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Use of Olive Cultivars in Landscape Planning Regarding Form and Texture

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ABSTRACT

Olive is a perennial evergreen tree which has good adaptability to poor environmental conditions such as salt and drought resistance. In recent years, there is a tendency to plant olive trees in green spaces. Therefore, this study was carried out to evaluate 15 olive cultivars regarding growth habit, form, and texture to recommend for landscape. Six-year-old trees of 15 olive cultivars, which had been planted in Isfahan University of Technology (2000), were used in randomized block design with 3 replications and some of their vegetative characters were measured. A cluster analysis was done using seven factors effective on tree texture, which divided cultivars into 3 groups and a separate genotype. Also, another cluster analysis done on the seven factors effective on tree form classified olive cultivars in 3 groups. In short, Manzanilla, Spain, and Amphisis cultivars performed wide oval form and fine-medium coarse texture, so they could be used as background tree, screen, and group planting in green spaces. Roughani, Mishen, Valanolia, Gorgan, Kroneiki, Zard, and Sevillana cultivars showed round form and medium texture which could be used as specimen tree to plant in lawn. Rashid cultivar with long height, long oval form, and coarse texture is suitable as accent, screen, and frame plant.

Keywords*:* Landscape, Olive, Tree form, Tree texture, Vegetative characters.

INTRODUCTION

Urban green spaces, an important component of urban ecosystems, provide many environmental and social services that contribute to the quality of the life in cities (Ducuy and Nakagoshi, 2008). Trees and green plants confer numerous physical and aesthetic benefits in urban environments. Plants use carbon dioxide and release oxygen, and surfaces allow deposition of pollutants. Trees provide shade and their transpiration cools air beneath the canopies, which can mitigate urban heat islands and lower energy consumption for air conditioning. These effects help reduce air pollution levels in urban area. However, in addition to the release of oxygen, green plants emit trace (biogenic) gases, including volatile organic compounds (Karlic and Winer, 2001, Zencirkiran, 2009). Evergreen plants, which keep their leaves throughout the year, have very effective function in interception of pollutants like lead and nitrogen oxides (Trowbridge and Bassuk, 2004).

Olive (*Olea europea* L. family *Oleaceae*) is a perennial evergreen tree believed to have originated in the Syro-Iranian region of Asia Minor. Olive is more salt and drought tolerant than other temperate fruit trees and it is considered less demanding in terms of nutrients and energy inputs than other fruit crops(Gucci and Tattini, 1997; Raina, 1995; Soleimani *et al*, 2010).

The olive is the emblematic tree of Mediterranean regions. Olive farming trends are confined to slopes or fairly ragged lands,

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so the olive occupies important parts of mountains and hills and is characteristic of Mediterranean landscape (Loumou and Giourga, 2003).

Olive trees can also be used for ornamental purposes since they are evergreens with different forms and textures and also can easily bear long periods of drought (Cantini *et al*., 1999; Samaee *et al*., 2003).

Iran has low water resources with saline soils especially in central regions, therefore, it seems that olive can be planted in Iran landscape (green spaces). Thus, this study was carried out in 2006 to evaluate 15 olive cultivars in Isfahan University of Technology (IUT) regarding growth habit, form, and texture to introduce for landscape areas.

MATERIALS AND METHODS

Fifteen olive cultivars were used in this study (Table 1). The trees were 6-years old, and had been planted in a randomized block design with 3 replications in 2000 in IUT. Each block included 7 trees of each cultivar. Drip irrigation system was used. Soft pruning and other cultural practices were carried out on trees each year. In each unit, 3 uniform olive trees were used for measurements. Factors measured included tree height and width, angles between shoots and one year old branches, and also scaffolds and trunk, length of shoots, number of shoots on one year old branches, canopy volume of each tree, length, width, and color of the leaves.

