

Effects of water-flow rate and water quality on tilapia culture in the Mae Ping River, Thailand

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ABSTRACT

Currently, tilapia cage culture farmers are facing the high climate risks such as floods and droughts. The farmers should have more information related to climates variability that influences river water. This study was to find out how flow rates influence water quality and other related factors which may influence the risks of mass mortality events in the Ping river, Northern Thailand. Eight monitoring stations (ST) were located along the 120 km stretch of the river and sampled every month in a year. The physicochemical and biological parameters were determined using onsite estimates and laboratory analysis through standard techniques. Secondary data was obtained from database, furthermore comparison of data are also investigated. Tilapia cage farms along the river are also exposed to the impacts of climate. The study results verified that significant difference in temperature, DO, pH, conductivity and water flow rate between the rainy season and dry season. High flow (floods) in rivers caused by torrential rains can damage fish cages, cause massive fish escapes and deaths. The water flow at the rate of 294.8 m³/s and 270 m³/s destroyed the river cages. Therefore, the high water flow rates are disadvantageous for floating cage fish culture in the river system especially with a flow rate above 250 m³/s. On the other hand, low flows (drought) can cause water stress resulting from low dissolved oxygen levels especially in culture area (ST3-ST8). This finding implies that fish farmers need to improve the strength and stability of floating open-top cages or choose times and sites to rear fish. In addition, an early warning system and proper aeration should be established.

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