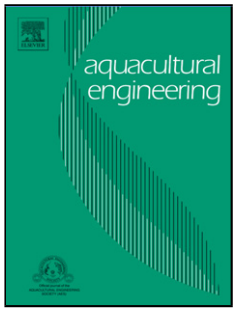

Title: Comparing biofloc, clear-water, and hybrid recirculating nursery systems (Part II): Tilapia (*Oreochromis niloticus*) production and water quality dynamics

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Comparing biofloc, clear-water, and hybrid recirculating nursery systems (Part II): Tilapia (*Oreochromis niloticus*) production and water quality dynamics

Running Title: Three recirculating systems for tilapia

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Abstract

Indoor, recirculating aquaculture systems (RAS) can be used to nurse tilapia fry in a biosecure environment to support a variety of production systems; however, it is not understood what type of RAS may be most appropriate for this task. Clear-water and biofloc systems have advantages and disadvantages; hybrid systems combining positive features of both could optimize animal performance and minimize production costs. In this study, four replicate 160-L tanks were randomly assigned to clear-water (CW), biofloc (BF), or hybrid (HY) treatments. CW tanks had a settling chamber, foam fractionator, and external biofilter containing biomedia. BF tanks only had a settling chamber, and HY tanks used a settling chamber and external biofilter. Tilapia (Oreochromis niloticus) were stocked at 55 per tank (305 fish/m^3) at 0.17 g average weight. Total Ammonia Nitrogen (TAN) and nitrate were not significantly different between systems. Nitrite was significantly higher in BF compared to CW and HY systems during the last 4 weeks of the study. Turbidity was significantly higher in BF systems versus other treatments.. Tilapia in