Selection of elite male date palm (*Phoenix dactylifera* L.) genotypes based on floral phenology, stability and pollen production potential at Kachchh, India

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ABSTRACT

Date palm (Phoenix dactylifera L.) is a vital crop in arid and semi-arid regions, where genetic diversity of the females is majorly studied for its commercial point of view. While, worldwide there are a few selected male varieties, overall, their presence is limited compared to females. In dates males are equally important as they contribute to the fruit yield and quality. Thus, a study has been conducted at Date Palm Research Station, Mundra for nine male date palm genotypes for the reproductive traits during 2020 to 2023. The data were analyzed using principal component analysis and hierarchical cluster analysis. The results revealed that MDP-M1, MDP-M3 and MDP-M5 are early flowering genotypes with stable flowering period, while MDP-M3 and MDP-13 are superior in pollen production. Male dates showed diversity in spathe opening time ranged for 45 days (27 January to 12 March). The flowering duration for each genotype was 23.25 to 30.50 days with a narrow range of duration. The genotypes showed early, medium and late flowering period. PCA with first three principal components with eigen value greater than unity explained 87.6 % of total variance majorly based on pollen yield and spathe traits. The genotypes, MDP-M3 and MDP-M13 depicted association with pollen production quantity per spathe and per palm making them efficient pollinizers and HCA further clustered these genotypes into same cluster. This study helps to accumulate the data for high pollen yielding ability and early flowering genotypes for identification of superior male as pollinizers.

Keywords: Date palm, hierarchical clustering, male genotypes, PCA, variability