Table 1. Name and proposed origin of olive cultivars that were used in this experiment.[a]

Name of olive cultivars	Origin
Konservolia	Greece
Manzanila	Spain
Spain	Spain
Dezfol	Iran
Shenge	Iran
Blidi	Syria
Rashid	Iran
Valanolia	Greece
Zard	Iran
Kroneiki	Greece
Sevillana	Spain
Rowghani	Iran
Gorgan	Iran
Mission	North USA
Amphissis	Greece

[a] According to Samaee *et al*., 2003.

Measurement of tree height was carried out from land level to the mean of top branches using a rod. Lateral expansions of trees were recorded east-west and north-south with meter and the average was used. Measurement of angle between shoots and one year old branches and also angles between two main scaffolds with trunk were recorded with a large protractor.

For measurement of shoot growth, four shoots on 4 sides of each tree were selected and their length was recorded. Twenty fully expanded leaves from each tree were used to measure leaf area with Leaf Area Meter (Delta-T scan Image Analysis System, Windias software). Samples of 8 fully expanded leaves from shoots of each tree were used to measure length, width, and color. Color was measured by spectrophotometer (Spectra Flash 600). Canopy volumes of the trees were measured according to Westwood (1992). For this purpose, height and width of tree canopy were measured and canopy volumes were calculated by the following formulas:

For trees with the height more than width: $V= 4/3\ \pi\ ab^2$

For trees with the height lower than width: $V= 4/3\ \pi\ a^2b$

Where, a= 1/2 canopy height, b= 1/2 canopy width, and π=3.14. Statistical analysis was employed using SAS program and means were compared using LSD test at 5% probability level (SAS, 2008).

Seven characters effective in tree form and also in tree texture were separated and cluster analysis was carried out with SPSS program using Ward method. Effective characters in tree form included: height, width, ratio of crown height/width, angles between main scaffolds and trunk, angles between shoots and

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one year old branches, number of shoots, and length of shoots. Effective characters in tree texture included: ratio of leaf length/leaf width, leaf area, length of shoots, number of shoots/branch, angles between main scaffolds and trunk, angles between shoots and one-year old branches, and volume of the canopy.

RESULTS

Analysis of data showed that there were significant differences between olive cultivars for all of the measured vegetative traits (Tables 2 and 3). Large differences for most traits shows high genetic variability

Table 2. Mean comparison of vegetative characters for different olive cultivars.[a]

