

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

NONLINEAR MODELING GROWTH IN CANNON CIRCUMFERENCE OF MANGALARGA MARCHADOR HORSES

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Mangalarga Marchador (MM) is one of the most numerous and widespread horse breed in Brazil. The studies on animal growth curves via non-linear models has been employed with the aim of better understanding the growth dynamic for several species. Nevertheless, there is no report on growth curve model related to cannon circumference for MM breed. The objective was to evaluate four non-linear models fit to data of MM horses cannon circumference (CC) obtained by the cross-data collection method, in order to select the most adequate model for it, and predict about growth and maturity of males and females. Two hundred MM animals (75 males and 125 non-pregnant females), with age between six and 153 months, were tape-measured on the middle of the left thoracic member cannon. Brody, Gompertz, Logistic and Von Bertalanffy non-linear models were employed. Model parameter estimate was performed by the minimum square method through the Gauss-Newton numeric algorithm, with R base routine software. Data normality was verified by the Shapiro-wilk test. The comparison and selection of the most adequate model fit to describe the growth curve were made via coefficient of determination (R^2); residual standard deviation (RSD) and corrected Akaike information criterium (cAIC). The studied statistical models were efficient in predicting the CC variable, with R^2 values ranging between 75.5% to Brody model fit on female data and 86.3% to Logistic model fit on male data. The greatest growth intensity and homogeneity occurred at ages six to 24 months. A growth curve stabilization was noted at 60 months. The CC values varied between 18.25 to 18.76 cm on adult females, and 18.95 to 19.41 cm on adult males. Brody was the most appropriate non-linear model used to describe cannon circumference growth for MM females while Logistic model was the most indicated for MM males.

Keywords: Gender, Age, Non-linear models, Cross-data collection data

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