

Impact of trout aquaculture on water quality and farm effluent treatment options



In the context of the European Water Framework Directive, the in- and outflow water quality from 13 German trout farms, rearing mainly rainbow trout (*Oncorhynchus mykiss*) and using inflow rates between 0.03–0.80 m³ s⁻¹, were monitored for point-source pollution. The farms had a significant effect on the effluent quality and macro-invertebrate fauna in adjacent streams (saprobic index based on species assemblage and abundance was 1.56–2.10 upstream of the farms but increased to 2.06–2.37 downstream of the farms). Inflow water quality, type of rearing unit, feeding intensity (amount of feed input in relation to water resources) and effluent treatment method could be used to predict effluent quality by 50 to 88% for most water characteristics. Based on these results, different effluent treatment options were monitored for their treatment performance. Concrete sedimentation basins 11 m × 7 m × 1.2 m and 5.5 m × 3.3 m × 1.5 m (L × W × H), respectively, used for total farm effluent had little or no treatment effects. The micro-screen examined was relatively effective on particulate water components, measured as total phosphorous (TP), biochemical oxygen demand (BOD₅), chemical oxygen demand (COD) and total suspended solids (TSS), resulting in treatment efficiencies of 29–53%, which is less than expected from data in the literature. The constructed wetland examined showed the highest treatment efficiency: more than 35% for TP, COD, BOD₅, TSS and total ammonia nitrogen (TAN). From these results and data from the literature, treatment strategies for trout farm effluents can be developed, depending on the rearing system and production intensity.

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