Study On Growth Of Indian Major Carps Under Different Feed Treatments In Krishna District Andhrapradesh

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***Abstract*—The present study was conducted to evaluate the effect of pellet and artificial feed to the earthen ponds on the growth, of Catla catla, Labeo rohita and Cirrhinus mrigala. For the present experiment two ponds were selected in Machilipatnam area in both the ponds same stocking density same species same water quality parameters are .maintained but feeds are different in that treatment-1 pond which is used by local wet feed. (Rice bran, Oil cake, Soya beans and Corn powder) treatment-2 pond used by commercial feed(abis pellet feed) fish were sampled every month for weight measurements. This experiment was conducted for 6 months and growth difference was observed. This study will aid fish farmers for better feed practices in fish culture ponds and developing good yield.**

Keywords*— *Catla catla, Labeo rohita, Cirrhinus mrigala, Artificial feed, Pellet feed, Gross production

I. INTRODUCTION

Fish play an important role in human nutrition in India, particularly to the peoples of coastal areas. Fish meal has been an important source of protein in fish diets because of its high protein quality and palatability. However, fish meal is very expensive and can substantially increase feed costs. The nutrients derived from fish include vitamins, calcium, phosphorus and unsaturated fat. These nutrients when provided naturally or artificially in aquaculture enable the fish to grow adequately for the enhancement of health in humans (Ayanda, 2003). Various fishes may not be free from cultural and religious taboos, but could be acceptable by people of all nations, tribes and religious affiliations. The inadequate supply of fish protein in the country has no doubt increased malnutrition especially among low income earners. These persons can hardly afford the high cost of meat products. The demand for fish has therefore been on the increase because the high cost of protein from livestock, and the general increase in human population, has resulted in increased demand for food, including fish. Fish like other animals require essential nutrients to grow adequately at all times. Such nutrients could be supplied from plankton, insect's larvae, worms/maggot, etc. (Ovie, 1996). When fishes are cultured in artificial environment, additional nutrients need to be supplied in form of Artificial diet (Eyo, 1996). Feeding management plays a critical role in the success of fish culture.The Indian major carps Catlacatla, Labeorohita and Cirrhinus mrigala are the most important common commercial fishes in India with a maximum market demand and acceptability as food by the consumers due to their taste and flesh. They contribute about 67% of total freshwater fish production (ICLARM, 2001). Feeding management plays a critical role in the success of fish culture. The current trend in fish culture is towards increased intensification whereby, provision of feeds becomes necessary and success depends significantly on the availability of well-balanced nutritionally complete and cost effective compounded feeds. In India, the aquaculture practices mainly revolve around a few species of finfish and shellfish, among which the Indian Major Carp's viz. Catlacatla and Cirrhinus mrigala contribute substantially to the inland production Fish require adequate nutrition in order to grow and survive. Nature offers a great diversity of food to fish including plants and animals. Artificial feed plays an important role in semi intensive fish culture where it is required to maintain a high density of fish than the natural fertility of the water can support (Jhingran, 1991). Fingerlings of Labeo rohita are reported to give best growth performance with diet consisting of fish meal and mixed animal protein (fish meal, bone and meat meal). Nile tilapia showed the maximum increment in average body weight, feed intake and SGR with the fish meal diets (Godaet al., 2007). However, maximum conversion ratio is observed with mixed plant based diet (mustard oil cake, soyabean meal ,sesame oil cake and rice bran) and vitamin premixes @ 2 times feeding day-1 (Choudhury et al., 2002; Akhteruzzaman and Kiaya, 2003). Plant protein mixture is also utilized for high growth performance of fish species (El-Saidy and Gaber, 2003). Protein of plant origin is preferred as compared to animal origin protein in the culture of carps (Singh et al., 2004). The Artificial feed with 40% crude protein of plant origin along with the manuring plays a key role in enhancing productivity and performance in terms of weight gain and specific growth rate in carp culture system (Kallaet al., 2004; Samantaray and Mohanty, 1997). The present investigation is aimed to study the Growth status of Indian major carps such as Catla catla, Labeo rohita, Cirrhnus mrigala fed with local and commercial feed are the most important commercial fishes with a maximum market demand.

II. STUDY AREA

Sampling area is located at Machilipatnam, 16° 09'59.94"N; 81° 7'27.43"E Krishna district of Andhra Pradesh India.

