

“零排放”复合生物净化模式用于循环水养鲍系统的试验研究(英文)

Zero-discharge model of combined biofilters in recirculating abalone culture system

投稿时间: 2006-5-18 最后修改时间: 2006-12-26

稿件编号: 20070133

中文关键词: 水产养殖; 鲍鱼; 水质; 复合生物净化; 零排放

英文关键词: aquaculture; abalone; water quality; combined biofilters; zero-discharge

基金项目:

作者	单位
李秀辰	大连水产学院机械工程学院, 大连 116023
张国琛	大连水产学院机械工程学院, 大连 116023
张敏	大连水产学院机械工程学院, 大连 116023

摘要点击次数: 91

全文下载次数: 28

中文摘要:

采用水生植物滤池(UB和PUB)和固定膜生物滤池(SB)的复合净化模式,对鲍鱼养殖水体和系统排放水体进行净化,实现了循环水养鲍系统的清洁生产。试验结果表明,植物滤池UB对养殖水体中总氨氮(TAN)具有很高的吸收效率,从而降低了SB的硝化负荷,大大减少了TA N、 NO_2^- -N、 NO_3^- -N和COD的积累,在整个试验过程中,养殖水体中TAN、 NO_2^- -N、 NO_3^- -N和COD的浓度分别低于0.19、0.01、1.75和1.20 mg/L。由于UB滤池的吸收作用和SB的硝化作用,养殖水体中 PO_4^{3-} 的浓度一直保持在0.30 mg/L以下。另外,这种复合净化模式具有调节水体pH值的作用,在试验期间,养殖水体中的pH值一直保持在8.11~8.14的良好水质范围,对鲍鱼的养殖十分有利。系统排放水经另一植物滤池PUB吸收净化后, PO_4^{3-} 浓度降至0.22 mg/L以下, NO_3^- -N的浓度甚至降至0.10 mg/L以下。本文还建立了养殖循环水体中无机氮的循环模型,用于对养殖水体中TAN、 NO_2^- -N和 NO_3^- -N的预测和控制。

英文摘要:

Combined biofilters consisting of an ulva biofilter(UB), a polishing ulva biofilter(PUB) and a sand biofilter(SB) were developed for purification of the rearing water and effluent water in recirculating abalone culture system. UB exhibited intensive uptake to total ammonia-nitrogen(TAN) in the rearing water, thereby reduced the nitrification loadings of SB and lowered accumulation of TAN, NO_2^- -N, NO_3^- -N and COD in the system. During the experiment, the concentration of TAN, NO_2^- -N, NO_3^- -N and COD in the rearing water was kept below 0.19, 0.01, 1.75 and 1.20 mg/L, respectively. Due to the uptake of UB to PO_4^{3-} and the nitrification of SB, the concentration of PO_4^{3-} in the rearing water retained to 0.30 mg/L during the operation period. The combined biofilters also had good capability of pH value buffering in the rearing water and were able to maintain the pH value between 8.11~8.14 during the whole experiment. The concentration of PO_4^{3-} in the effluent water dropt to 0.22 mg/L and NO_3^- -N level even dropt to 0.10 mg/L after further uptake by PUB. The inorganic nitrogen cycling models were established for estimating the changes of TAN, NO_2^- -N and NO_3^- -N in the rearing water.

[查看全文](#)

[关闭](#)

[下载PDF阅读器](#)

您是第607235位访问者

主办单位: 中国农业工程学会 单位地址: 北京朝阳区麦子店街41号

服务热线: 010-65929451 传真: 010-65929451 邮编: 100026 Email: tcsae@tcsae.org

本系统由北京勤云科技发展有限公司设计