**Abstract:**

Fish mortality has an enormous impact on the aquaculture industry by reducing fish production and slowing industrial growth. A cross-sectional study was carried out in Kirinyaga County, Central Kenya, to evaluate potential risks of fish mortality and disease transmission and suitability of pond water for rearing fish. A semi-structured questionnaire that focused on general information, management practices, and disease history was administered to 92 small-scale fish farmers. Parasitological examination of fish sampled from selected farms (farms that were reporting mortality at the time of sampling) was done by following the standard procedure. Water quality parameters for 33 ponds were evaluated *in situ* (recorded on pond site) and *ex situ* (analysed at the laboratory) following the standard methods.*erisks were assessed by adjusted odds ratio based on univariate regression analysis. Prevalent fish husbandry practices that were found to be associated with fish mortality and acquisition of pathogens in the study area were: the use of raw livestock manure (0R  1.500), high fish stocking density (0R 1.168), and feeding fish on homemade rations (0R  1.128). Parasitological investigation found infestation with *Diplostomum* spp., *Dactylogyrus* spp., *Clinostomum* spp. and *Piscicola* leeches. Water temperature and pH were found fit for rearing fish. Of the 33 fishpond water samples tested, 1 (3%) and 6 (18%) exceeded the recommended limits of <100 mg/L and <0.2 mg/L of nitrate and nitrite, respectively. Of the 29 fishpond water tested, 15 (59%) exceeded the recommended limits of <100 mg/L of total ammonia. *e findings show that the use of raw livestock manure, high fish stocking density, high nitrates and nitrites, and high ammonia levels in fishponds are potential risk factors for fish mortality and acquisition of infectious pathogens in a pond environment in a rural setup, in Central Kenya. There is, therefore, need to address the above factors in small-scale farming practices to minimize fish loss and also to prevent the occurrence and spread of infectious pathogens.