III. METHODOLY

The experiment was conducted in two ponds, located at the Machilipatnam Krishna district Andhra Pradesh. After preliminary preparations, each pond was stocked with 2000 No's Catla catla species, 10000 No's of Labeorohita and 600 No's Cirrhinus mrigala .Both the ponds were fertilized with cowdung at the rate of 0.10g N/100g wet fish body weight. The treated ponds were supplemented with Rice bran,Oil cake, Soya beans and Corn powderat the rate of 4% wet fish body weight daily for a period of six months. The other pond served with pellet floating feed (ABIS pellet FEED) at the rate of 4% The amount of feed was increased monthly according to the measurement of fresh fish body weight. Fish growth was measured in terms of increase in body weight by random capturing of each fish species from both the ponds on every month throughout the experimental period. After obtaining the data, the fish were released back into their respective ponds.

IV. RESULTS AND DISCUSSION

The growth performance of three cultured fish species under two different treatments was studied.

A. *Catla catla*

The initial average body weights of the Catla catla were recorded as 200gm in both T1 and T2 ponds and final average weight was 1550 gm in T1 and 1300 gmin T2. The gain average weight in T1 1350 gm and 1100 gm in T2. And total gross production noted as 3100 kg in T1 and 2600 in T2, in the period of 6 months. (Table-2 and fig-2A).

B. *Labeo rohita*

The initial average body weights of the Labeo rohita were recorded as 100 gm in both T1 and T2 ponds and final average weight was 900gm in T1 and 700 gm in T2. The gain average weight in T1 800 gm and 600 gm in T2. And total gross production noted as 9000 kg in T1 and 7000 in T2, in the period of 6 months (Table-2 and Fig-2B).

C. *Cirrhinus mrigala*

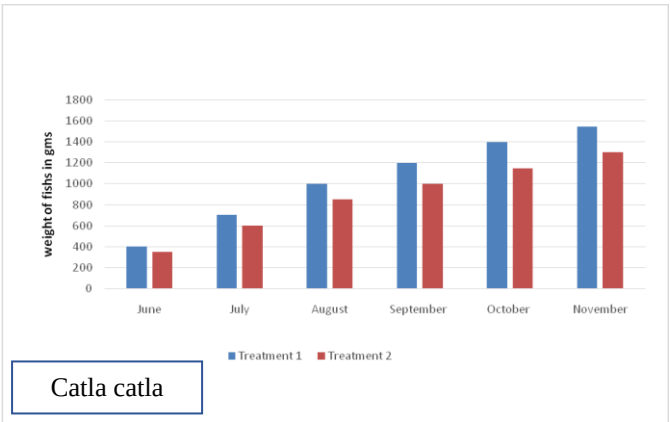
The initial average body weights of the Cirrhinus mrigala were recorded as 150 gm in both T1 and T2 ponds and final average weight was 950 gm in T1 and 800 gm in T2. The gain average weight in T1 800gm and 650gm in T2. And total gross production noted as 570 kg in

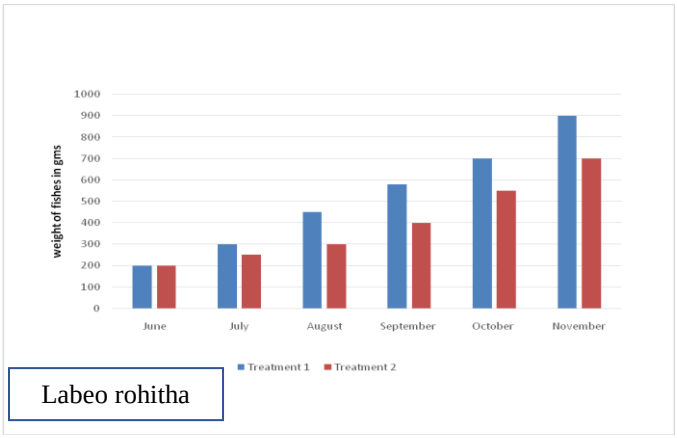
T1 and 480 in T2, in the period of 6 months (Table-2 and Fig-2C).

