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Title: Nibbling Frequency of Carps in Periphyton-Based Aquaculture Systems with and without Supplemental Feed

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Abstract: The nibbling frequency of five carp species (rohu *Labeo rohita*, mrigal *Cirrhinus mrigala*, catla *Catla catla*, common carp *Cyprinus carpio*, silver carp *Hypophthalmichthys molitrix*) on bamboo lateral sticks (kanchi) colonized by periphyton was examined in fed and unfed systems. There were three treatments: (a) no carp and no supplemental feed (control), (b) carp without supplemental feeding (unfed treatment), and (c) carp with supplemental feeding (fed treatment). For 12 h (07:30-19:30) during six days, nibbling behavior was observed in real time via a digital video camera and recorded on a camcorder for later viewing. Rohu, catla, and common carp nibbled on the kanchi, while mrigal and silver carp did not. In rohu and catla, the nibbling frequency was significantly higher in the unfed treatment than in the fed treatment ($p < 0.05$); supplemental feeding reduced nibbling frequency by 81% and 91%, respectively. Hence, in periphyton-based aquaculture systems, there is no need for a high density of substrates in ponds that receive supplemental feed. Alternatively, the amount of supplied feed can be reduced to force these species to consume more periphyton.

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