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QUEST FOR WALNUT SUPERIOR GENOTYPES WITH LOW CHILLING REQUIREMENTS IN WEST OF IRAN

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Persian walnut as a temperate-zone deciduous fruit tree usually requires high chilling requirement and dormancy in winter. Climate change and global warming increases interest for selecting low-chill varieties. To identify superior walnut genotypes with low chilling requirements, we screened walnut population at "Zarneh region", Ilam province (West of Iran) as a subtropical zone with traditional walnut orchards. After two-years of evaluation (2013-2014), we selected five walnut superior genotypes (Z1, Z2, Z5, Z7 and Z12) with high yield, large nut, extra light kernel and lateral bearing habit. In the third year, 80 one-year-old shoot (10 cm) of each selected genotypes were exposed at 5±1 ^{o}C temperature at specified intervals (300, 400, 500, 600, 700, 900, 1100 and 1300 hours). The results showed that Z1 (300 h) and Z2 (700 h) genotypes had the lowest and highest chilling requirement, respectively. In term of pomological traits, Z7 and Z12 genotypes were superior to other studied genotypes. Z7 and Z12 genotypes requires 400 chilling hours (at 5±1^{o}C) for budbreak. In general, our primary studies showed that Z7 and Z12 genotypes have the potential to be introduced as a commercial walnut cultivars with low chilling requirement.

Keywords: Ilam, Chilling requirement, Superior genotypes, Walnut, Climate change