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Genetic Variation among the Wild and Hatchery Raised Populations of Labeo rohita Revealed by RAPD Markers

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Abstract : The studies on genetic diversity of Labeo rohita by using molecular markers were carried out to investigate the genetic structure by RAPAD marker and the levels of polymorphism and similarity amongst the different groups of five populations of wild and farmed types. The samples were collected from different five locations as representatives of wild and hatchery raised populations. RAPAD data for Jaccard's coefficient by following the un-weighted Pair Group Method with Arithmetic Mean (UPGMA) for Hierarchical Clustering of the similar groups on the basis of similarity amongst the genotypes and the dendrogram generated divided the randomly selected individuals of the five populations into three classes/clusters. The variance decomposition for the optimal classification values remained as 52.11% for within class variation, while 47.89% for the between class differences. The Principal Component Analysis (PCA) for grouping of the different genotypes from the different environmental conditions was done by Spearman Varimax rotation method for bi-plot generation of the co-occurrence of the same genotypes with similar genetic properties and specificity of different primers indicated clearly that the increase in the number of factors or components was correlated with the decrease in eigenvalues. The Kaiser Criterion based upon the eigenvalues greater than one, first two main factors accounted for 58.177% of cumulative variability.

Keywords : variation, clustering, PCA, wild, hatchery, RAPAD, Labeo rohita
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