

ORL-F&HN-12

Assessment of Mustard Oil Cake as Supplementary Feed for Carps in Ponds With and Without Periphyton Enhancement

Preyanka Yadav*, Sunila. Rai, Dilp K. Jha, and Rahul Ranjan

Faculty of Animal Science, Veterinary Science and Fisheries
Agriculture and Forestry University, Chitwan, Nepal
preyankayadav2081@gmail.com

The most challenging factor in aquaculture is the high feed cost. In order to reduce the feed cost of carp production using locally available mustard oil cake, an experiment was conducted in farmers' pond at Phullaria and Majhui of Chitwan district from April 29 to November 26, 2021. The experiment included four treatments i) T1: 50% rice bran + 50% mustard oil cake, ii) T2: 25% rice bran + 75% mustard oil cake, iii) T3: 100% mustard oil cake and iv) T4: 50% mustard oil cake + bamboo substrate with three replications. Silver carp, Bighead carp, Rohu, Mrigal, Grass carp and Common carp were stocked at a density 15000 fish/ha in all treatments. Fish were fed with dough of rice bran and mustard oil cake in treatments T1 and T2, and mustard oil cake only in T3 and T4. Bamboo substrate covering 1% pond surface area was installed for periphyton enhancement in T4 ponds. Feeding rate was 3% body weight and ration was adjusted monthly based on sampled weight of fish species. Water quality temperature, dissolved oxygen, transparency and pH were recorded fortnightly while total ammonium nitrogen, soluble reactive phosphorus, total alkalinity and chlorophyll-a were analyzed monthly.

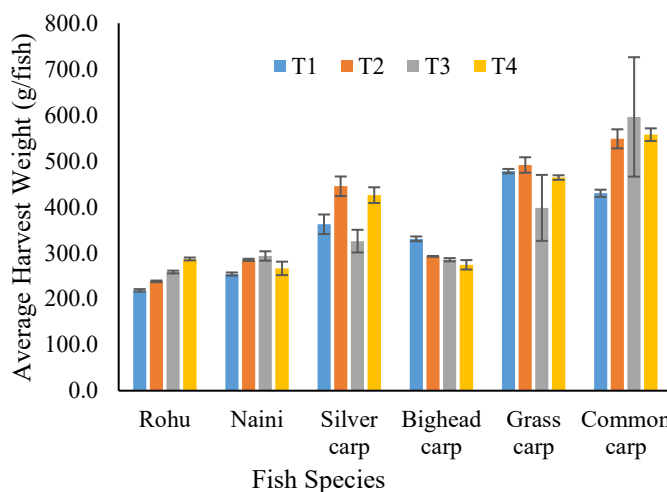


Figure: Average harvest weight of different fish species

Daily weight gain of Rohu was significantly higher ($P<0.05$) in T4 (1.33 ± 0.02 g/fish/day) than treatments T3 (1.20 ± 0.1 g/day), T2 (1.01 ± 0.01 g/day) and T1 (1.01 ± 0.01 g/day). The daily weight gain of Rohu in T4 was 1.33 ± 0.02 , survival rate 94.5 ± 2.5 , GFY was 1.43 ± 0.04 and NFY was 1.39 ± 0.04 which was significantly higher ($P<0.05$) than other treatments. Daily weight gain of Mrigal was significantly higher ($P<0.05$) in T2 than T1. Average harvesting weight of Silver carp was significantly higher in T2 than other treatments. The gross margin and B:C ratio were significantly higher ($P<0.05$) in T4 (11116.3 ± 310.0 NRs/100 m² and 3.5 ± 0.2) than remaining treatments due to low production cost (92.2 ± 5.4 NRs/kg). Thus, due to locally available of rice bran and mustard oil cake and due to low AFCR (1.5 ± 0.1) as well as high gross margin use of 50% MOC with substrate installation was found to be appropriate in Nepal for small scale carp farmers.

Table: Overall fish production parameters

Parameters	T ₁	T ₂	T ₃	T ₄
Survival Rate (%)	78.9 ± 0.7^a	72.4 ± 1.2^a	71.1 ± 6.4^a	81.4 ± 1.0^a
EGFY (t/ha/yr)	7.0 ± 0.0^a	7.5 ± 0.2^a	6.8 ± 1.3^a	8.5 ± 0.0^a
ENFY (t/ha/yr)	6.7 ± 0.0^a	7.3 ± 0.2^a	6.6 ± 1.3^a	8.3 ± 0.0^a
AFCR	4.0 ± 0.3^b	3.7 ± 0.4^b	4.1 ± 0.9^b	1.5 ± 0.1^a