

Evaluation of Different Commercial Feeds on *Pangasianodon hypophthalmus* (Striped Cat Fish) for Optimum Growth Performance and Attractibility of Feeds

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Abstract:

The objective of the study was to find a cost – effective feed from four commercial feeds, namely Dayal Aqua gold and other three remaining brands hide by our investigation department for commercially producing *Pangasianodon hypophthalmus* (Striped cat fish) in Dayal Excellence center , Dayal group , Barabanki. These feeds were given with same pellet size, same protein %, and fat%, moisture % and crude fiber % which were mention on the feeds bags. The experiment was conducted for 180 days with avg weight (10±2g). This experiment was continued on total 104 *Pangasianodon hypophthalmus* under eight aquarium units. (A1,A2,A3, A4,A5,A6,A7,A8) with the capacity of 10000Liter. Each aquarium contain 13 fishes with weight (10±2gm) and feeds were supplied twice daily (9.00 AM and 5.00 PM) with 39 pellets in each aquarium. During the study period, the water quality parameters (water temperature, pH, Ammonia) were monitored every 15 days. There were no significant($p>0.05$) differences found in average body weight, daily weight gain and attractibility of feed but Average body weight and daily weight gain were found higher in A1 over the other treatments. Attractibility of fish feed was found higher in A8 over the other treatment. Average body weight and daily weight gain found more in A1 compared with other the present study showed that Dayal Aqua gold found better result as compared other commercial brands.

KEYWORDS - Commercial feeds, Daily weight gain, striped cat fish (*Pangasianodon hypophthalmus*).

Introduction

India's aquaculture industry has developed over the years, overcoming several challenges (including disease outbreaks), to become a significant contributor to the world's seafood trade and aquaculture production. Today, the country is an important trade partner to the major importing countries of the world such as the United States, Japan, China and throughout Europe. India has third rank in world fish production and second rank in the aquaculture sector. It provide nutritional security , livelihood support to the farmers , and employment about more than 14 million peoples and about 0.91 % of the GDP and 5.23 % to the Ag- GVA of the country. The national mean production levels from still- water ponds has gone up from about 600 kg/ha/year in 1974 to over 2900 kg/ha/annum at present and several farmers are even demonstrating higher production levels of 8-12 tonnes/hectare/year (Handbook of Fisheries and

Aquaculture, 2013, ICAR publication, India). Main species cultivated in north India is Indian major carps, Exotic carps and cat fishes.

Pangasius (*Pangasianodon hypophthalmus*) has become one of the major species of freshwater fish cultured for internal consumption, and will continue being an important contributor to the country's growing aquaculture production. Therefore present experiment aimed to check growth performance and attractability of commercial feeds brands because feed contribute over 50% operating costs in intensive aquaculture (EI-Sayed, 1999). Therefore any reduction in feed cost or improvement in feed efficiency would have positive impact in reducing production cost and maximizing profit of the fish farming enterprises.

The aim of this study was to analysis of commercial feeds on growth performance of *Pangasianodon hypophthalmus* and attractability of fish feed effect on growth performance of *Pangasianodon hypophthalmus*.

Materials and Methods

The present experiment was conducted for analysis of commercial feeds effect on growth performance of *Pangasianodon hypophthalmus* and effect of feed attractability on the growth performance on *Pangasianodon hypophthalmus* Total duration of experiment was 180 days.

Experimental fish

Total 104 number of uniform sized of pangasius fishes ($10 \pm 2g$) collected from Badhuria fish farm, Barabanki. The health condition of the fishes was good.

Selection of site

The experiment was carried out in eight aquariums (A1, A2, A3, A4, A5, A6, A7, A8) consists of 10000 Liter capacity with proper filtration and aeration of Himalaya research center, Barabanki. There were four feeds brands (Dayal Aqua Gold, other three remaining brands) used for experiment and two unit used for each brand in which A1 and A2 used for Dayal Aqua Gold. Other brands named as O1, O2, O3 in which A3 and A7 unit used for O1, A4 and A8 unit for O2, A5 and A6 unit for O3, A5 and A6 unit for O4. Each unit contained 13 fishes with Avg weight ($10 \pm 2g$).

Sampling-

Sampling to be done each month from April to September.

Estimation of Average weight of Fish-

$$\text{Average weight of Fish (gm)} = \frac{\text{Total weight of fish (gm)}}{\text{Total no of fishes}}$$

Estimation of Daily weight gain of Fish-

$$\text{Daily weight gain (gm/day)} = \frac{\text{Final Avg weight- Initial Avg weight}}{\text{No of Days}}$$

Estimation of Attractibility of fish feed-

Attractibility of feed was tested for four feeds at predefined time 9 A.M and 5P.M. Total 39 pellets of 2 MM sized were placed in each unit. After 30 Min, counted the pellets which were remaining in each unit and subtracted from total pellets.

No of pellet consumed by fish = Total pellets – Remaining pellets.

$$\% \text{ of pellet consumed by fish} = \frac{\text{No of pellets consumed by fish}}{\text{Total no of pellets kept in each unit}} \times 100$$

Take Average % of pellet consumed by fishes from morning and evening of each unit.

