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A Comparison of Growth, Survival Rate and Number of Marketable Koi Carp Produced under different Management Regimes in Earthen Ponds and Concrete Tanks

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Abstract—*To compare the growth performance of koi carp, Cyprinus carpio var. koi, produced in concrete tanks (2.13 X 0.91 X 1.22 m; capacity: 2000 l each) and earthen ponds (9.14 X 6.10 X 1.07 m; capacity: 59650 l each), fish larvae (stocking size: 0.12 ± 0.008 g) were cultured for 11 weeks and weight gain, survival rate and number of marketable fish produced were compared among four management regimes for each culture system: (1) live zooplankton fed to larvae in ponds (PLF) and tanks (TLF); (2) application of poultry manure in ponds (PPM) and tanks (TPM); (3) application of cow manure in ponds (PCD) and tanks (TCD); and (4) a control treatment for ponds (PC) and tanks (TC), where a commercial feed was applied. There were three replicates for each treatment. Weight gain of koi carp was highest in the PLF treatment. There was a significant difference in the survival of koi carp among the treatments, ranging from 67.83% in TC to 95.50% in PLF. The number of marketable fish produced was highest in the PLF treatment. Significantly higher ($P < 0.05$) values of pH and dissolved oxygen were obtained in the live food and control treatments (for both tanks and ponds), compared to the manured treatments. The concentration of total alkalinity, BOD, $PO_4 – P$, $NO_3 – N$ and specific conductivity were significantly higher ($P < 0.05$) in PPM and PCD, compared to other treatments. The results suggest that introduction of*

live zooplankton into culture units result in higher growth of koi carp larvae compared to manure based systems. Earthen ponds appeared to be better alternative to concrete tanks for manure application through maintenance of better water quality due to their higher assimilatory capacity and greater abundance of plankton which resulted in better growth of cultured fish.

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