The high yield of fish acquire by the providing the supplement feeds and which consists of various rich in proteins and other nutrient values. Sumitraet al (1981) were observed increase of fish yield by providing the organic fertilizers. Li et al (2000) were observed better growth of Ictalurus punctatus(cat fish) by supplying of protein rich artificial feed. Hassan et al (2000) were observed cowdung was shown significant growth performance on major carps. Ash and Jaya (2000) were observed better growth responses by providing feed ingredients of common carp culture than artificial feeds. Azimet al (2002) were also observed major carps were showed high growth rates by providing supplement feed.Liand Yakupitiyage (2003) were observed that supplemental feed is required to increase fish yield in fertilized ponds.Virk and Saxena (2003) were observed high growth rate in Cyprinuscarpio and Labeorohitacultures which supplemented with Amaranthus seeds and concluded it provided high quality proteins to the fish. Ahmed et al (2005) were observed the treated ponds with supplement rice polishing major carps ponds were shown more growth rate and it was 1.47 times greater. Ahmad et al (2012) was analyzed the growth and length weight of carps and Labeo rohita in artificial (rice bran) andcommercial feeds (Miracle and Tokyo) and observed significantprofitable vitiationonly in Tokyo feed. Suresh et al (2013) were observed catlacatla grows more growth with organic manure combination such as cow dung and poultry manure.).(Similarly, Ganesan (2015) also observed high growth rate in artificial feeds in Catlacatlaand final body weight reached 77.1 gminKrishnagiri in Tamil Nadu). (It was also observed high growth rate in artificial feeds by Ganesan (2015) in Krishnagiri in Tamil Nadu).The result of present study showed that Artificial feeds improved growth performance of fingerlings of Indian common carp (Catlacatla Labeo rohita and Cirrhinus mrigala) that this can associate with improve health status and physiological response. The manipulation of major carps and provision of artificial feed enhanced the growth rate as well as production in semi intensive culture system.

V. TABLES AND FIGURES

Fig. 1. Map showing sampling site.





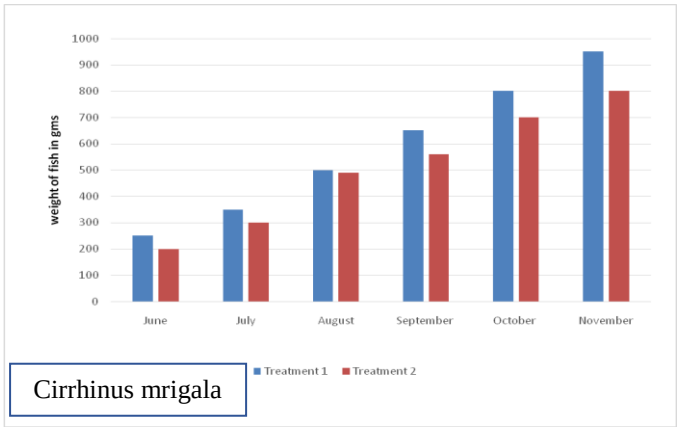


Fig. 2. Growth of indian major carps fed with different feeds.

TABLE I. GROWTH PARAMETERS OF C.CATLA, L.ROHITA AND C.MRIGALA WITH TOTAL PRODUCTIONS IN TREATMENT POND- I AND TREATMENT POND-II

	Treatment 1			
	Catla	**Rohu**	**Mrigala**	
No. of stocked fishes	2000	10000	600	12600
Initial average weight (g)	200	100	150	450
Initial biomass (kg)	400 590	1000	90	1,490
June 2015	400	200	250	
July 2015	700	300	350	
August 2015	1000	450	500	
September 2015	1200	580	650	
October 2015	1400	700	800	
November 2015	1550	900	950	
Survival rate (%)	90	90	90	
Final biomass (kg)	2,790	8,100	513	11,403
Total feed used (kg)				30,000
FCR				0.42
Final average weight (g)	1550	900	950	3,400
Gain average weight (g)	1350	800	800	2,950
Gross fish production/pond/6 months (Kg)	3100	9000	570	12,670

	Treatment 2			
	Catla	**Rohu**	**Mrigala**	**Total**
No. of stocked fishes	2000	10000	600	12600
Initial average weight (g)	200	100	150	450
Initial biomass (kg)	400	1000	90	1,490
June 2015	350	200	200	
July 2015	600	250	300	
August 2015	850	300	490	
September 2015	1000	400	560	
October 2015	1150	550	700	
November 2015	1300	700	800	
Survival rate (%)	90	85	85	
Final biomass (kg)	2340	5950	408	8,698
Final average weight (g)				20,000
FCR				0.43
Final average weight (g)	1300	700	800	2,800
Gain average weight (g)	1100	600	650	2,350
Gross fish production/pond/6 months (Kg)	2340	5950	408	8,698

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