Cultivar	Tree height (cm)	Tree canopy height (cm)	Width extent (cm)	Canopy volume (m^3)	Angle between scaffolds and trunk (Degree)	Angle between shoot and one-year old branch (Degree)	Growth of shoots (cm)	Number of shoots on one year old branches
Konservalia	279.3 $^{c-f}$	236.8 $^{c-e}$	281.5 $^{b-e}$	10.81 $^{b-f}$	76.1 ^{de}	72.6 ^{a}	7.5 ^{ab}	0.94 ^{f}
Manzanila	224.1 ^{g}	183.8 ^{fg}	252.3 ^{ef}	6.67 ^{f}	80.6 $^{b-e}$	63.9 $^{b-d}$	6.4 ^{ab}	3.81 $^{b-e}$
Spain	215.9 ^{g}	179 ^{g}	273.3 $^{b-f}$	6.85 ^{f}	93.3 ^{a}	66 $^{a-c}$	5.3 ^{ab}	4.53 ^{b}
Dezful	243.6 $^{e-g}$	213.7 $^{d-g}$	247.7 ^{f}	7.36 ^{ef}	88.6 $^{a-c}$	65.8 $^{a-c}$	9.3 ^{ab}	2.2 $^{d-f}$
Shengeh	289.3 ^{cd}	253.2 ^{cd}	313.7 ^{a}	13.15 ^{bc}	84.9 $^{a-e}$	69.8 ^{ab}	7.1 ^{ab}	2 ^{ef}
Bleidi	292.6 ^{c}	253.4 ^{cd}	301.2 ^{ab}	13.74 ^{b}	90.3 $^{a-c}$	58.7 $^{c-e}$	8.9 ^{a}	4.34 $^{b-d}$
Rashid	381.7 ^{a}	338 ^{a}	317.4 ^{a}	19.35 ^{a}	94.2 ^{a}	65.2 $^{a-c}$	9.3 ^{a}	4.3 $^{b-d}$
Valanolia	282.6 $^{c-e}$	246.3 $^{c-e}$	260.2 $^{d-f}$	9.15 $^{c-f}$	78.6 $^{c-e}$	47.4 ^{f}	8.5 ^{ab}	4.1 $^{b-e}$
Zard	291.3 ^{c}	259.1 ^{bc}	302.2 ^{ab}	11.32 $^{b-e}$	84.4 $^{a-e}$	56.6 ^{de}	4.3 ^{b}	3 $^{b-f}$
Kroneiki	269.7 $^{c-f}$	240.6 $^{c-e}$	265.3 $^{c-f}$	9.71 $^{b-f}$	92 ^{ab}	51.7 ^{ef}	9.2 ^{a}	2.5 $^{c-f}$
Sevillana	248.6 $^{d-g}$	221.5 $^{c-f}$	265.4 $^{c-f}$	8.61 $^{c-f}$	86.1 $^{a-d}$	63.9 $^{b-d}$	9.3 ^{a}	4.2 $^{b-e}$
Roughani	336.3 ^{b}	298.5 ^{ab}	294.9 $^{a-c}$	13.39 ^{b}	73.1 ^{e}	58.6 $^{c-e}$	6.9 ^{a}	4.4 ^{bc}
Gorgan	266.6 $^{c-f}$	229.3 $^{c-e}$	288.7 $^{a-d}$	9.15 $^{c-f}$	79.7 $^{c-e}$	61.6 $^{b-d}$	9.3 ^{a}	1.5 ^{f}
Mishen	293.2 ^{c}	256.1 ^{c}	289.6 $^{a-d}$	11.93 $^{b-d}$	78.7 $^{c-e}$	51.2 ^{ef}	7.5 ^{a}	4.9 ^{b}
Amphisis	241.2 ^{g}	210.4 $^{e-g}$	288.1 $^{a-d}$	8.75 $^{d-f}$	86.7 $^{a-d}$	64 $^{a-d}$	6.03 ^{ab}	11.7 ^{a}

[a] In each column means followed with the same letters are not significantly different at P= 0.05, using LSD test.

Table 3. Mean comparison of leaf characters for different olive cultivars.[a]

Cultivar	Leaf blade length (cm)	Leaf blade width (cm)	Leaf blade length/width (L/W)	Leaf area (cm^2)	Leaf color (index of a)
Konservalia	6.11 ^{a}	1.14 $^{c-e}$	5.4 ^{ab}	3.53^{ab}	-6.47 ^{f}
Manzanila	4.44 $^{e-g}$	1.09 $^{d-f}$	4.27 $^{d-g}$	2.83 ^{cd}	-7.3 $^{c-e}$
Spain	4.25 ^{fg}	1.04 ^{f}	4.1 $^{e-g}$	2.55 ^{de}	-7.31 ^{cd}
Dezful	5.84 ^{ab}	1 ^{f}	5.86 ^{a}	3.39 ^{ab}	-7 ^{e}
Shengeh	6 ^{a}	1.2 $^{a-c}$	4.85 $^{b-d}$	3.18 ^{bc}	-7.06 ^{de}
Bleidi	4.59 $^{d-g}$	1.24 ^{ab}	3.6 ^{g}	2.9 ^{cd}	-7.65 ^{b}
Rashid	4.95 $^{c-f}$	1.26 ^{a}	3.93 ^{fg}	3.78 ^{a}	-7.83 ^{b}
Valanolia	4.76 $^{d-g}$	1.05 ^{f}	4.67 $^{c-e}$	2.79 ^{cd}	-7.24 $^{c-e}$
Zard	5.11 $^{c-e}$	1.15 $^{b-d}$	4.59 $^{d-f}$	3.18 ^{bc}	-7.09 ^{de}
Kroneiki	4.15 ^{g}	0.86 ^{g}	4.81 $^{b-e}$	2.2 ^{ef}	-8.35 ^{a}
Sevillana	4.77 $^{d-g}$	1.14 $^{c-e}$	4.19 $^{d-g}$	2.86 ^{cd}	-7.08 ^{de}
Roughani	5.23 $^{b-d}$	1.2 $^{a-c}$	4.23 $^{d-g}$	3.72 ^{a}	-7.52 ^{bc}
Gorgan	5.56 $^{a-c}$	1.05 ^{ef}	5.34 $^{a-c}$	2.69 ^{d}	-7.33 ^{cd}
Mishen	5.07 $^{c-e}$	1.04 ^{f}	4.89 $^{b-d}$	2.88 ^{cd}	-7.23 ^{a}
Amphisis	4.48 $^{e-g}$	0.85 ^{g}	5.31 $^{a-c}$	2.11 ^{f}	-5.99 ^{g}

