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Growth performance of exotic catfish Pangas, *Pangasius hypophthalmus* (Sauvage, 1878) at Fish Hatchery ChilyaThatta, Sindh, Pakistan

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Abstract: The present study was conducted to observe the growth performance of exotic catfish Pangas (*Pangasius hypophthalmus)* in cemented cisterns (50 x 25 x 3 ft) at fish hatchery Chilya Thatta, Sindh for 120 days from May to August. Pangas fry (0.76g in weight and 0.78 cm in length) respectively, procured live from Thailand and stocked in cemented cisterns. After acclimatization, the fry fed with formulated diet containing 30% gross protein level thrice a day at the rate of 5 % body weight. The diet was consists of fishmeal, mustered oil cake, rice bran, wheat bran, rice protein and wheat flour. The water quality parameters were recorded throughout the study period and was ranged between temperature 28-32°C, dissolved oxygen 5.2-7.5 mg/lit, pH 7.5- 8.4 and hardness 70-185 ppm which are within the range. The results showed that the growth of Pangas (*Pangasius hypophthalmus)* found to be higher after 30 days of rearing. Finally, at the end of experiment fish attained 80-140 g in weight and 19.3-23.0 cm in length with Specific growth rate (SGR) 4.1. Feed conversion ratio was estimated 1.15 in 120 days experiment.

Keywords: Pangas (*Pangasius hypophthalmus)*, Hatchery, Chilya, growth, acclimatization, cemented cisterns.

1. INTRODUCTION

*Pangasius hypophthalmus*is commonly known as Thai Pangas, which belongs to family Pangasidae of the order siluriformes. The origin of *Pangasius hypophthalmus* was from the Mekong River of Vietnam to Chao Phraya River of Thailand and distributed to other countries such as Malaysia, Indonesia and China (Robert and Vidmayanon, 1991). This specie is widely cultured in Asian countries such as Bangladesh, Vietnam, Malaysia, Indonesia, Laos, Cambodia and China (Roberts and Vidthayanon, 1991; Rohul Amin *et al.,* 2005; Chheng *et al.,* 2004; Ali *et al.,* 2005). Pangas Commercially production has increased recently because of its acceptance in the market, fast growth and omnivorous feeding habits (Chheng *et al.,* 2004; Ali *et al.,* 2005; Rohul Amin *et al.,* 2005). Cultivated production in the region is considerable and Vietnam is the largest Pangas producing country in the region (Phan *et al.,* 2009). In 2007, Vietnam's total production of catfish was 1,200,000 tons, of which 95-97% was Pangas (Phuong and Oanh, 2010). Pangas (*P. hypophthalmus*) is the best due to its easy farming system, suitable weather condition and high market demand (Phuong and Oanh, 2010). Pond culture of Pangas was started in 1945 at Khulna region of Bangladesh (Sadder *et al.* (1994), But due to the lack of sufficient technical knowledge and proper culture management it was not successful and nor so popular to the local people. Though basic steps for Pangas culture in closed water system were taken in 1987 at Chandpur, but the initially did not get any notable success (Sarker, 2000). In recent years, Pangas has become the most Popular commercial cultivable species because of its high yield and low investment cost, now all over the country are producing mass Pangas seed at many Hatcheries to fulfill the fish farmers' demand. Due to seed availability monoculture system of Pangas has been widely spread all over the world and fish farmers are attracted and interested into Pangas culture. But aquaculture practices in Pakistan still running extensive way which is far behind the aquaculture practices in Bangladesh and Thailand and other countries, to bring some momentum in to Pakistan aquaculture it is essential to bring new fish species like as Pangas to promote aquaculture technology with high fish density and artificial feeding which is practicing in Bangladesh and other countries because Pangas fish have great potential which can play a vital role to bring the change in the Pakistan aquaculture. The weather, ecological condition and the resources available at Fish Hatchery Chilya Thatta is good for this species. So we decided to culture this exotic Pangas fish here in Sindh Pakistan.

2. MATERIAL AND METHOD

Pangas *(Pangasius hypophthalmus)* fry (length 0.78 cm and weight 0.76 g) imported from Thailand in 2011, about 1650 numbers. Initial stocking had taken place in the raceway at fish hatchery Chilya Thatta. The experimental fish was acclimatize properly by maintaining the temperature and water exchange for one week. Before culturing the experimental fish in cemented cisterns, the cisterns was treat with salt solution to prevent any fungal infection. The culture of experimental fish was feed with formulated feed.

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Monthly sampling was conducted to measure various growth parameters such as mean initial weight, mean initial length, mean final weight, mean final length, Weight gain (WG), Specific growth rate (SGR), feed conversion ratio (FCR), mean daily weight gain (MDWG), Condition factor and survival rate.

The material which is used throughout culture/ study period was cemented cisterns, Scoop nets, Dreg net, Weight Balance, Measuring scale, American pellet machine, Net, Buckets and Grinder etc.

Table 1 . Ingredients and composition of the experimental diet.

