

## Culture potentials of bata, *Labeo bata* under semi-intensive management system

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### Abstract

Small indigenous fish species (SIS) provide food, nutrition, subsistence and supplemental income to a great majority of the people particularly the poor and disadvantaged people of Bangladesh. To date nobody explored the possibilities of culturing these species in combination with the indigenous major carps viz. catla, *Catla catla*; rohu, *Labeo rohita*, and mrigal *Cirrhinus cirrhosus* and grass carp, *Ctenopharyngodon idellus*. An experiment on the polyculture of carps with a popular SIS, bata (*Labeo bata*) was carried out to evaluate the production performance of carp-SIS culture in on-farm condition during 15 March to 15 September 2003. Three treatments each having three replications with different stocking densities of bata were tested keeping the carp species combination and stocking density similar in all the treatments viz. treatment 1 ( $T_1$ ), bata (5,000/ha) + catla, rohu and mrigal (5,000/ha at the ratio of 1:1:1) + grass carp (250/ha); treatment 2 ( $T_2$ ), bata (7,500/ha) + catla, rohu and mrigal (5,000/ha at the ratio of 1:1:1) + grass carp (250/ha); and treatment 3 ( $T_3$ ), bata (10,000/ha) + catla, rohu and mrigal (5,000/ha at the ratio of 1:1:1) + grass carp (250/ha). After six months rearing, the production obtained were  $2,466 \pm 77$ ,  $2,395 \pm 85$  and  $2,074 \pm 72$  kg/ha from  $T_1$ ,  $T_2$  and  $T_3$ , respectively. The highest production was obtained from  $T_1$ , where the stocking density of bata was the minimum (5,000/ha) while the lowest production was obtained from  $T_3$ , where the stocking density of bata was maximum (10,000/ha). Significant difference ( $P < 0.05$ ) exists in the production levels as obtained from different treatments. The contribution of bata to total production was 10.31%, 13.96% and 14.38% in case of  $T_1$ ,  $T_2$  and  $T_3$ , respectively.

Key words: Culture potentials, *Labeo bata*, carp polyculture, semi-intensive management

### Research findings

- Bata attained an average weight of  $62 \pm 3.83$  g,  $54 \pm 3.88$  g and  $42 \pm 3.0$  g in  $T_1$ ,  $T_2$  and  $T_3$ , respectively. There is a significant difference ( $p < 0.05$ ) in weight gain as obtained from different treatments.

- Catla attained an average weight of  $616 \pm 54$  g,  $590 \pm 48$  g and  $524 \pm 38$  g in T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively, that of rohu was  $412 \pm 22$ ,  $388 \pm 31$  and  $334 \pm 41$  g; and mrigal was  $390 \pm 46$ g,  $310 \pm 30$  g and  $274 \pm 29$  g, in T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively.
- Grass carp showed similar growth patterns in all the treatments, there is no significant difference ( $p > 0.05$ ) in average weight (806-876 g) as recorded from different treatments.
- Fish production of  $2,466 \pm 78$ ,  $2,395 \pm 88$  and  $2,074 \pm 71$  kg/ha was obtained from T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively, after six months.
- In treatment-1, the contribution of bata to total fish production was 10.31%, 13.36% and 14.38% in T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively.

### Policy implications

- Policy decision should be taken to develop technical packages for polyculture of indigenous and exotic carps with SIS to ensure higher economic return and benefit of the rural fish farmers.
- Efforts should be undertaken to motivate rural fish farmers to incorporate SIS in carp polyculture system.
- Policy decision should be taken to develop and disseminate technology for seed production of important SIS.
- Department of Fisheries (DoF) might take a policy to produce SIS seeds in their Fish Seed Multiplication Farms for the rural farmers.

### Livelihood implications

Until early 90s, small indigenous fish species (SIS) were abundantly available in rivers, beels ditches and flood plain in Bangladesh and rural people used to catch SIS from the natural waters at a little or no cost for their livelihoods. Gradual declining of SIS in the open waters is making the livelihood of poor fishers vulnerable. Popularising SIS culture and conserving SIS in open water system could increase the production of SIS, which could improve the livelihood of the rural poor fishers. Availability of SIS seed in the Fish Seed Multiplication Farm will encourage fish farmers to culture SIS with larger indigenous carps as a result the total fish production will be increased in the country, which would improve the livelihood of the rural poor.