[a] In each column means followed with the same letters are not significantly different at P= 0.05, using LSD test.

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among cultivars studied. Evaluation of trees canopy showed that Rashid cultivar had the largest canopy (19.35 m^3) (Table 2), but Manzanilla and Spain had small canopy volume (6.67 and 6.85 m^3, respectively). There was a significant correlation between tree height and also width extent with canopy volume (respectively, r= 0.95, r= 0.83) (Table 4).

There were significant differences between angles of shoots and one year old branches, and also main scaffolds and trunk (Table 2). Also, Dezful, Rashid, Sevillana and Gorgan cultivars showed high growth of shoots, but Zard cultivar showed lowest amount (Table 2). The number of shoots on one year old branch varied in cultivars, with the highest in Amphisis and lowest in Konservalia (Table 2).

Regarding leaf ratio (length/width), Dezful showed the narrow leaves (5.86) and Bleidi with broad leaves (3.6). The largest and lowest leaf areas belonged to Rashid (3.78 cm^2) and Kroneiki (2.2 cm^2), respectively (Table 3).

Leaf color of olive is generally silver-grey green, but between the studied cultivars there were differences, for example, Kroneiki had the darker color compared to other cultivars (Table 3).

Regarding tree texture, cluster analysis based on the seven traits mentioned previously divided olive cultivars in 3 categories and a separate genotype (Figure. 1). The first group with medium texture was divided into two subgroups: the first subgroup included Manzanilla, Sevillana, Spain and Kroneiki with medium-coarse texture, and the second subgroup included Valanolia, Zard, Mishen, Gorgan, and Roughani cultivars with medium-fine texture. The second group showed coarse texture which included Bleidi and Rashid cultivars with broad and darker leaves and large canopy. The third group showed light (fine) texture and included Dezful, Shengeh, and Konservalia cultivars which had narrow and lighter leaves. Amphisis had also fine texture, but because of high number of

Table 4. Correlation of some measured characters in olive cultivars.

	Length of leave	Width of leave	Length/Width of leave	Leaf color	Growth of shoot	Tree height	Tree width extent	Canopy volume	Tree canopy height	Height/extent of canopy	Trunk diameter
Length of leave	1	0.35	0.61*	0.31	0.11	0.24	0.24	0.2	0.18	0.11	0.01
Width of leave		1	-0.53*	-0.13	-0.03	0.59*	0.55*	0.64**	0.6*	0.44	0.54*
Length/width of leave			1	0.4	0.16	-0.26	-0.23	-0.32	-0.31	-0.25	-0.41
Leaf color				1	-0.35	-0.38	-0.08	-0.34	-0.41	-0.5	0.32
Growth of shoot					1	0.24	-0.17	0.2	0.32	0.56	0.07
Tree height						1	0.7**	0.95**	0.97**	0.84**	0.77**
Tree width extent							1	0.83**	0.7**	0.27	0.8**
Canopy volume								1	0.95**	0.75**	0.89**
Tree canopy height									1	0.87**	0.8**
Height/extent of canopy										1	0/59*
Trunk diameter											1

