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The Importance and Usage of Grapevine as Landscaping Elements

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ABSTRACT

Natural living spaces on earth are shaped by human activity, changed through time, and the landscape characters of areas are established based on the usage. The landscape character of an area is a heritage that develops in ages and connects the past to the future. In this context, in order to ensure that the historical and cultural landscape values of regions are preserved as parts of heritage and handed over to the future generations, it is highly important that such values are used in adaptation to the needs and demands of our time and promoted. In this study, the grapevine (*Vitis* spp.) plant with a high economic value, inherited from ancient civilizations, produced in many regions in Turkey where it shapes the terrain, was introduced, and the importance of grapevine gardens was analysed in terms of cultural landscaping. The problem investigated in this study is that grapevines and grapevine gardens that establish a region's landscape character are not sufficiently utilized or sustainably used today. Therefore, the importance of grapevines and grapevine gardens, which provide genuine character for landscaping was presented, and in order to ensure that they are passed down to future generations, possibilities to use these in landscaping designs were determined by providing examples others.

Keywords: Grapevine garden, Landscape design, Heritage, Cultural landscape

INTRODUCTION

The original texture of the earth changes in time due to human and natural activities. Consequently, unique landscape characteristics which later become the subject matter of "cultural landscape" studies are created and they form the natural and cultural heritage of our civilisation. Similar to the rest of the world, ensuring the persistence of that texture which has been formed within thousands of year and preserving it to be transferred to next generations are important problems for various regions in Turkey. Particularly landscape areas including elements such as historical ruins that have managed to survive until present day are being either destructed or being suppressed by modern space use methods (Antrop, 2000; Huba, 2004).

The best example for the adverse effects of human on the environment is the change in landscape characteristics on rural lands as a result of sudden changes in land use preferences. These mentioned changes of preferences not only disrupt the ecological balance and the physical features of the landscape but also destruct the unique landscape elements that enable the inhabitants develop identity. The changes in land use that take place without being planned in details also change the characteristics and aesthetic of the landscape beside changing its appearance (Krivosudský, 2014). Within this context, "Grapevine Gardens", which have been used from ancient civilizations to the present day for various purposes and enabled regions develop their identities in terms of history and culture, are important landscape elements but unfortunately they have been the victims of modern lifestyle. The plant "Grapevine" is considered as an important landscape element as it shapes the regional landscape physically, affects the social structure and develops identity for the area (Figure 1).



Figure 1. Vertical Gardens, In Tech Open, Babylon (Anonymous, 2013).

Besides providing characteristics to the region with the production patterns it creates in rural areas and different figures it forms on the land, grapevine is an important economic resource (Figure 2).

A.  B. 

Figure 2. Vinyards. A- Malaysia grape vines growing in topsoil, covered in lapilli, La Geria, Lanzarote, Canary Islands. (Anonymous, 2014 a), B- Aerial view of vineyards in Markgräflerland, Baden, Germany. (Anonymous, 2014 b)

The main research question of the study is that the grapevine gardens that provide characteristics to the regional landscape is not being used efficiently and sustainably. Within this scope, the study presents different use opportunities and the importance of "grapevine plant", which has had economic value from the ancient civilisations to the present, considering cultural landscape. It is aimed to offer suggestions on the use of grapevine gardens, which provide unique characteristics to the area by changing its physical appearance, so that they can contribute to a large segment of the society in terms of both education and recreation through sociocultural activities. In this regard, the use of grapevine from the past to the present; its contribution to the cultural landscape and the way how it determines the characteristics of the landscape have been set forth using examples and suggestions have been offered in order to ensure its sustainable use.

MATERIALS AND METHODS

The main materials of the study are "grapevine plant" itself and "grapevine gardens". Grapevine species (*Vitis* spp.) belonging to Vitaceae family are of woody and climbing plants and they are widespread on both hemispheres. The grape varieties of the cultivated grapevine (*Vitis vinifera* L.) have been originated from wild species through breeding as a result of hundreds of thousands-year natural selection and tens of thousands-year deliberate selection. It has been one of the cultivated plants of Turkey since the ancient times. It grows nearly everywhere except for a part of Black Sea Region and high grounds in the east. Its native lands are Anatolia and Caspian Sea Region (Ağaoğlu, 1999; Karamanoğlu, 1974). Grapevine types are recognised according to the position of the clusters and tendrils, which is opposite the leaves. *Vitis sylvestris* Gmel and *Vitis caucasica* Vav. can be given as examples for wild grapevine species. The wild ones generally grow on stream beds, valleys, forest lands and around the lakes in our country. The grapevine called ARG 9 is a crossbreed of vinifera and

rupestris and it is important as a decoration plant (Ağaoğlu, 1999). The cultivated one (*Vitis vinifera* L.) can grow up to 20–30 meters by either spreading on the land at the absence of any pillars or by clinging with its tendrils at the presence of any support. The trunk needs a pillar due to its twisted, flexible, holding and climbing characteristics (Çelik, 2007).

