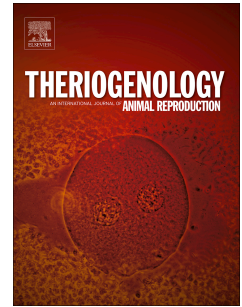


# Accepted Manuscript

Genetic analysis of age at first calving, accumulated productivity, stayability and mature weight of Nellore females

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3 **Genetic analysis of age at first calving, accumulated productivity, stayability and mature weight**  
4 **of Nelore females**

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13  
14 **Abstract:** The female reproductive performance, productivity and size are strongly associated with  
15 production efficiency of herds raised in a tropical environment. The age at first calving (AFC),  
16 accumulated productivity (AP), stayability (STAY) and mature weight (MW) could be used as  
17 indicators of these traits. In this study, the genetic parameters and correlations between AFC, AP,  
18 STAY and MW measured in Nelore females were estimated, in order to provide support for the beef  
19 cattle evaluation programs. In addition, the genetic changes for these traits were obtained. The  
20 (co)variance components were estimated by Gibbs sampling by four-trait multivariate analysis, using  
21 a threshold animal model for STAY and linear animal model for the other traits (AFC, AP and MW).  
22 Heritability of AFC, AP and STAY showed low values, with posterior means of  $0.13 \pm 0.02$ ,  $0.14 \pm 0.01$   
23 and  $0.19 \pm 0.03$ , respectively. On the other hand, for MW were estimated mean heritability of  
24  $0.44 \pm 0.03$  and repeatability of  $0.77 \pm 0.03$ , demonstrating the importance of genetic and permanent  
25 environmental effects for the expression of beef cows' size. The AFC showed null genetic correlation  
26 with AP ( $-0.06 \pm 0.12$ ) and MW ( $0.01 \pm 0.09$ ) and low and negative with STAY ( $-0.15 \pm 0.11$ ). The AP  
27 showed high genetic correlation with STAY ( $0.86 \pm 0.03$ ) and weak with MW ( $0.23 \pm 0.09$ ). Positive  
28 and moderate genetic association was estimated between STAY and MW ( $0.66 \pm 0.05$ ). Annual direct  
29 genetic trends of 0.19 kg, 0.30 units and 0.10 kg were estimated for AP, STAY and MW, respectively,  
30 and were significant ( $P < 0.05$ ) for STAY and MW. For AFC, negative and favorable annual genetic

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