*= Significant at P= 0.05, **= Significant at P =0.01

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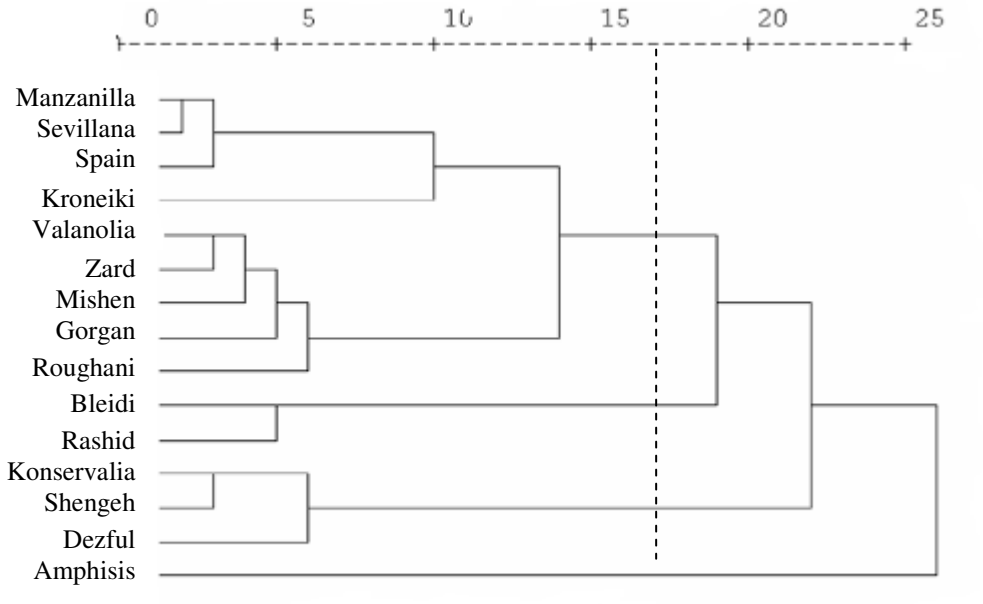

Figure 1. Dendrogram of genotype grouping using cluster analysis (Ward method) of olive cultivars based on characters that are effective on tree texture.

shoots and dense canopy, made an independent group (Figure 1).

Cluster analysis based on traits indicating tree form classified the genotypes in 3 groups: the first group with wide oval form included Manzanilla, Spain, and Amphisis cultivars. The second group with long oval form included only Rashid cultivar, and the third group with rounded (spherical) form included the other 11 cultivars (Figure 2).

DISCUSSION

Genetic diversity between olive cultivars due to differences between cultivars for all morphological characters could be the base of various applications of olive cultivars in landscape (Mobli *et al*., 2005; Samaee *et al*., 2003).

The form of a plant is important because all landscape design is fundamentally based on the arrangement of shapes or forms. Angle of branches, especially the angle between main scaffolds and trunk, has an important role in determination of tree form (Scarfon, 2007). Thus, Amphisis and Spain with wide such angles exhibited wide oval form. Rashid cultivar, in spite of wide angles between main scaffolds and trunk, had long oval form because of considerable vertical growth of scaffolds and branches (Figure 2).

Length of current branches and the number of shoots are effective factors in determination of tree form (Nelson, 1975). Rapid growth of the shoots of Dezful, Valanolia, and Gorgan together with lower number of shoots, which may be due to stronger apical dominance, allowed these cultivars to produce rounded form canopies.