RESULTS

When cultivated plants are considered, grapevine plant growing has taken an important place after grain agriculture in Turkey and is called "grapery". Grapery is carried out on the 2% of the total cultivated area in Turkey and when the total area devoted to agriculture of the perennials considered, the amount is 19 % (TÜİK, 2007). Moreover, Turkey comes 4th in terms of vineyards and 6th in terms of fresh grape production all around the world. The products of grapery can be listed as seedless and seed bearing raisins, table grapes, fermented grape juice, wine, alcohol, vinegar, molasses, churchkhela, pestil (dried layers of grape pulp) and bastık (sheet of grape pulp dried under sun). Since vineyards can be planted on ridges that cannot be used for agricultural activities they both provide an important source of living for the local people and protect these ridges against erosion (Aktaş, 2002).

According to the 2015 data by The Ministry of Food, Agriculture and Livestock, the total amount of vineyards (devoted to table grape, raisin, seedless and seed bearing grape, wine grape production) is 4,619,557 decares out of the total cultivated land amount, which is 236,486,338.14 decares. In other words, grapevine cultivation has tended to decrease within ten years and has declined at the rate of 1.95 % (TÜİK, 2015).

The Characteristics of Grapevine Plant as a Landscape Element

Besides being used for cooking, drink production and for medical purposes, grapevine stands out with is use as design plant throughout the history. Therefore, in addition to its economic and ecological value, its use is important in terms of urban aesthetic. The most important design functions of grapevine can be listed as follows: It is ideal to be used as shade in order to be protected from sun during summer. It provides aesthetic views at the arbours and building entrances with its climbing characteristic and the changes in leaf colour depending on the season. The leaves of grape varieties juice colour of which is red have several bright tones of red during autumn. *Vitis riparia* Michx., which is one of the oldest pure rootstocks and which has a total leaf area exceeding 600 cm^2 is widely used as hedge plant or creeping plant particularly in governmental agencies' gardens. The species Isabel (*Vitis labrusca* L.), which grows particularly in Black Sea Region and is relatively more resistant to fungus diseases, is commonly preferred on arbours (Ağaoğlu, 1999).

Berry colour, berry size and cluster size of cultivated grapevines (*Vitis vinifera* L.) differ from one another. The berries might be yellowish green, green , yellow, straw yellow, golden, amber, greenish yellow, pink, red, reddish purple, deep red, dark violet, violaceous black, fuzzy dark grey, bluish black and black in colour. Especially the leaves of wine grapes, which have dark coloured berries, change colour due to anthocyanin (a kind of pigment) accumulation before they fall and they provide a beautiful view during autumn. The leaves of uncoloured grapevine species change from various tones of green into yellow tones whereas the coloured ones turn into reddish purple dominantly. In the Black Sea Region, grapevines are grown especially by being winded around cherry laurel tree. Cultivated grapevines are also quite prone to be shaped desirably by pruning. It is possible to form large numbers of training systems by utilising this characteristic. Most commonly used local training systems are goblet, prop, iznik and spur etc. High culture training methods, on the other hand, are unilateral or bilateral cordon, single or double guyot, sylvoz, lenz moser, arbour and kniffen etc. The characteristic of the cultivated grapevine which is being prone to be harshly pruned in winter might be used as an advantage so that any desired shape can be applied to it on landscape (Çelik, 2007).

The grapevine species that have been cultivated to be used as decoration plant is Roger's Red. The most important characteristics of this cultivar are that they have ideal creeping potential to be used as fence and that their opaque green leaves turn into an attractive bright red in autumn. Although their small seeded fleshy fruits have no commercial value, they are quite attractive for birds and wildlife. Roger's Red was first selected and

included in the collection as a kind of wild grapevine in 1983 in the arboretum of California University by Roger Raiche. The plant was grown in the Sonoma rural (8 miles from California to the West) with the other types of wild grapevines that climb to oak and redwood trees. The plant was remarkable with its bright orange-red coloured leaves. The leaf shape and size was also the same as *Vitis californica* (Benth.) grown in the same region. Canes cut from Roger's Red were planted on the field in the arboretum in 1984 and it started to be grown in commercial plantations by 1990. The DNA marker reports of this cultivar was first prepared by Dangl et al. in 2010. Roger's Red is known as variety, the leaves of which turns into red in autumn, of the natural species *Vitis californica* (Benth.). However, it is a combination of the species *Vitis californica* (Benth.) and *Vitis vinifera* L. in fact (Dangl *et al.,* 2010).

