



Production Of *Cyprinus Carpio* (Common Carp, Linnaeus, 1758) Fingerlings And Table Size Using Local Feedstuff.

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Abstract

Production of *Cyprinus carpio* (common carp, linnaeus, 1758) fingerlings and table size using local feedstuff was carried in Ramat Polytechnic, Borno State, Nigeria. The aim was to meet the requirements of fish farmers in Maiduguri, Borno State. 20 males and 20 females of Common carp brooders were purchased in a reputable fish farm in Jos and were transported in oxygenated transportation tanks to Ramat Polytechnic, Maiduguri for the breeding and culturing of the fish. Local fish feeds were prepaid at 28% Crude protein and used for feeding the fish at 5% of their body weight. All data obtained on survival were analysed using descriptive statistics such as percentage, while a standard formula was used to calculate the specific growth rate of the fish. For the results, a total of 12388 fries were hatched and out of these, only 4.43% survived. This study shows specific growth rate of common carp to be 7.43 %/day when fed 2 times a day at the rate of 2 % of the body weight while common carp fed 2 times a day at the rate of 5 % ration level only showed Specific Growth Rate (SGR) of 2.88 %/day in indoor fish rearing system. It therefore concluded that the production of Common Carp in Maiduguri is possible but with extra careful care due to the excessive.

Keywords *Common carp; Fingerlings; Broodstock; Growth rate; Fish culture.*

Introduction

Aquaculture in Maiduguri was started recently in small scale ponds by introducing the seed of African Catfish or Tilapia. While common carp (*Cyprinus carpio*) is still lacking in many parts of Borno State. Aquaculture is still subsistence type except raceways and mostly carps are emphasized to grow in part of Biu and Hawul Local Government Area of Borno State. Aquaculture is still limited on extensive and semi-intensive system. According to Balami and Pokhrel (2020), Common carp and Grass carp are mostly cultured in Nepal and some parts of the World. Common carp dwells in the bottom and feed on the bottom insects, insect larvae, zooplankton, dead and decayed vegetation, whereas grass carp dwells in the middle layer and feeds on aquatic vegetation, terrestrial plants and plankton in the water column with same habit of warm water fish. So the idea is to rear them together in the same pond as they utilize the two different niches of the pond. The production of common Carp (*Cyprinus carpio*) fingerlings is a

project designed to meet the requirements of fish farmers in Maiduguri, Borno State. The main economic significance of the proposed project is its contribution towards narrowing down the fish demand-supply gap deficit in Nigeria as well as the supply of proteins and micronutrients for feeding the teeming population of Borno State and Nigeria at large. The project's aims specifically at fingerlings production as well as table-size common Carp fish production to boost the domestic fish supply in the country and for export purposes too.

Materials and Methods

Study Area

The nursing of the common carp was done in Aquaculture farm of Integrated Research Farm of Ramat Polytechnic, Maiduguri, Borno State. Earthen pond of size (20m × 30 m) was used for the nursing of fries to fingerling production and to table Size

Methods and methodology

Procurement of brood stock: 5 numbers of male (♂) and female (♀)

brood stock each; were procured from the reliable fish farm in Jos plateau state Pond preparation was done by draining and drying of the pond. Liming was done at the rate of 250 Kg/ha for disinfection. Urea (0.54 Kg) and DAP (1.127 Kg) was used for fertilization (Balami and Pokhrel, 2020). A total of 12,388 common carp fry of average weight 0.51 g were successfully hatched but only 550 were stocked in the prepared pond and cultured for 51 days until they reach fingerlings size

Local feeds

Pellet feed of 28 % Crude Protein was fed two times a day at a rate of 2 % of total body weight. Periodic fertilization using organic (cow dung) and inorganic (DAP and Urea) was done to produce the natural foods, phytoplankton and zooplanktons.

All other materials like Borholes, indoor hatchery, etc are available.

Experimental design.

The fingerlings were grown to a table sizes in two different ponds type (earthen and polythene) measuring 5x7x1.5 m² will be stocked at the rate of 20 fingerling of common carp per meter square in replicates for the period of six months to determine their survival and growth rate. While the % and survival of fingerling were estimated

Fish growth and survival for this study, growth will be expressed as Weight gain, Relative Growth Rate, Specific Growth Rate, Condition Factor (Bagenal, 1978) and Survival rate (Fasakin *et al.*, 2001)

Mean Weight Gain (MWG) = $M1 - M0 / N$

Where W₀ = Initial mean weight-

W₁ = final mean weight

Specific Growth Rate (SGR) = $\ln W1 - \ln W0 / T \times 100$

Where

Ln = Natural log

W₁ = final mean weight

W₀ = Initial mean weight

T = time interval

$$\text{Survival \% (S)} = \frac{N1 \times 100}{N0}$$

Where

N1 = final number of fish at the end of experiment.

N0 = Initial No of fish at the beginning of experiment.

Statistical analysis

Data collected on survival was analyzed using simple descriptive statistics such as percentages and specific Growth Rate was calculated using standard formula

Results

Fish Survival

Fish mortality was observed during the culture period due to heat. At the final harvest the number of fish survived was found to be 550 common carp. So, the survival rate calculated was 4.43 % of common carp as tabulated below in table 1.

Table 1: Survival rate (%) of common carp.

Species	Number of fish hatched	Number of fish survived	Percentage survival
Common Carp	12388	550	4.43

Fish growth

The average weight and length of common carp during stocking was 0.51 g and 2.88 cm respectively. The average final weight and average final length of common carp was 21.43 g & 9.23 cm respectively. The average weight gain of common carp was 20.76g. The mean daily weight gain of common carp was 0.53 g/fish/day. The specific growth rate is 7.32 %/day in common carp. All the observed data are tabulated below in table 2 below.

Table 2: Stocking weight and length, harvest weight and length, weight gain and dailyweight gain (Mean ± SD) of fry during the rearing period.

Parameters	Common Carp
Mean initial weight (g/fish)	0.51 ± 0.53
Mean initial length (cm/fish)	2.88 ± 0.97
Mean final weight (g/fish)	21.43 ± 16.32
Mean final length (cm/fish)	9.23 ± 2.50
Weight gain (g/fish)	20.76
Mean daily weight gain (g/fish/day)	0.53
Specific growth rate (%/day)	7.43

Discussion

This study shows specific growth rate of common carp to be 7.43 %/day when fed 2 times a day at the rate of 2 % of the body weight while common carp fed 2 times a day at the rate of 5 % ration level only showed Specific Growth Rate (SGR) of 2.88 %/day in indoor fish rearing system. The high SGR may be due to the earthen pond in which the present study was conducted which was similar to the work of Shrestha and Pandit (2017). For survival only 4.43% survived similar to the studies carried out by Ali (2010).

Conclusion and Recommendation

Fry rearing is an activity which involves nurturing of the fry of size 1.0 to 3.0 cm up to the size of fingerling which can be used later for grow out. The fry rearing of Common carp can be conducted in the month of May after the breeding of Common carp. Fingerling production in earthen ponds can be done with proper water quality management and moderate temperature. The fingerling of both common carp can be produced and cultured successfully in earthen ponds in Maiduguri, Borno State. The daily weight gains and growth of common carp is very good in earthen ponds. It is economically feasible to rear common in the same pond but still need more research for the culture rearing of Common Carp in a same pond.

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