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Effects of Aeration on Growth and Production of Carps in Kathar, Chitwan

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Pond aquaculture is the major system practiced in Nepal, contributing more than 95% of the total aquaculture production. Aeration is important to select an appropriate stocking density level, in order to enhance carrying capacity and reach a high productivity of fish.

To assess the effects of aeration on water quality, growth and production of carps and gross margin, an experiment was conducted at farmer's pond of Kathar, Chitwan for 225 days from 25th May 2018 to 10th January 2019. Experiment was conducted in completely randomized design with three treatments and four replications. Treatments were: T₁ - No aeration, T₂ - 4 hours aeration and T₃ - 6 hours aeration. Ponds were stocked with fingerlings of rohu, mrigal, common carp, silver carp, bighead carp and grass carp in the ratio of 5:5:4:3:2:1 at a combined stocking density of 10,000 fingerlings ha⁻¹. Ponds were fertilized weekly and fish were fed with locally prepared pellet feed containing 18 % CP at the rate of 2% of body weight

Dissolved oxygen remained significantly ($p < 0.05$) higher 6.5 mg L⁻¹ in aerated ponds than control ponds 2.5 mg L⁻¹. Survival of all fish (70.3%) at harvest did not vary significantly ($p > 0.05$) among the treatments. Overall weight gain in the control ponds was 1.01 g fish⁻¹ d⁻¹ while it was 1.55 g fish⁻¹ d⁻¹ in aerated ponds. The combined gross yield and net yield of all carps in aerated ponds was significantly higher ($p < 0.05$) than non-aerated ponds. Aerated ponds gave net production of 3.4 t ha⁻¹ which is 55.1% higher than that of 2.2 t ha⁻¹ in the control ponds. Apparent Feed Conversion Ratios (AFCR) was not significantly different ($p > 0.05$) among the treatments. Net profit generated by aeration was 37.7 % and 34.2 % higher in T₂ and T₃ in comparison with T₁.

These results suggested that aeration can enhance the growth and production of carps by improving dissolved oxygen content in pond water and synchronizing with other water quality parameters in ponds. This experiment recommends for further study on optimum duration of aeration and stocking density of carp to maximize profitability from aerated pond.

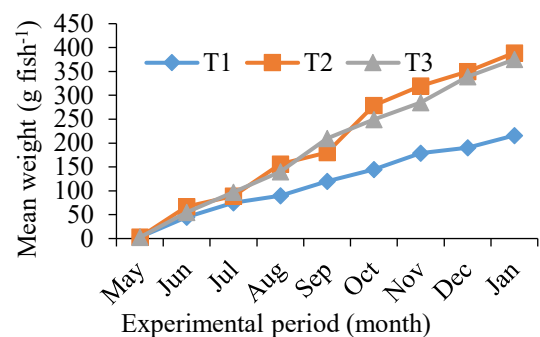


Figure 1: Monthly mean weight (g fish⁻¹) of

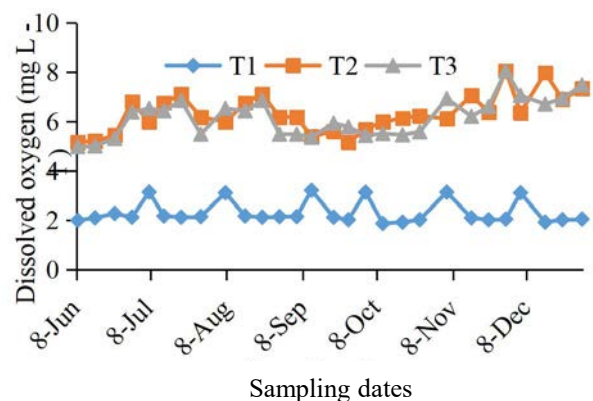


Figure 2: Weekly mean DO (mg L⁻¹) of Pond