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ANALYSIS OF GROWTH CURVE IN SANTA INES FEMALES SHEEP

ANÁLISE DA CURVA DE CRESCIMENTO EM FÊMEAS DA RAÇA SANTA INÊS

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In a sheep production system, the growth-related characteristics have direct relationship to both, quantity and quality of meat. The objective of this study was to evaluate the application of non-linear models to report the growth curve of Santa Inês sheep. Weights of 140 females, born from2010 to 2012, from a single herd at Cravinhos- SP were used. The weights were measured from birth to about one year of age and the ages were grouped together in biweekly classes. The average weight observed at birth was of 3.77±0.92 kg. The non-linear models utilized in the data adjustment were the Brody, Gompertz, Logistic and Von Bertalanffy models, adjusted by the Gauss-Newton method by means of NLIN procedure, available in SAS software. The parameters which compose the functions (Table 1), Wt (kg) is the weight in time t (days); A (kg) is the asymptotic weight when age tends to infinity; b is an integration constant, related to the initial weights of the animals and not well defined biological interpretation, and k is the maturity rate. The average estimates for A and k, are the most important from an zootechnical parameters point of view, mainly because heavier females tend to create faster growing sheep. All the models evaluated reached convergence. The quality of the models adjustment was done by error mean square (EMS) means. From the EMS results , the Gompertz model showed the best adjustment, which indicates increased association between the observed and estimated weights, in spite of the EMS values being quite close in all models, pointing out that all were adequate to report the growth curve from birth to one year of age in females of Santa Inês breed.

Table 1. Estimates of the parameters of the Brody, Gompertz, Logistic and Von Bertalanffy non-linear models, equation, error mean square (EMS) for the weight characteristic

Model	Equation	A	b	k	RSM
Brody	$Wt= A (1-b.e^{-k.t})$	29.7675	0.8832	0.00855	11.2533
Gompertz	$Wt= A.e(-b.e^{-k.t})$	27.4936	1.9173	0.0160	11.0798
Logístico	$Wt=A / (1+b.e^{-k.t})$	26.6502	4.6932	0.0239	11.3689
Von Bertalanffy	$Wt= A(1-b.e^{-k.t})^3$	29.7674	0.8832	0.00285	11.2533

Keywords: non-linear regression, weight.

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