

Comparison of different feed for the production of *Mystus gulio* (Brackish water cat fish)

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ABSTRACT

An experiment was conducted for 150 days in earthen ponds to evaluate the three different feeds for production of *Mystus gulio*. Three same stocking density fishes were fed with three different feeds (i) Mega pangus sinking feed (30% protein) (T₁), (ii) Quality pangus sinking feed (30% protein) (T₂) and (iii) prepared feed (T₃) (30% protein, containing fish meal-15%, soybean meal - 32.22%, rice bran - 22.39%, mustard oil cake - 22.39%, binder - 7% and vitamin premix-1%) each with two replicates. The prepared feed has been formulated according to Pearson's square method. The study was conducted in six earthen ponds of 500 m² each. After 150 days of rearing, growth of fishes was almost similar in all treatments and was 10.78g, 13.60g and 12.42g in ponds supplied with Mega feed, Quality feed and prepared feed, respectively. Average survival of fishes was 100%, 94.34% and 67.93% with the above three different feeds, respectively. But production of fishes in treatment T₂ (2053 kg/ha) was highest than those of T₁ (1725.5kg/ha and T₃ (1350kg/ha). The highest production of *Mystus gulio* was obtained from Quality pangus feed might be due to presence of some ingredient which is helpful for better growth and survival of this fish.

Key words: Feeds, brackish water catfish, growth, survival, production, FCR, Bangladesh.

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INTRODUCTION

Mystus gulio, locally known as '*Nona tengra*', is a euryhaline estuarine small catfish commonly occurring in the coastal waters of Bangladesh and eastern coast of India. This species is supporting the coastal fisheries of Bangladesh to a great extent, both in point of commercial and local point of view. Though, the fish has naturally being caught every year in fairly a large quantity, its catch is gradually declining due to combined effect of different factors, such as over-exploitation, destructive fishing pressure, loss of habitat, and different ecological modifications (Alam et al., 2006). This fish is having high market demand and delicious in taste and it has an emerging trend as an aquaculture species in the coastal Bangladesh.

For conservation and increasing supply of this fish, Bangladesh Fisheries Research Institute has developed breeding technology of this fish in 2007 (Alam et al., 2007). This has paved the way of establishing and expansion of aquaculture of the species. But culture practice of this species has not yet been developed. Expansion of aquaculture of any fish is greatly dependent on its ensured supply of seed for grow-out pond. Nursing of yolk-absorbed spawn in the nursery pond seems to be very sensitive, as they pass through a critical period of switching over from planktonic feed to other feed and also need to adjust with new environment from indoor hatchery to outdoor earthen pond. Short term nursing of delicate spawn in nursery ponds is a prerequisite to ensure the reliable and regular supply of quality fry for

stocking in grow out ponds at farmers' level. Considering the euryhaline nature, this fish has potential for culture in both brackish water and well freshwater ponds. This fish may be very much suitable for culture with shrimp (*Penaeus monodon*) in brackish water *ghers*. This may help to save the shrimp farmers from losing their investment in case of invasion of viral disease in shrimp which is very common in the coastal *ghers*. In spite of having great possibility of production of this fish through aquaculture, seed production and culture technology of this fish has not yet developed. In this context, the present research program is being proposed to develop a nursery management and production technology of this important catfish in the south west Bangladesh.

MATERIALS AND METHODS

A 150-day experiment was carried out from 8th June 2014 to 8th November 2014 in 6 earthen ponds at Bangladesh fisheries Research Institute, Brackishwater Station, Paikgacha, Khulna.

The same stocking density fishes were fed with two different commercial pellet feed and one prepared feed (30% crude protein) @ 4-6% of estimated fish biomass and 16 Nos/m² were tried each with two replications in 6 earthen ponds of 500 m² each. The ponds were prepared by drying, liming (CaO @ 250 kg/ha) and then filling with tidal water up to 100 cm. Water of the ponds were treated with rotenone @ 1.5 ppm to kill all unwanted animals. After removing all dead animals, ponds were treated with dolomite @ 20 ppm. After five days of liming, water of the ponds were fertilized with 25 ppm urea, 30 ppm TSP and 1 ton/ha cattle dung and the ponds were made ready for stocking. After seven days of fertilization, required quantity of one month old fries of catfish was stocked at different treatment. The stocked fishes are being fed with commercial pellet feed (30% crude protein) @ 4-6% of estimated fish biomass. Growth of fishes is being checked fortnightly for the adjustment of feed.

Physicochemical parameters of water *viz.*, transparency, temperature, pH, dissolved oxygen and alkalinity were determined and plankton samples were analyzed at seven days interval. After five months of rearing, all fishes were harvested and production was estimated and compared.

RESULT AND DISCUSSION

Temperature and salinity of water during study period were 29-30°C and 5-15 ppt respectively which were almost same in all ponds. As shown in Figure 1a, transparency of water was initially higher in all ponds and gradually decreased with the progress of culture period. The transparency was 16-59 cm. pH of water of all the ponds was 7.4-9.4 (Figure 1b). Alkalinity (Figure 1d) was almost same (92-216 mg/l) in all ponds during stocking and some variations among different treatments were observed with the progress of culture period. Dissolved oxygen was always congenial for normal survival of fish fry in all ponds. As shown in Figure 1c concentration of dissolved oxygen was 2.0-5.7 mg/l.

Concentration of phytoplankton was 17.32×10^3 - 91.97×10^3 No/l (Figure 2a) and zooplankton production was 2.7×10^3 - 29.64×10^3 No/l (Figure 2b).

