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Evaluation of Oyster Shell as Treatment Material to Improve Water Quality for Fish Seed Propagation

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Abstract : The study examined the impact of exposure and duration of exposure of water (tagged C-0) that was incapable of supporting fish egg hatching to quantities of crushed oyster shell (COS) for curative to use the water for fish seed propagation. The water was studied alongside approved water for fish egg hatching (F-0). The water (C-0) in 5 separate containers was exposed to COS at 1.08g/l for 13, 9, 5, and 3 days and 0.80g/l for three days prior to use for seed propagation. The five experimental treatments were studied alongside C-0 and F-0 with zero shells. Water quality conditions of each treatment were monitored during the study. Fertilized Clarias gariepinus eggs were incubated in each treatment in triplicates. Eggs were monitored for fertilization, hatchability, and larval growth. The pH and hardness in F-0 (6.63, 63.3mg/l) and C- 0 (4.47, 104.0mg/l) were significantly different ($P<0.05$). The pH of C-0 increased from 4.47 to 8.45 while the hardness increased from 104.0 mg/l to 153.3 mg/l when the water was exposed to crushed oyster shell at 1.08 g/l for nine days. When the exposure duration was extended to 13 days, the pH did not change; however, the hardness increased to 169.3 mg/l. Egg hatching and larval development in C-0 were improved with COS. The fastest growth was recorded when it was exposed to COS at 1.08 mg/l for three days. The improvement could result from the ability of COS to induce a pH increment of the acidic water due to its high calcium content.

Keywords : Clarias gariepinus, curative, egg hatching, larval development, water quality
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