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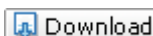
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Assessing genetic diversity of Tecomella undulata (Sm.) - An endangered tree species using amplified fragment length polymorphisms-based molecular markers

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Abstract

Tecomella undulata is an important agro-forestry tree in the western parts of India, which has been included in the list of endangered plant species due to over exploitation. There is an urgent need to formulate appropriate conservation and breeding strategies to save this versatile tree. Quantification of genetic diversity in the existing populations of T. undulata prevalent in India, is an essential first step towards this objective. The present work was undertaken to investigate the utility of amplified fragment length polymorphism (AFLP) markers in the assessment of genetic diversity and phenetic relationship among 42 T. undulata plants collected from different regions of India. Eight AFLP primer combinations generated a total of 338 bands across the 42 T. undulata accessions screened. On an average, 42 AFLP fragments were amplified per reaction. Of the total 338 AFLP fragments, 71.7% was polymorphic across all the accessions. From the AFLP data, a similarity matrix based on Jaccard's coefficient was calculated which was used for constructing a phenetic dendrogram using UPGMA analysis. T. undulata accessions represented high levels of genetic variation as indicated by GS values ranging from 0.721 to 0.83, at which 42 T. undulata accessions grouped together. The pattern of grouping in the phenogram was highly consistent as indicated by high values of co-phenetic correlation ($r = 0.87$, $P = 1$) as also by high bootstrap values at the key nodes. Principal correspondence analysis also

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revealed that *T. undulata* accessions were scattered on the plot. Based on our study, it may be concluded that there is a high level of genetic diversity in *T. undulata* accessions analysed, which may be attributed to its out-crossing nature. Our study may be useful in identifying diverse genetic stocks of *T. undulata*, which may then be conserved on priority basis.

Author Keywords

AFLP; Conservation; Genetic diversity; Molecular markers; *Tecomella undulata*

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