Ingredient	Actual protein	% used (g)	Protein (%)
Fish Meal	60 %	15	9
Rice Protein	42 %	29	12.2
Wheat Brawn	12 %	24	2.88
Rice Brawn	13 %	13	1.69
Mustered Oil Cake	30 %	13	3.9
Wheat Flour (as binder)	10 %	5	0.5
Vitamin & mineral Premix		1	
Total		**100**	**30.17**

3. RESULTS

Water quality parameters were record throughout study period and found within the optimal ranges to fish culture. Water temperature was 29.0 to 31.0 °C, pH values fluctuated from 7.2 to 8.1, Alkalinity varied from 152 to 180 mg/l, Dissolved oxygen varying from 5.2 to 6.2 mg/l and ammonia was 0.03 to 0.05 mg/l in throughout the experiment **(Table 3).** During rearing period, fish showed slow growth in weight and length due to new environment adaptation but after 30 days, culture period better growth was observe **(Fig.1).** The frys of Pangas (*Pangasius hypophthalmus*) grew from mean weight of 0.76 g to 106.5 g during 120 days mean daily weight gain was 0.88 g/day and specific growth rate (SGR) reached 4.1g/day and Food conversion ratio (FCR) was 1.15, survival rate was 85% and condition factor was recorded 2.16 shown **(Table 2).**

Table 2. Growth parameters of Pangas (*Pangasius hypophthalmus)* fish culture for 120 days fed with formulated feed.

S.No	Parameters	Readings
1.	Mean initial weight (g)	0.76 ± 0.14
2.	Mean initial length (cm)	0.78 ± 0.01
3.	Mean final weight (g)	106.4 ± 21
4.	Mean final length (cm)	23 ± 0.12
5.	Weight gain (WG)	105.4 ± 11.3
6.	Specific Growth Rate (SGR)	4.1 ± 0.0
7.	Feed conversion ratio	1.15 ± 0.4
8.	Survival rate (%)	85 ± 0.0
9.	Mean daily weight gain	0.88 ± 0.0
10.	Condition Factor	2.16 ± 0.0

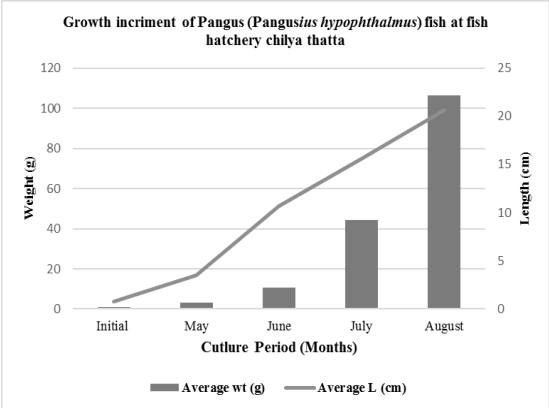

Fig.1. Graph shows the Growth increment of Pangas (*Pangasius hypophthalmus*) during culture period in weight (g) and length (cm).

Table 3. Showed month wise variation in water quality parameters of Pangas (*Pangasius hypophthalmus*) Through hout the culture period.

Months	Parameters					
	Temperature(°C)	pH	Dissolve Oxygen (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Hardness (ppm)
May	29	7.4	6.2	155	0.51	105
June	31	7.6	5.2	152	0.54	122
July	32	7.9	5.5	180	0.48	110
August	31	8.1	6.1	160	0.38	112

4. DISCUSSION

This study was conduct to observe the growth performance of exotic fish Pangas (*Pangasius hypophthalmus*) in the environment of Fish Hatchery Chilya Thatta Sindh Pakistan. At the end of experiment, average weight gain of fish was 106.5 g during 120 days culture period, which is similar to the work of Huq *et al.,* (2004). Mean daily weight gain of fish was 0.88 g/day which is similar to the results of Cremer *et al.*, 2002 and Specific Growth Rates (SGR) was 4.1 which is almost same with the results was recorded by Razzaque *et al.,* (2008), the different SGR values of Pangas in the present experiment might be due to the climatically changes. The Food Conversion Ratio (FCR) was 1.15 that is similar with the findings of Amin *et al.*, (2005). Survival rate was 85%. These results are similar with the results of Narejo *et al.,* (2010). The water quality parameters was found more or less similar and within the acceptable range for fish culture. The range of temperature recorded was 29.0 to 31.0 °C, this result is almost similar with the values of pervious results reported by (Rahman 1996, Uddin 2002,) and pH values was fluctuate from 7.2 to 8.1 these are almost similar to the findings of previous researcher (Akter *et al.,* 2009 and Hoq *et al.,* 1996). Recorded Dissolved oxygen was varying from 5.2 to 6.2 mg/l. Which is similar with the values of (Hoq *et al.,* 1996, Ahmed *et al.,* 2009, Swann 1990) Alkalinity from152 to 180 mg/l and ammonia was 0.38 to 0.54 mg/l similar with the results of Narejo *et al*. (2010). throughout the study period. The results of present indicate that this exotic catfish can be culture in Pakistan and will promote aquaculture in our region.

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