Modelling the growth of Nile Tilapia (Oreochromis niloticus) on fed diets formulated from local ingredients in C

ABSTRACT

The use of agricultural by-products as a fish meal is an attempt to minimize the cost of fish production to aquaculturist and to also create a more environmentally friendly practice. Due to high demand of Tilapia fish, efforts to improve its growth performance is highly needed. The application of linearization technique by natural logarithm transformation, even though standard, is inaccurate and can just provide an estimated value for the single parameter measured; the specific growth rate. In this paper, for the first time we used various kinetics models such as Von Bertalanffy, Baranyi-Roberts, modified Schnute, modified Richards, modified Gompertz, modified Logistics and most recent Huang were used to get values for the above constants or parameters from Nile Tilapia Oreochromis niloticus growth on fed diets formulated from local ingredients in cages. At the end of the modelling exercise, Baranyi-Roberts model proved to be the finest model with the highest adjusted R2 value and lowest RMSE value. The Accuracy and Bias Factors values were close to unity (1.0). The kinetics modelling shows that the most satisfactory fitting is with the Baranyi-Roberts model. The use of Nile Tilapia growth models to obtained exact growth rate is advantageous for further development of secondary model and this work has revealed the capability of such models.

Keyword: Nile Tilapia; Mathematical modelling; Growth; Baranyi-Roberts