Abstract

In Mexico, weaning and yearling weights in herd of Hereford (HER) and Salers (SAL) breeds are measured at different ages. This information can be used to analyze growth by using nonlinear models (MNL); which is the objective of this study. In HER, 4,549 observations were analyzed of 1,910 animals born from 2002 to 2011 in nine herds; in SAL, 14,468 observations were analyzed of 1,910 animals born from 2000 to 2011 in twelve herds. The MNL assessed were: Brody (BRO), Logistic (LOG), Bertalanffy (BER) and Gompertz (GOM). Thereafter, the following parameters were estimated: asymptotic mature weight (PAD; kg); relative growth rate (PCU; kg/kg/t); the correlation (PP) between PAD and PCU; age and weight of the inflection point (EPI, months; PPI, kg); and, the percentage of maturity up to 205 (GM205) and 365 (GM365) days. Analyses were performed by using NLIN SAS procedure. Model selection was done based on: average prediction error, variance of the prediction error, determination coefficient, Durbin-Watson statistic, and Akaike information criterion. All models fitted accounted for approximately 96% of data variation. The best fitting model was different across breeds but coincided in both sexes within breed; for HER was BER and to SAL was BRO. The PP were negative and high in all models. For HER, the estimates of EPI y PPI were 3.5 with 118.3 for females and 4.1 with 138.4 for males. The predictions of PAD were 343.9 and 537.2 for SAL, and 399.1 and 467.2 for HER, in females and males, respectively. In HER, the GM205 y GM365 were 50.1 y 73.6 in females, and 44.8 and 68.2 in males. In SAL, the GM205 and GM365 in females were 57.9 and 76.4, and for males were 38.8 and 55.6.

Keywords

Beef cattle, growth parameter, growth rate, growth curve, animal production, NLIN SAS.