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Morphological Traits Survey of Cluster-Bearing Walnuts Half-sib Progenies for Selection of Dwarf and Precocious Genotypes

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One of the ways to establish high density orchards is using dwarf varieties and rootstocks. This entails having dwarf varieties or rootstocks. Dwarf rootstocks are available for most pome and stone fruits but it is still under development in walnut (*Juglans regia*). Selection of dwarf /semi dwarf and precocious genotypes of walnut was the main objective of this research. For this purpose, seeds of dwarf and cluster bearing walnut genotypes were collected from 21 locations all around the country and planted in a nursery and 28 morphological traits were recorded and evaluated for 2 years. A significant morphological difference was observed between half-sib families. Clustering of all genotypes appears three dwarf, semi-dwarf, and vigorous groups. More than 65% of families belong to dwarf and semi-dwarf clusters. Cluster analysis insert all the genotypse in three groups including dwarf, semi-dwarf, and vigorous. Results showed that 46.1% of all 351 genotypes are dwarf, 37.3% are semi-dwarf, and 16.5% are vigorous. According to the PCA analysis, three first principal components could explain 61.37% of the total variation. Also results showed that seedling height have significant correlation with some traits like stem diameter, node number, and internode length.

Keywords: Correlation, Dwarf, Genotype, *Juglans regia*, Morphological, Rootstock.

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