Texture in plants refers to the arrangement and characters of its component parts. It may be the result of a pattern of lines or the scale of the leaf or twig patterns. Plant textures are relative and generally classified as fine, medium, or coarse (Bell, 1993; Scarfon, 2007).

The texture of trees with large undivided leaves or thick branches has been classified as coarse, while the texture of trees with small pinnate leaves or with thin branches is considered as fine (Serpa and Muhar, 1996).Color is the another important factor in determination of plant texture (Serpa and

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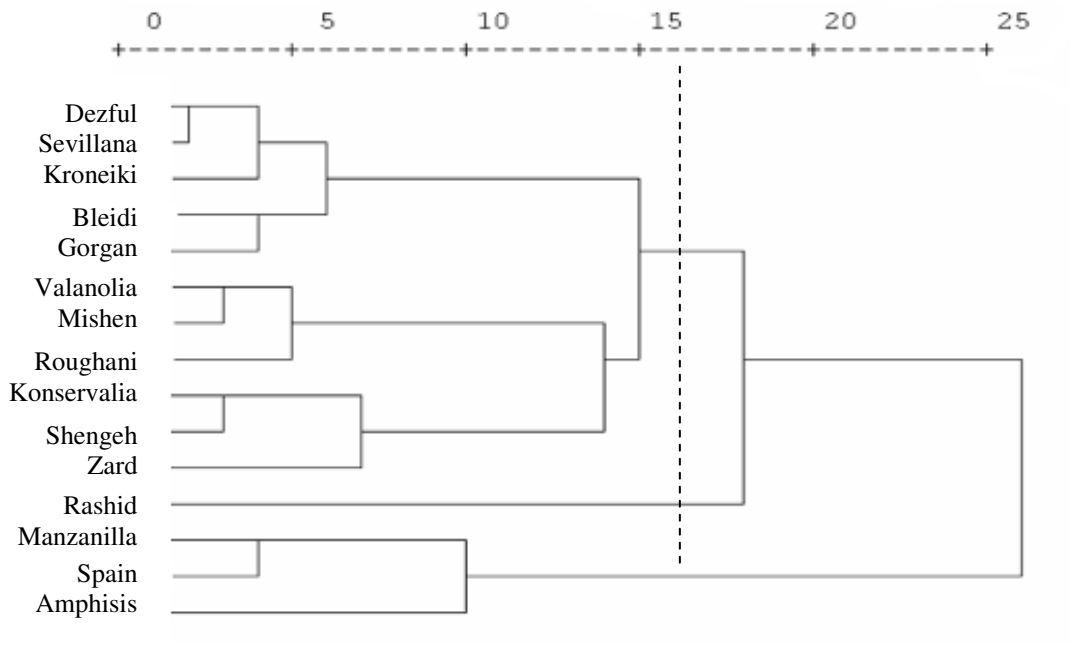

Figure 2. Dendrogram of genotype grouping using cluster analysis (Ward method) of olive cultivars based on characters that are effective on tree form.

Muhar, 1996). The color of a tree is mainly influenced by the color of its leaves. Light color leaves shows fine texture and dark color result in coarse texture (Nelson, 1975).

In this study, comparison of leaf factors showed that the highest ratio of length to width of leaves belonged to Dezful, Konservalia, and Gorgan, while cultivars Bleidi and Rashid had the lowest ratio and, compared to other cultivars, coarser texture.

In this research, Amphisis cultivar with narrow and light color leaves showed the fine texture in comparison to Rashid and Bleidi with darker and extensive leaves which resemble coarse texture.

Cantini *et al*. (1999) founded variations between leaves of olive cultivars in their shape and color like long, narrow and light-green leaves as the cultivar Gremig nolo di Bolgheri or long, large, dark-green, as the cultivars Leccione and Allora. Such variations also observed between cultivars used in this study. This variation helps designers to use olive in ornamental gardens (Cantini *et al*., 1999).

