Fish production from integrated aquaculture is very low in Africa compared to global fish output. In countries such as Kenya where some commercialization has been adopted, fish yields are either stagnating or declining. An innovative way aimed at improving production of the catfish could involve mixed culture of catfish and tilapia in rice. With the assumption that production of catfish is not affected by culture type, an experiment was conducted to assess growth and production of the African catfish, *Clarias gariepinus* in different culture systems where growth and production was monitored for 122 days within the Lake Victoria Basin in Kenya.

The experiment was laid out in a randomized block design with three treatments and three replicates. The treatments consisted of three culture systems which included catfish-tilapia polyculture in rice as treatment 1, catfish monoculture in rice at low stocking density as treatment 2 and catfish monoculture in rice at high stocking density as treatment 3. The fish were stocked as: 4 catfish + 4 tilapia m⁻², 4 fish m⁻² and 8 fish m⁻² for treatments 1, 2 and 3 respectively. The rice variety used in the integrated culture experiment was the Basmati variety IR62032. Measurement of water quality parameters was done in the mornings only, while measurement of fish growth parameters was done monthly. The mean values of all the measured water quality parameters were calculated and reported with their standard errors.

Two factor-ANOVA test was used to determine the effects of culture type on growth and production of catfish, and also to determine the effects of period and frequency of water replacement on water quality. One factor-ANOVA test was used to determine the variations in the water quality among the treatments for each DAR and between the DARs for each treatment. Production parameters (length, weight, survival, condition factors, and yield) of the fish in the treatments were compared using one factor ANOVA test. All statistical analyses were performed using MINITAB 13.0 computer software.

There was a significant difference in fish weight between the three treatments (F=11.6; P<0.05) with treatment 1 registering the highest growth in terms of weight. Fish survival was significantly higher (p<0.05, at 95% CI) in treatment 2 (61.3%) but insignificant between treatments 1 (46.5%) and 3 (422%). The general condition of the fish in the treatments was not significantly different (p<0.05) between the three treatments. Fish conditions deteriorated in all the treatments as the days of culture increased, the K-values eventually dropping to less than 1. Yield of fish was higher in treatment 1 (373.16 kg ha⁻¹) compared to treatments 2 (288.88 kg ha⁻¹) and 3 (236.26 kg ha⁻¹), although the values were not significantly different (F=3.11, P<0.05). Catfish production was positively affected by mixed culture of catfish and tilapia in rice-fish culture while Water quality parameters critical to survival of fish increased with increasing days of culture. Turbidity, nitrites and SRP were the major factors affecting growth and the general condition of the fish.

**Key words:** agro-pisciculture, rizi-pisciculture, geo-ecological zones, integrated agriculture-aquaculture, integrated fisheries aquaculture, integrated multi-trophic aquaculture.