

Thema:

Konzeptionierung und Testung eines geschlossenen Modellkreislaufs mit *Alitta virens* und *Agarophyton vermiculophyllum*

Abstract

The aim of this bachelor thesis is to test whether *Alitta virens* and *Agarophyton vermiculophyllum* are suitable organisms for integrated multitrophic aquaculture using a closed recirculation system. For this purpose, the growth of the algae and worms and the accumulation of nitrogen and phosphate in the system were studied. The organisms were kept in a closed recirculating system with three tanks for the algae, a sand filter with worms and a biofilter. Data were collected in two experiments, in which the stocking density of the algae and the type of feed given to the worms differed. In the first experiment the worms were fed fish food pellets and the initial algae biomass was 594,38 g, while in the second experiment fish faeces from a tilapia aquaculture facility were used, and the initial algae biomass was 271,46 g. The algae had a biomass increase of 18.6 % in the first experiment and 8.97 % in the second, while the worms experienced an increase of 65.52 % and a decrease of -39.2 %, respectively. Nitrogen accumulated in the system during both experiments, 0,108 g*d⁻¹ and 0,027 g*d⁻¹ respectively, while phosphate accumulation only occurred in the first experiment. *Alitta virens* and *Agarophyton vermiculophyllum* are suitable for a closed recirculating system, but the parameters and the experimental system can be further optimised. We concluded that the tilapia faeces are not a suitable feed source for the worms due to the loss of *A. virens* biomass and that the ratio of worms to algae should be at least one to six to avoid nitrogen accumulation.

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