After 150 days of rearing, growth of fishes was almost similar in all treated ponds and was 10.78g, 13.60g and 12.42g in ponds supplied with Mega feed, Quality feed & prepared feed, respectively (Table 1). Average survival of fishes was 100%, 94.34% and 67.93% with the above mentioned three different feeds, respectively (Table 1). But production of fishes in treatment T₂ (2053 kg/ha) was highest than those of T₁ (1725.5kg/ha) and T₃ (1350kg/ha) (Plate 1 & 2, Table 1). The highest production of *Mystus gulio* was obtained from Quality fungus feed (Table 1). FCR of *Mystus gulio* was 1.50-2.00.

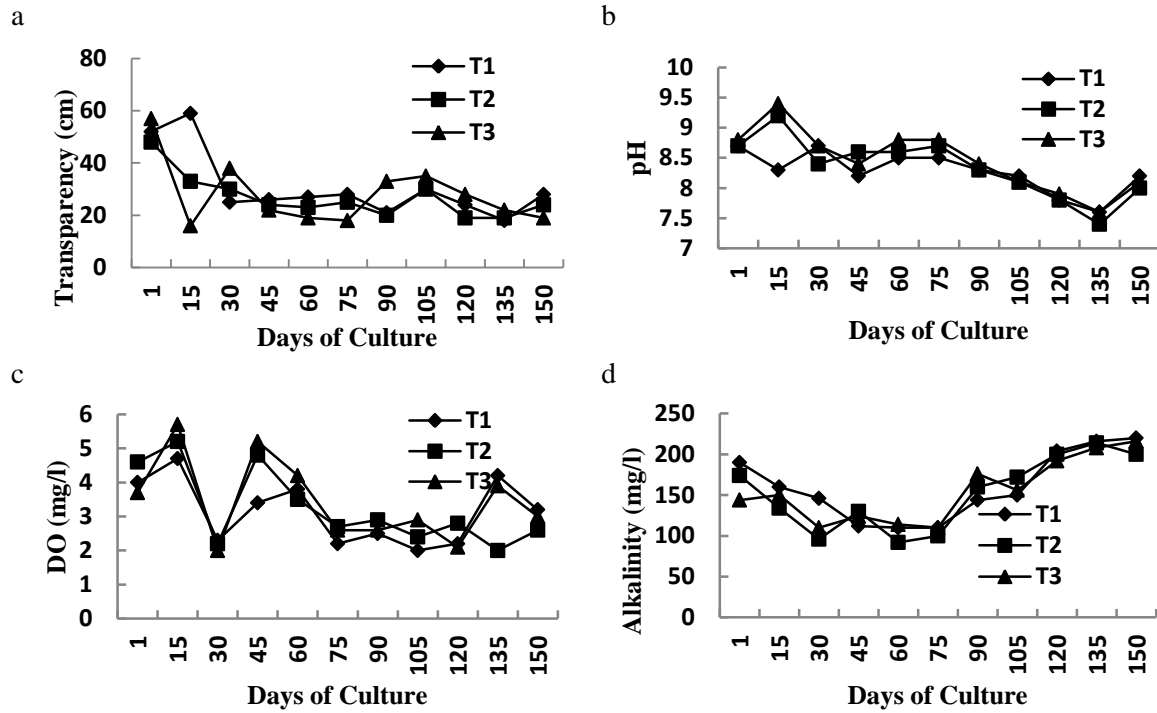


Figure 1 Variation of some water quality parameters of the ponds used for culture of *Mystus gulio*.

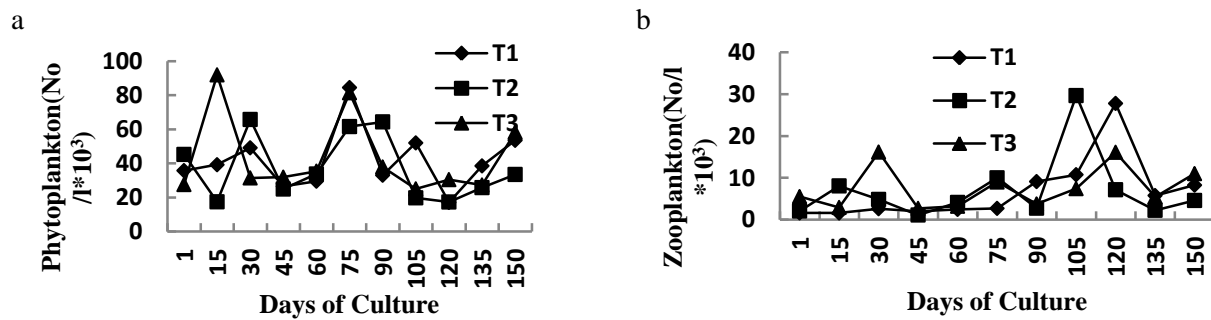


Figure 2 Concentration of phyto- and zooplankton of the ponds used for culture of *Mystus gulio*



Plate 1. Harvested *Mystus gulio*



Plate 2. Gathering of *Mystus gulio* in the monk during harvesting period

Table 1
Growth and survival and production of *Mystus gulio*.

Treatments	Replications	Final ABW (g)	Survival (%)	Production (kg/ha)
T1 Mega pungus deed (16/m ²)	R1	11.36	100	1818
	R2	10.20	100	1633
	Av.	10.78	100	1725.5
T2 Quality pungus feed (16/m ²)	R1	13.70	94.34	2067
	R2	13.51	94.34	2039
	Av.	13.60	94.34	2053
T3 Farm made feed (16/m ²)	R1	12.34	70.87	1400
	R2	12.50	65.0	1300
	Av.	12.42	67.93	1350

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