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Sciintific Notes

Effect of supplementary feed on the growth of shinghi (*Heteropneustes* fossilis Bloch)

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Abstract

Effect of two supplementary feed (food A and food B) on the growth of shinghi, *Heteropneustes fossilis* was observed for 3 months period during winter and summer. Food B containing rice bran 2g, wheat bran 2g and blood 10 ml, showed better growth. The net gain in length was 70.04 mm and in weight was 13.82 g. Total net production of the was observed as 254.00 g/m^2 with feed A and 345.50 g/m^2 with feed B.

Key words : *H. fossilis,* Feed

Supplementary feed is one of the most prime exogenous requisite for proper fish culture. The supplementary fish feed may either be vegetable foods (e.g. pulse, cereals, grains, yeast, plant parts etc.) or of animal origin (e.g. fish meal, meat meal, blood, cheese, internal parts of animal body etc.) (Huet 1979). Whatever the food type may be, the criteria for a successful fish feed are, (i) readily acceptable, (ii) having high conversion rate (iii) availability (iv) high keeping quality and (v) low cost.

Among the commercially important fishes of Bangladesh shinghi, *Heteropneustes fossilis* is rich in protein and minerals (Basu and Gupta 1939, Ahmed 1957, Sahidullah 1964). According to FAO report (1991) the chemical composition of the fish is 72% water, 19% protein, 8% fat, 0.15% calcium, 0.25% phosphorus and 0.10% vitamin A, B, C and D. The fish fetches a high market price because of its therapeutic value. In natural habitat *H. fossillis* is known to be carnivorous, but in intensive culture the fish responds to supplementary feeds, *viz.,* slaughter house waste, trash fishes, silk worm pupae, oil cake, rice and wheat brans, compost, bio-gas slurry, etc., in various proportions and combinations (Dehadri 1978). Sengupta *et al.* (1969) reported the possibility of intensive monoculture of the fish reared on supplementary feed. The present work is an attempt to study the growth of *H. fossilis* both in terms of length and weight with two types of supplementary feeds.

Experiment was carried in two cement cisterns, each of them having a surface area of 4.86 m^2 and a depth of 2.5 to 3 m. Water sources were tap water and rain water. *H. fossilis* of average 75 to 90 mm in total length were collected from the market and acclimatised for 40 hours before release. Healthy

160 fish were released in each tank and provided with supplementary feed once in every 24 hours. One kind of food was supplied in one tank at a rate of 6% of the total body weight of the fishes which increased subsequently 7 to 8% as the fishes gain in weight. The experiments were carried for three months, once in the winter (December to February) and once in the summer (May to July).

The supplementary feeds consisted of Food A mixture of rice bran (40%), wheat bran (40%), chicken entrails (20%). The chicken entrails were cut into small pieces and boiled till soft. Food B: the mixture consisting of rice bran (2g) wheat bran (2g) and blood (10 ml). The blood was collected from slaughterhouse. The mixture was kept in an airtight container for 15 days and then refrigerated. Food A was used in the tank I and food B in tank II.

Before stocking the initial total length and weight of the fry were recorded. In every 30 days 10 fishes were randomly collected and measured to record the subsequent growth in terms of length and weight. The coversion rate of the food supplied was determined from the formula used by Huet (1979) and Jhingran (1982).

$$\text{Conversion rate} = \frac{\text{Food fed (dry)}}{\text{Fish live weight gain}}$$

The survival rate of the fishes after three months was 95 to 100% in winter and summer respectively in both the tanks. Both the food types resulted increase in length and weight of the fishes and the monthly growth was gradual with both foods (Table 1). The length weight relationships of the fishes fed on either type resulted increase in length and weight of the fishes and the monthly growth was gradual with both foods (Table 1). The length weight relationships of the fishes fed on either type of feed, were positively correlated. Moreover, the growth rate was higher in the summar than in winter (Table 2). The 't' test showed significant difference between the weight of the fishes fed on two different feeds ($p<0.05$).

The present result showed gradual increase in growth of *H. fossilis* with supplementary feeds. The growth rates were similar as occurs in the natural habitat though the net gain in length and weight were not satisfactory. Stocking of fry at a rate of $25/m^2$ with supplementary feed yielded a production equivalent to 440 g/m^2 in 4 months (Jhingran 1982) and 480 g/m^2 in 6 months (Sengupta *et al.* 1979). Whereas, in the present experiments the net gain in weight were only 52.26 g/m^2 (food A) and 71.09 g/m^2 (food B). Higher stocking rate (32 fry/m^2) and lesser rearing period might be the causes of lower growth rates as observed in the present study. Moreover, the temperature and soil condition also affecting factors of growth in *H. fossilis* (Macan et al. 1942, Ahmad 1957 an Jhingran 1982). The water depth (2.5 to 3.0 m) which maintained in the experiment is not suitable for proper fish culture.

The present results revealed that *H. fossilis* can be cultured in cemented tanks with supplementary feeds in 4 to 6 months time.

Table 1. Growth of *H. fossilis* during 3 months feeding on supplementary feed

Feed type	Day-wise increase in body length (mm)					Day-wise increase in body weight (g)					Total net
	Initial	30	60	90	Net gain	Initial	30	60	90	Net gain	production g/m^2
A	80.46	93.00	111.40	139.30	58.84	4.57	6.59	10.30	14.73	10.16	254.00
Gain in length		12.54	18.40	27.90		Gain in weight	2.02	3.71	4.43		
B	80.46	96.67	122.27	154.50	70.04	4.57	8.34	13.13	18.39	13.82	345.50
Gain in length		16.21	26.83	31.00		Gain in weight	3.77	4.79	5.26		

Table 2. Length-weight relationship of *H. fossilis* fed on supplementary feed

Tank/food type	No of obs.	value of 'a'	value of 'n'	value of 'r'	Mean condition factor $K=TW/Tl^3$
I/Feed A	10	1.25^{-05}	2.83	0.976	0.54
II/Feed B	10	1.47^{-06}	3.23	0.979	0.45

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