Form, texture, and color all have aesthetic characteristics capable of producing certain effects in landscape (Scarfon, 2007). Plants with round and spreading form could apply for lawn tree and also for screen (Ingels, 2004). Round is the most common plant form and smaller forms of round plants can be placed individually as a specimen and when repeated along the edge of a border, rounded plants create repetition (Scarfon, 2007).

Based on the results, Manzanilla, Spain, and Amphisis cultivars exhibit wide oval form and fine-medium coarse texture, therefore, they could be used for background, screen, and group planting. Roughani, Mishen, Valanolia, Gorgan, Kroneiki, Zard, and Sevillana cultivars showed round form and medium texture, suitable as specimen tree to plant in lawn.

Olive tree is also a good selection for accent plant (Dolezal, 2002). Rashid cultivar with long height, long oval form, and coarse texture could apply for accent plant and for screen and frame.

There was a significant correlation between tree height and trunk diameter at the soil level (r= 0.77) (Table 4). Sullivan (2003) obtained the same result in olive

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cultivars and suggested that trunk diameter could be used for initial screening of tree growth. Trunk diameter has the advantage of being an easier parameter to measure than tree height.

In conclusion, olive as the evergreen tree with good tolerance to salt and drought conditions and various cultivars with differences in growth habit, form, and texture is a good selection to apply in landscape. On this basis, there are different olive cultivars that can be used for background, screen, frame, group planting, accent plants, and as specimen trees (Zencirkiran, 2009). In addition, the other olive cultivars and different types of pruning could affect olive applications in landscape and need more studies.

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REFERENCES

1. Bell, S. 1993. Elements of Visual Design In The Landscape. E and FNSPON. An imprint of Chapman and Hall, London. 212P.
2. Cantini, C., Cimato, A. and Soni, G. 1999. Morphological Evaluation of Olive Germplasm Present in Tuscany Region. *Euphytica*, **109:** 173-181.
3. Dolezal, R. J. 2002. The Complete Guide to Choosing Landscape Plants. Choosing and Planting Garden Trees and Shrubs. International, Inc. and Dolezal, USA. 312p.
4. Ducuy, P. and Nakagoshi, N. 2008. Application of Land Suitability Analysis and Landscape Ecology to Urban Green Space Planning in Hanoi, Vietnom. *Urban Forest and Urban Green*, **7:** 25-40.
5. Gucci, R. and Tattini, M. 1997. Salinity Tolerance in Olive. *Hortic. Rev.,* **21:** 177-213.
6. Ingels, J. E. 2004. *Landscaping Principles and Practices*. 6th Edition, Thomson-Delmar Learning, USA. 498P.
7. Karlic, J. F. and Winer, A. M. 2001. Plant Species Composition Calculated Leaf Masses and Estimated Biogenic Emission of Urban Landscape Types from a Field Survey in Phoenix, Arizona. Landscape. *Urban Plan.,* **53:** 123-134.
8. Loumou, A. and Giourga, C. 2003. Olive Groves: The Life and Identity of the Mediterranean. *Agr. Human Values,* **20:** 87-95.
9. Mobli, M., Baninasab, B. and Dehdari, A. 2005. Evaluation of Genetic Diversity and Grouping of Some Olive Cultivars by Vegetative Characters. *Proceeding of 4th Iranian Horticultural Science Congress*, Nov. 8-10, Mashhad, 122.
10. Nelson, W. M. R. 1975. *Landscaping Your Hom*e. Board of Trustees of The University Of Illions, USA. 246P.
11. Raina, B. L. 1995. Olive. In: "*Handbook Fruit Sci. Tech.*", (Eds): D. K. Salunkhe and S. S. Kadam, Marcel Dekker public, New York, 465-473.
12. Samaee, S. M., Shobbar, Z. S., Ashrafi, H. and Hosseini-Mazinnani, M. 2003. Molecular Characterization of Olive Germplasm in Iran by Use of Random Amolified Polymorphic DNA (RAPD) and Correlation with Phenotypic Studies: Preliminary Results. *Acta Hort.,* **623:** 169-175.
13. SAS Institute Inc. 2008. *SAS/STAT 9.2 Users Guide.* SAS Institute Inc., Cary, NC.
14. Scarfon, S. C. 2007. Professional Planting Design. An Architectural and Horticultural Approach for Creating Mixed Bed Plantings. John Wiley and Sonc, Inc, USA. 272P.
15. Serpa, A. and Muhar, A. 1996. Effects of Plant Size, Texture and Color on Spatial Perception in Public Areas: A Cross-cultural Study. *Landscape. Urban Plan.,* **36:** 19-25.
16. Soleimani, A., Talaie, A. R., Naghavi, M. R. and Zamani, Z. 2010. Male Gametophytic and Sporophytic Screening of Olive Cultivars for Salt Stress Tolerance. *J. Agr. Sci. Tech.,* **12**: 173-180.
17. Sullivan, G. 2003. Olive Variety Assessment for Subtropical Summer Rainfall Regions. Rural Ind. Res. Dev. Corporation, Australia, 1-18.
18. Trowbridge, P. J. and Bassuk, N. L. 2004. Trees In The Urban Landscape. Site Assessment, Design, and Installation. John Wiley and Sons, Inc., Hoboken, New Jersey, 232P.
19. Westwood, M. N. 1992. *Temperate-zone Pomology Physiology and Culture*. 3ed

