COMPARISON OF THREE NONLINEAR GROWTH MODELS IN PREDICTION OF GROWTH NILE TILAPIA FISH

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ABSTRACT

Three non-linear mathematical equations, namely Logistic, Gompertz, and Von Bertalanffy, were employed to depict the growth curves in question. The present investigation utilized a dataset sourced from the Wastewater Oxidation Pond located in Thailand. The dataset consisted of weight measurements of Nile Tilapia fish, which were acquired at four-week intervals spanning from week 0 to week 48. The python software was utilized to fit each model individually to the body weight records of all Nile Tilapia Fish. The adequacy of the models was evaluated through the utilization of statistical measures such as the adjusted coefficient of determination (R^2), Akaike's Information Criterion (AIC), and Bayesian Information Criterion (BIC). The Von Bertalanffy model was found to be the most suitable for fitting the growth curve of Nile Tilapia fish, as indicated by its comparatively lower Mean Absolute Error (MAE) values and the lowest AIC and BIC values among the other models considered. The growth curve fit for Nile Tilapia fish was found to be the poorest using the Logistic model. The assessment of various growth equations utilized in this investigation demonstrated the potential of non-linear functions in accurately modeling body weight data of Nile Tilapia fish.

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