

**DESIGN, FABRICATION AND PERFORMANCE EVALUATION OF TWO  
RECIRCULATING AQUACULTURE SYSTEMS  
FOR THE PRODUCTION OF TILAPIA**

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**By**

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**ABSTRACT**

This system was fabricated and conducted at the Tilapia Hatchery of the Southeast Asian Fisheries Development Center (SEAFDEC) in Tigbauan, Iloilo from December 16, 2018 to February 7, 2019. This system was evaluated using two different bio-filtering media, namely: the commercial bio-filtering medium and the recycled plastic bottle caps. They were compared based on their operating performance and effects on fish growth in terms of temperature and pH level of water, weight gained of fishes, feed conversion ratio, specific growth rate and survival rate. The investment cost of the systems were also computed and their operating costs were analyzed. The basic components of the Recirculating Aquaculture System are: fish tanks, mechanical radial flow filter, bio-filter, sump tank, pump and aerators. Results of the study showed that for both systems, the water temperature ranged from 27°C to 28°C while the pH of the water ranged from 8 to 9. The designed system using two types of bio-filter functioned as purpose. System 2 performed numerically better in terms of feed conversion ratio at 2.08 as compared to that of System 1 at 2.15 and specific growth rate at 8.02% vs 7.94% for System 1. Tilapia in System 1 had better survival rate at 82.56% compared to the 80.51% survival of fishes on System 2. Both systems performed no significant difference ( $P>0.05$ ) in terms of weight gain of fishes (12.06 g and 12.48 g for Systems 1 and 2, respectively). Since System 2 incurred the lower expenses in terms of investment and operating costs, this type of Recirculation Aquaculture System is recommended.