

ABSTRACT

Aquaculture has been documented as the fastest developing food industry in Kenya with increased production since the Government initiated the Economic Stimulus Programme (ESP) in 2009. However, the production has not yet reached the maximum level (20,000 metric tons per year) anticipated in the country. This is due to a number of challenges, top of which is poor water quality resulting from the uncontrolled addition of inputs (fish feeds, inorganic fertilizers, and organic fertilizers) into the ponds. These deteriorate water quality, cause increased incidences of parasite infections, and impede fish production. Therefore, this study investigated the effect of water quality on parasite assemblages infecting *Oreochromis niloticus* (Linnaeus 1758) in selected fish farms within Nakuru County from November 2016 to February 2017. Selected physico-chemical parameters namely: dissolved oxygen, temperature, pH, conductivity, and turbidity were measured in situ using appropriate meters. Water samples from each fish farm were analyzed for nutrient concentrations using standard methods. A total of 300 fish were examined for parasites. Parasites were counted, preserved, and identified using identification keys and parasitological parameters determined. The results indicated that certain water quality parameters, such as dissolved oxygen, were significantly different for all the six fish farms (one-way ANOVA, $p < 0.05$). A total of 15 species of parasites were recovered. *Trichodina* sp. and *Cichlidogyrus halli* were found in all the studied fish farms. Correspondence analysis revealed that some parasites' occurrences were highly correlated (positively) with certain water quality parameters. Therefore, regular monitoring and control of water quality in fish ponds are recommended to reduce levels of parasite infestations.

Keywords: Fish farms; Nakuru County; *Oreochromis niloticus*; Parasite assemblages; Water quality.