond in which supplementary feeding with equal proportion of mustard oil cake (MOC) and wheat flour

(WF) along with 2% vitamin mineral mixture were used. The freshly made dough by mixing all the ingredients and adding water was used to feed the fish daily. The experiment was conducted for 60 days and there was very few accidental mortality (about 10%) as observed during this experimental feeding trial.

Growth rate of fish was measured in terms of weight gain (WG %), specific growth rate (SGR %) and feed conversion ratio (FCR) using the following equations.

$SGR (\%) = \frac{(\text{Log final weight} - \text{Log initial weight})}{\text{number of experimental days}} \times 100$

$WG (\%) = \frac{(\text{final mean weight} - \text{initial mean weight})}{\text{initial mean weight}} \times 100$

$FCR = \frac{\text{feed given (dry weight)}}{\text{body weight gain (wet weight)}}$

RESULTS & DISCUSSION

The weight gain in the experimented fishes after 60 days trials are given in the table-1, which shows comparatively higher final weight in the fishes with supplementary feeding (T_2) in comparison to the control (T_1) where fishes were depended on natural food production of the pond. Results showed 300% weight gain in fishes of the control pond (T_1), while 500% in the experimental pond (T_2). The weight gain was 200% more in the fishes with supplementary feeding for 60 days.

The results of the Specific Growth Rate (SGR %), Food Conversion Ratio (FCR) and Survival are reflected in the table-2. SGR showed higher in case of T_2 then T_1 , while the FCR was lower (1.6) in T_2 then T_1 . There was only accidental mortality of about 10% in both the groups.

TABLE 1: Showing weight gain during 60 days of experimentation
Growth performance of Common carp using supplementary feeding

| Treatment | In. Weight (g) | Final Weight (g) | Weight Gain (%) | LN Initial Wt | LN Final Wt |
|-----------|----------------|------------------|-----------------|---------------|-------------|
| T_1 | 5.0 | 20.00 | 300 | 1.6 | 2.99 |
| T_2 | 5.0 | 30.00 | 500 | 1.6 | 3.40 |

TABLE 2: Showing performance in terms of SGR (%), FCR and survival (%) after 60 days of experimentation

| Performance in terms of SGR, FCR & Survival of Common carp using supplementary feeding | | | |
|--|------|-----|--------------|
| Treatment | SGR | FCR | Survival (%) |
| T_1 | 2.31 | 2.5 | 90 |
| T_2 | 2.98 | 1.6 | 92 |

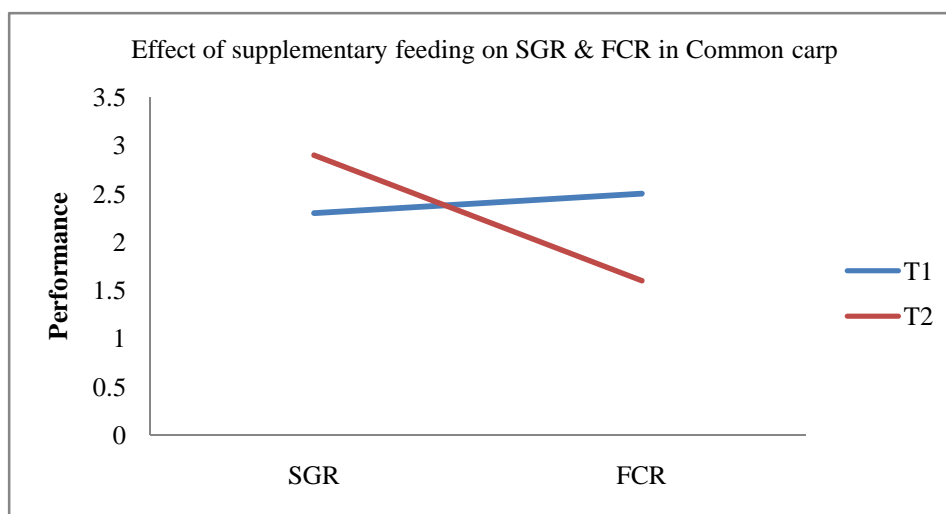


FIGURE 1: Comparison of SGR & FCR after 60 days trial

Figure-1 reflects and compares the effect of 60 days supplementary feeding trials on SGR & FSR in common carp. This figure clearly indicates that there is an inverse relationship between the SGR and the FCR. With increase in Specific Growth Rate (SGR), Food Conversion Ratio (FCR) decreases. In other words, we can say “the food ingredients with lower value of FCR can lead to more profitability from aquaculture”.

CONCLUSION

A sixty-day experiment was carried out to evaluate the growth performance of Common carp (*Cyprinus carpio*) using supplementary feeding with equal proportion of mustard oil cake and wheat flour and growth parameters such as weight gain (%), specific growth rate (SGR%), food conversion ratio (FCR) and survival was recorded after the experiment. Supplementary feeding increased weight gain % and specific growth rate (SGR %) when compared to control group (T_1), while the FCR data decreased and it was 1.6 for

T₂. With increase in specific growth rate, values of food conversion ratio decreased. The results obtained in present study indicated that cheap and easily available feed supplements like mustard oil cake and wheat flour in equal proportion leads to better growth performance in common carp in temperate condition. Decreased FCR leads to lower the fish production cost.

REFERENCES

Jha, G.N., Sharma, D., Akhtar, M.S., Charak, A.S., Paul, N. and Kour, R. (2018) Effect of spirulina (*Spirulina platensis*)

fortified diets on growth performance of two important cold water fishes viz. *Barilius bendelisis* and *Schizothorax richardsonii*. *Journal of Coldwater Fisheries* 1(1):85-88.

Sarma, D. and Jha, G.N. (2010) Effect of spirulina fortified diets on growth and survival of chocolate mahseer (*Neolissochilus hexagonolepis*). *Indian Journal of Animal Nutrition*. 27(4): 437-442.

Sugunan, V.V. (2002) Pond Enhancement: An effective tool for increasing inland fish production. *Fishing Chimes*. 21(10&11), 21-22.