

Landscape Genetic and Species Distribution Modeling of Date Palm (*Phoenix dactylifera* L.)

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Abstract : Date palms are economically important tree plants with high nutrition and medicinal values. More than 400 date palm cultivars are cultivated in many regions of Iran, but no report is available on landscape genetics and species distribution modeling of these trees from the country. Therefore, the present study provides a detailed insight into the genetic diversity and structure of date palm populations in Iran and investigates the effects of geographical and climatic variables on the structuring of genetic diversity in them. We used different computational methods in the study like, spatial principal components analysis (sPCA), redundancy analysis (RDA), latent factor mixed model (LFMM), and Maxent and Dismo models of species distribution modeling. We used a combination of different molecular markers for this study. The results showed that both global and local spatial features play an important role in the genetic structuring of date palms, and the genetic regions associated with local adaptation and climatic variables were identified. The effects of climatic change on the distribution of these taxa and the genetic regions adaptive to these changes will be discussed.

Keywords : adaptive genetic regions, genetic diversity, isolation by distance, populations divergence

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