

Biofiltration performance of doum palm, *hyphaene compressa* (h. windl, 1878) fronds and effective micro organisms' technology in a semi-intensive mariculture system

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Biofiltration performances of native microorganisms concentrated on East African Doum Palm Fronds (EADPF), *Hyphaene compressa* (H. Windl. 1878) and Effective Microorganisms (EM) consortium were assessed. Triplicate polyculture tanks (1 m³) with *Oreochromis urolepis urolepis* (Norman, 1922) and *Mugil cephalus* (Linnaeus, 1758) were used. Seawater treated EADPF (EADPF-F), untreated EADPF (EADPF-U), EM on Polyvinyl Chloride sheets (PVC-EM), EM consortium without media (EM) and Polyvinyl Chloride without EM (PVC) were used except in the control (CONTROL) tanks. PVC-EM, PVC, EADPF-F and EM systems had better ammonia biofiltration efficiency of $83.7 \pm 3.13\%$, $80.9 \pm 3.13\%$, $73.2 \pm 5.36\%$ and $66.7 \pm 3.23\%$ respectively while EADPF-U had the least ($38.4 \pm 7.09\%$). Total suspended solids levels were relatively little in PVC-EM, PVC and EM but high in EADPF-F and EADPF-U systems. Of the two finfish, *O. urolepis urolepis* had relatively higher specific growth rate (SGR) and survival rate (SR), with EM and EADPF-F systems providing the best SGR (3.41%) and SR ($55.6 \pm 9.0\%$) while the CONTROL and EADPF-U provided the least SGR ($2.45 \pm 0.03\%$) and SR ($27.9 \pm 14.7\%$), respectively. The results showed that EM, PVC-EM and PVC were effective in enhancing both, the effluents biofiltration and growth of *O. urolepis urolepis*. Higher values in EM and PVC-EM were attributed to both the regenerative characteristics of EM consortium and ability to fix ammonia while excess heterotrophic activities explained the low values in EADPF-U. The EADPF-F, providing the best SR and run-up SGR of 3.17 ± 0.06 similar to PVC-EM (3.17 ± 0.04) was revealed as a potential biofilter media and enhancer of periphyton or bioflocs in mariculture system.