Water Quality Parameters –

The water quality parameters, pH, and ammonia were monitored every 15 days by AQUA BIOSOL Kit.

Table :1 Composition of feeds which were mention on bags.

BRANDS	Pellet Size	Protein %	Fat%	Crude Fiber %	Moisture%
Dayal Aqua Gold	2MM	32	4	4	11
O1	2MM	32	5	5	11
O2	2MM	32	4	4	11
O3	2MM	32	4	4	12

Statistical One way analysis of variance (ANOVA) followed by Duncan's multiple range test (DMRT) was done to determine the significance of variation among the treatment means.

RESULTS

Table: 2 Monthly average growth in *Pangasianodon hypophthalmus* from different commercial feeds.

Brands	Unit	No of fish	April	May	June	JULY	AUG	SEPT
Dayal	A1	13	10.65	13.68	16.72	30	38	43
Dayal	A2	13	9.11	12.08	16.66	29	35	41.8
O1	A3	13	12.19	12.65	16.46	24	28	29.9
O2	A4	13	11.46	12.42	16.33	27	32	34.5
O3	A5	13	12.46	16.04	16.67	18.54	21	38
O3	A6	13	11.61	12.96	10.83	15.91	21.6	24.5
O1	A7	13	12	13.19	15	23.53	26.45	29.38

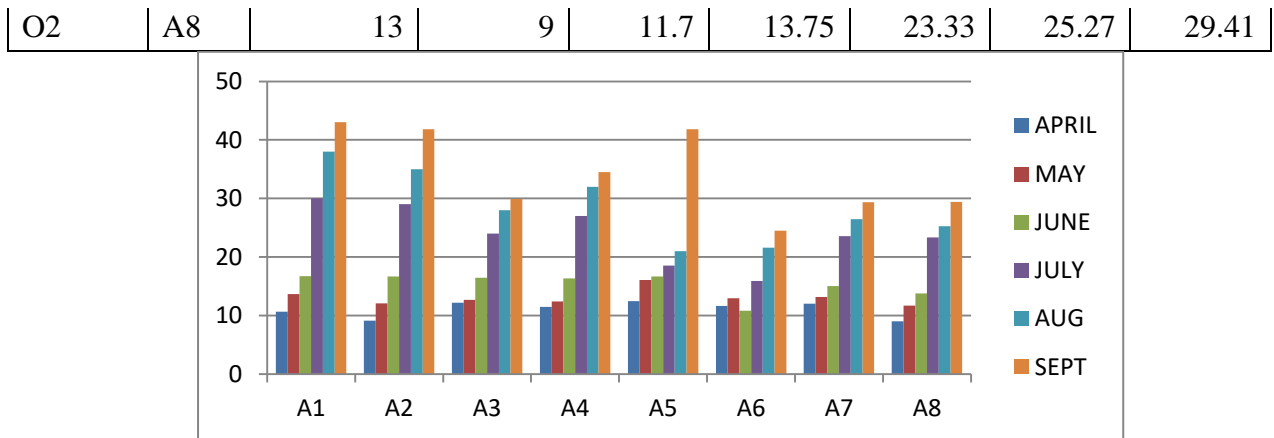


Fig.1: Monthly variation in average body weight of *Pangasianodon hypophthalmus*.

Analysis of variance at the level of ($P < 0.05$) showed no any significant differences found average body weight month wise but average body weight found highest throughout month wise in A1 and Lowest value found in A8.

Table: 3 Daily weight gain in *Pangasianodon hypophthalmus* from different commercial feeds.

Brands	Units	No of fish	May	JUNE	JULY	AUG	SEPT
Dayal	A1	13	0.28	0.1	0.44	0.3	0.32
Dayal	A2	13	0.32	0.15	0.41	0.23	0.22
O1	A3	13	0.03	0.12	0.25	0.15	0.06
O2	A4	13	0.08	0.13	0.35	0.19	0.08
O3	A5	13	0.28	0.02	0.06	0.09	0.12
O3	A6	13	0.11	0.07	0.16	0.21	0.09
O1	A7	13	0.09	0.06	0.28	0.11	0.09
O2	A8	13	0.3	0.05	0.31	0.07	0.13

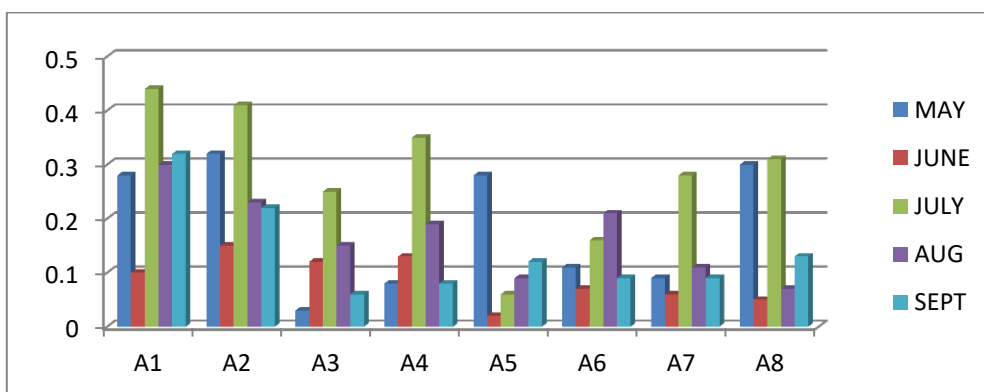


Fig.2: Monthly variation in daily weight gain of *Pangasianodon hypophthalmus*.

