

## Assesment of SNP Variation and Distribution in Pakistani Cattle Breeds using High Density SNP Genotyping

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**Abstract :** In this study, 67 animals, representing six different cattle breeds of Pakistan, were genotyped with the Bovine high density (777K) SNP Beadchip. These include 13 Sahiwal, 09 Red Sindhi, 13 Tharparkar, 08 Achi, 13 Cholistani and 10 Dhanni cattle breeds. Analysis of 500, 939 SNP markers revealed that the mean minor allele frequency (MAF) was 0.21, 0.22, 0.18, 0.23, 0.22 and 0.22 for Sahiwal, Red Sindhi, Tharparkar, Achi, Cholistani and Dhanni respectively. Significant differences of minor allele frequency (MAF) were observed between the indigenous Pakistani cattle population ( $P < 0.001$ ). Across these Pakistani cattle breeds, a common variant MAF ( $\geq 0.10$  and  $\leq 0.5$ ) accounted for an overall estimated 75.71 % of the 500,939 SNPs and on the average 19.58 % of the markers were monomorphic. Mean observed (HO) and expected (HE) heterozygosities were 0.656 and 0.638, respectively. This primarily study of Pakistani indigenous cattle breeds indicate that this level of SNPs variation can potentially be used for genomic studies for future breeding plans and for farm animal conservation strategies.

**Keywords :** Pakistan, cattle, minor allele frequency, SNP, variation

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