

Effects of different stocking density of Nile tilapia (*Oreochromis niloticus*) and common carp (*Cyprinus carpio*) on the growth performance and rice yield in rice-fish farming system

ABSTRACT

A 105 day investigation was conducted to measure the impacts of stocking densities at different ratios of Nile tilapia (*Oreochromis niloticus*) and common carp (*Cyprinus carpio*) on their growth and rice yields in rice-fish farming systems. The experiment was conducted by randomized complete block design with three replications. The plot size was 6×3 m, 50 cm height with ditch (3×1 m) for fish. Mean initial weight of *O. niloticus* was 12.2±1.92 g using three different fish stocking densities (4, 6 and 8 fish m⁻²) in five different ratios (1:1, 1:0, 0:1, 1:2, 2:1) of *O. niloticus* and *C. carpio*. At the end of the investigation specific growth rate, total length (cm), final weight (g), and survival rate (%) for fish were estimated. Plant height and tiller number were also calculated. The study showed that fish growth performance, fish survival rate, plant height, number of tiller, and abundance of plankton were significantly affected by culture system ($p<0.05$). The final weight was higher in 4 fish m⁻², followed by 6 fish m⁻² while the 8 fish m⁻² treatment recorded the lowest growth performance. The survival showed the same trend, the highest survival rate was found in *C. carpio* - *O. niloticus* ratio of 1:1 (66.67±9.31%) with 6 fish m⁻² followed by 4 fish m⁻² then by 8 fish m⁻² 55.36 ±6.11%, and 49.78±4.17% respectively. The highest rice yield, were found in 6 fish m⁻² (5.43) that was significantly ($p<0.05$) higher than in 4 fish m⁻² and 8 fish m⁻² treatment. The present study revealed that the suitable stocking density was 6 m⁻² with 1:1 for *C. carpio* and *O. niloticus* for better growth, survival and maximum rice production.

Keyword: Integrated farming; Plankton; Rice production; Fish growth; Survivability