Analysis of variance at the level of ($P < 0.05$) showed no any significant differences found daily weight gain monthly wise but Average daily weight gain found highest in A2 and Lowest values found in A3, A6 and A7.

Table: 4 Attractibility of different commercial feeds in *Pangasianodon hypophthalmus*.

Brands	Units	No of fish	MAY	JUNE	JULY	AUG	SEPT
Dayal	A1	13	49.34 %	51.22%	58.42%	52.21%	53.28%
Dayal	A2	13	67.30%	57.08%	67.56%	55.41%	50.90%
O1	A3	13	64.75%	53.80%	64.75%	50.87%	52.66%
O2	A4	13	59.95%	59.05%	59.95%	57.16%	56.46%
O3	A5	13	64.59%	61.39%	64.59%	55.43%	49.50%
O3	A6	13	58.46%	56.46%	58.46%	60.21%	61.80%
O1	A7	13	50.65%	48.65%	50.65%	47.81%	47.81%
O2	A8	13	66.91%	64.81%	66.91%	62.28%	57.96%

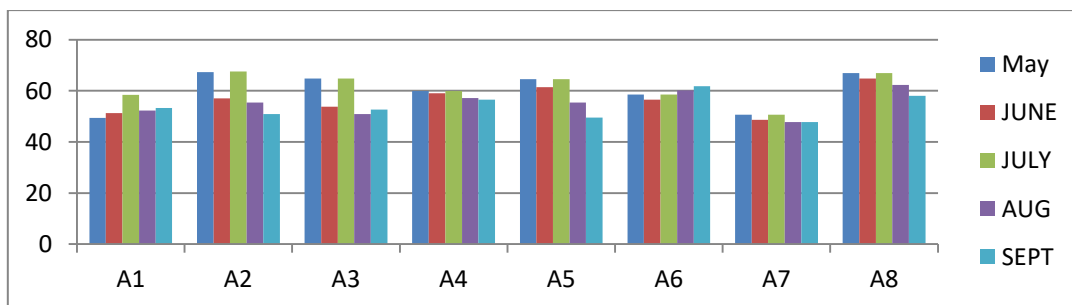


Fig.3: Monthly variation in attractability of fish feed in *Pangasianodon hypophthalmus*.

Analysis of variance at the level of (P<0.05) showed no any significant differences found attractability of fish feed month wise but Average attractability found highest in A8 and Lowest values found in A7.

Discussion

The water quality parameters such as temperature, pH, DO, were found to be more or less similar and were within the suitable range for fish culture (Jhingran1991). Nutrition play important role in the maintenance of healthy and marketable product. The nutrient balance of feed influences feed utilization and growth of fishes (El. Dahar *et al.*, 2000).

In the present study, the average body weight and daily weight gain was observed higher in A1 unit receiving Dayal Aqua gold followed by A2 also receiving Dayal Aqua Gold then A4 fed with other brand. The significantly highest growth of fish in A1 may be due to better quality of feed. It may be possible that source of protein, formulation of feed and necessary elements which required for growth of *Pangasianodon hypophthalmus* may be optimum level. Level of crude protein and other necessary elements in the diets and mode of feed presentation influences the growth rate of the fish (Khan *et al.*, 1997). The highest energy diet produced highest nutrient retention (Hillestad *et al.*, 2001). The lower growth performance of catfish may be due to low concentration of some essential amino acids such methionine and lysine as reported by (Robinson *et al.*, 2001). It may be possible that digestibility of feed can be also effect the growth of *Pangasianodon hypophthalmus* at present research. Protein digestibility also major factor for growth in any species. It may be possible that better growth found in

A1 unit due to better protein digestibility. If protein digestibility is not good then it reduced the growth of fishes. Nutrients in faeces can never be available for growth and maintenance hence represent key losses at the expense of tissue growth (Glencross *et al.*, 2007). Digestibility depends upon quality and quantity of feeds and feeding frequency (Ginindza *et al.*, 2012).

In the present study, feed attractability was found high in A8 followed by A6 and minimum was found in A3. The study showed that feed attractability effect on the growth of fish at certain level. It may be possible that other factors of growth slightly more striking than attractability of feed. There was no any supporting documents found which were related with growth performance effected by attractability of feeds.

Conclusion

In the present study , Average body weight and daily weight gain, were found higher in A1 receiving Dayal Aqua gold and attractability was found higher in A8 (other brand) . Feed composition and nutrient value effect on the growth of fish and fish growth may be depend upon feed attractability on certain level. The result of the study suggested that Dayal aqua gold quality is much better than other feeds brand as per results but future research should be needed for improving feed quality .

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