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Performance evaluation of barley straw, wood chip, sponge and PVC pure pipe based biofilters in Common carp recirculating aquaculture system

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Abstract

Biofilter is one of key components of recirculating aquaculture system (RAS) that affect initial investment, executing cast and success or unsuccess of system. Hence in this research, performance of barley straw, wood chip, sponge (as cheap and available media) and PVC pure pipe (to compare) based biofilters was surveyed in Common carp recirculating aquaculture system. To conduct this research 12 pilot recirculating aquaculture systems designed and 50 common carp individuals (mean weight: 4/8 g) were stocked in each system. After activation period (about 1 month), waste removal efficiency of biofilters and growth performance of Common carp were surveyed. Results indicated that sponge based biofilters had the best performance. Barley straw and wood chip based biofilters showed acceptable waste removal efficiency, while PVC pure pipe biofilters had poor performance. The highest feeding and growth performance of fish were observed in systems involved barley straw based biofilter. In conclusion barley straw, wood chip and sponge because of having low cast, being available, having relatively high specific surface area and showing acceptable waste removal efficiency, can be used in RAS and semi reuse systems.

Key words: Recirculating aquaculture system, Biofilter, Waste removing, Common carp