[DOR: 20.1001.1.16807073.2015.17.3.1.6]

Edition, TIMBER Press, Portland, Oregan. 523P.
20. Zencirkiran, M. 2009. Determination of Native Woody Landscape Plants in Bursa and Uludag. *African. J. Biotech.,* **8:** 5737-5746.

کاربری ارقام زیتون در فضای سبز براساس فرم و بافت آنها

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چکیده

زیتون یک درخت هیشه سبز چندساله است که سازگاری خوبی با شرایط نامساعد محیطی از قبیل خشکی و شوری خاک نشان می دهد. در سال های اخیر، تمایل به استفاده از این گیاه در فضای سبز بیشتر شده است. این مطالعه بر روی ۱۵ رقم زیتون و به منظور بررسی عادت رشد، فرم و بافت هر یک با هدف کاربرد در فضای سبز انجام شد. در سال ۸۶ درختان زیتون ۶ ساله از ۱۵ رقم متفاوت زیتون که در قالب طرح بلوک کامل تصادفی و در ۳ بلوک در دانشگاه صنعتی اصفهان کشت شده بودند برای این مطالعه در نظر گرفته شد و برخی خصوصیات رویشی و مورفولوژیک آن ها مورد بررسی قرار گرفت. آنالیز خوشه ای برای ۷ فاکتور مؤثر در بافت درختان انجام شد و بر این اساس ارقام در ۳ گروه و یک ژنوتیپ جداگانه قرار گرفتند. هم چنین آنالیز خوشه ای دیگری برای ۷ صفت مؤثر در فرم درخت انجام شد که بر این اساس ارقام زیتون در ۳ گروه دسته بندی شدند. در مجموع می توان گفت ارقام مانزانیلا، اسپانیا و آمفی سیس با فرم بیضی عرضی (گسترده) و بافت سبک تا متوسط برای کاربرد به عنوان درختان تک نما، برای پوشش دادن و نیز کاشت گروهی در فضای سبز مناسبند. ارقام روغنی، میشن، والانولیا، گرگان، کرونایکی، زرد و سویلانا با فرم رشد گرد و بافت متوسط می توانند به عنوان درخت تک نما برای کاشت در چمن به کار روند. هم چنین رقم رشید با ارتفاع زیاد، فرم بیضی طولی و بافت سنگین، قابلیت کاربری به عنوان درخت تأکیدی، برای پوشش دادن و نیز قاب گرفتن را دارد.

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