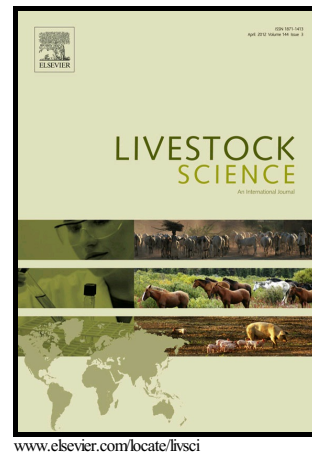


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Genomic regions associated with performance in racing line of Quarter Horses

G. L. Pereira^{1*}, L. A. Chardulo², J.A. II V. Silva², R. Faria¹, R. A. Curi²

¹*Department of Animal Science, College of Agriculture and Veterinary Science, São Paulo State University (UNESP), access route Paulo Donato Castellane, 14884-900, Jaboticabal, São Paulo, Brazil.*

²*Department of Animal Breeding and Nutrition, College of Veterinary and Animal Science, São Paulo State University (UNESP), Rubião Junior District, 18618-970, Botucatu, São Paulo, Brazil.*

*Corresponding author: Guilherme Luis Pereira. E-mail: guipicoia@hotmail.com

Abstract

Quarter Horses breed for racing are able to run short distances faster than any other breed. Although in Brazil the effective number of animals in the racing line is relatively smaller compared to the other lines, its economic importance is substantial. Despite economic and scientific interest in this athletic trait, few efforts have been made to better understand the genetic and physiological mechanisms underlying this trait. The objective of this study was to perform genome-wide association studies (GWAS) in Quarter Horses of the racing line using equine single nucleotide polymorphism (SNP) genotyping chips for prospecting chromosome regions, genes and polymorphisms related to maximum speed index. Genotypic and phenotypic data from 305 horses genotyped with the 54k or 65k chip were used. Additional 187 not genotyped animal with SI record were added in the study, for a total of 492 animals and 620 horses in the pedigree used for the GWAS analysis. GWAS was performed by the single-step genomic best linear unbiased prediction (ssGBLUP) method using two approaches: ssGWAS1 in which only SNP

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