Comparison of Some Olive Cultivars in Isfahan Conditions for Using in Landscape

Abstract

Urban landscape, an important component of urban ecosystems, provide many environmental and social services that contribute to the quality of life in cities. Trees, specially evergreens, use carbon dioxide and release oxygen, reduces air pollution through the year, provide shade and their transpiration cools air, and improve urban ecosystems. Olive is a prennial evergreen tree which has good adaptibility to poor environmental conditions. It is more salt, drought and cold tolerant than other similar fruit trees and is considered less demanding in term of nutrients and energy inputs than other fruit crops. In recent years, there is a tendency to plant olive trees in green spaces. So, this study was carried out to evaluate 15 olive cultivars regarding form, texture and color and also frost resistance to recommend for landscape and green areas of Isfahan. A randomized block design experiment was done using: Konservalia, Manzanilla, Spain, Dezful, Shengeh, Bleidi, Rashid, Valanolia, Zard, Kroneiki, Sevillana, Roughani, Gorgan, Mishen, Amphissis. Factors measured in first experiment include tree height, tree canopy height, width extent, canopy volum, trunk diameter, angle between branches, branch growth, number of lateral branches on one year old shoots, length, width, area, shape index and color of leaves, length, diameter and index of fruit shape. Results showed a larg genetic diversity between cultivars. A cluster analysis was done using seven factors effective on tree texture (leaf area, length/ width ratio of leaves, color of leave, angle between trunk and scaffolds, angle between current year with one year old branch, canopy volum and number of lateral branches) and also on seven factors effective on tree form (tree height, width extent, height/ extent of canopy, angle between trunk and scaffolds, angle between current year with one year old branch, growth of current year branches and number of lateral branches). The results showed that Manzanilla, Spain and Amphisis perform width oval form and medium and fine texture so could apply for background, screen and group planting. Roughani, Mishen, Valanolia, Gorgan, Kroneiki, Zard and Sevillana show round form and medium texture could apply for specimen tree to planting in lawn. Rashid cultivar with long height, long oval form and coarse texture is a good selection to accent plant and for screen and frame. In second experiment with the aim of determination of cold tolerance cultivars, visual method (in years of 2007 and 2008) and chlorophyll fluorescence measurment was used. Results in two methodes was relative like together. Results showed that Amphisis, Shengeh and Gorgan were frost tolerant cultivars which tolerate temperature reduction to -15 and Rashid, Kroneiki, Valanolia and Spain were sensitive cultivars to low temperatures (-10 centigrade degree and lower). In addition, most of olive cultivars studied, could be use in Isfahan green space and cities with similar temperature condition. In regions that temperature reduce to -10 to -15 centigrade degree for several days it is better that use tolerant cultivars. Cold damages on tree shoots could be recover following light pruning.

Key words
Olive, landscape, frost resistance, chlorophyll fluorescence