The History of Grapevine and Grapevine Gardens

The oldest findings related to the grapevine belong to the cretaceous of the Mesozoic era, which is 140 million years ago (Hoffmann, 1970). Wild grape seeds were found within the layers dated to 11.000 B.C in Franchthi Cave in Argolis Region of Greece. Besides, wild grapevine marks were found in the layer dated to 9000 B.C on Çayönü settlement located in the South-eastern Anatolia Region of Turkey. The first archaeological remarks showing that wild grapevine plant had been used by the ancient people belong to Mesolithic-Neolithic era (Sazcı, 2007). Descriptions of grapevine growing and winemaking are found on Egyptian hieroglyphics (2400 B.C). When the history of grapevine on Anatolia is researched, it is possible to say that the records begin with the very first civilisation. On most of the works inherited from The Hittites, the first civilisation to establish an organised state on Anatolia (3000 B.C), grapevine plant, its fruit and vine were figured (Orhan *et al.,* 2011). When the use of wild grapevine fruits (both fresh, dried and in wine) considered, grapevine is estimated to be domesticated after 6000 B.C (Ağaoğlu, 1999; Orhan *et al.,* 2011).

The name Engürü, which is the initial name for Ankara, means grape in Persian and it was given by Midas (800 B.C), the King of Phrygia. Ankara and its nearby settlements have been of the most important regions in grapevine growing throughout the history. It is also known that vine cultivation have been carried out on several parts of Anatolia. Menua (Semiramis, Samram) irrigation canal in Van dated to the Urartian (900–600 B.C) and the surrounding grapevine gardens have been described on ancient documents. The traditions and beliefs that had transferred from the Hittites to the Lydian first, transferred to Crete then and later to the Greek civilisation. Dionysus, the son of Zeus, is considered as the protector of vineyards and the inventor of wine in Greece. Traditional grape harvest feasts are accepted to have transferred from Anatolia to Greece by ancient historians. Grapevine figure is frequently used in drawings as Jesus described himself as grapevine and his blood as wine. The figures of grapevine and its leaves can be commonly found on the coins remaining from Archaic, Classical and Hellenistic periods. It is known that wine and grapevine commonly appeared in social life in Byzantine period as well. Grapevine leaves and branches were used as ornaments on a Byzantine marble column drum which is dated to 5th or 6th centuries A.D and exhibited at Istanbul Archaeology Museum (Orhan *et al.,* 2011).

Hanging gardens of Babylon were said to have been built in the ancient city of Babylon, near present-day Hillah in Iraq. According to one legend, Nebuchadnezzar II built the Hanging Gardens for his wife, Queen Amytis. Quintus Curtius Rufus (1st century A.D) and Cleiarchus the historian of Alexander the Great, in the 4th century B.C mentioned about the gardens in their works. Strabon (64 B.C–21 A.D) also describes the gardens in one of his paragraphs, which is thought to belong the lost part of Onesicritus as follows: "Babylon, lies on a quite wide plain and it is surrounded by 385 stades of walls. These walls are 32 feet thick and the height of the towers vary from 50 cubits to 60 cubits. The passages on the walls are wide enough to enable 4 carriages pass at the same time. That's why the Hanging Gardens have been included in 7 wonders of the World. The gardens have rectangular shape and each side is 4 plethra in length. Irrigation water is carried by the workers who are employed just for this duty from Fırat River which has as much width as one stadium and which passes through the city and by the garden". The roots of the plants on the gardens were attached on the ground and they grow on a system designed as arched vaults, in other words the plants grow suspended in the air. The gardens used to include plenty of trees and blooming plants so that they arouse joy and pleasure in watchers. This human-made arable field lies over the passers-by along the vaults. The aqueduct existing in the structure carries water from

highlands. It enables water flow down properly along the slope. However, no archaeological evidence on these gardens has been found until now. Although the gardens are estimated to be lying buried under the river Fırat, it is impossible to unearth the ruins safely. On the other hand a latest theory claims that Sanherib, the Assyrian King, (reigned between 704-681 B.C) had suggested the gardens to be built for his palace in Ninova. Dalley bases his mentioned arguments upon the latest developments with the decoding of the Akkadian inscriptions (Goor, 1966; Anonymous, 2014c).

The Hanging Gardens are the ancestors of the vertical gardens the indoor use of which is rapidly increasing in modern cities. This garden style has been inspired, developed and used in different shapes until now (Timur and Karaca, 2013).

DISCUSSION AND SUGGESTIONS

On the regions that are important in terms of history and culture and on which special plant species can be grown due to the lands' different natural characteristics the resources should be used in adaptation to the needs and demands of our time so that they can be preserved. When their social contribution is set forth, the quality of these unmovable values and the way that they can be used in the present time shall be determined. Grapevine is a plant that should be considered as cultural heritage with its natural and cultural qualities stated in the study. But unfortunately, a close social encounter cannot be carried out today because technology occupies much of the daily life and the growing of the plant has turned into a branch of industry. Contrary to this, in many countries educational and touristic organisations have been held in order to enable people get acquainted with the plant and see how it has been grown (Figure 3).



Figure 3. Vinyards educational trip, Athens, Georgia (USA), May. 2014.



Figure 4. Georgia Botanical Garden, (USA), September. 2014.

The identity of vineyards gradually change as technology defeats traditional agricultural activities. However, people who get bored of monotonous city life still prefer rural lands for tourism and recreational activities (Figure 4). Grape harvest activities on Bozcaada for instance, attract attention and reinvigorate the

economy of the region. Such kind of activities should be popularised all around the country. In the meantime, vineyard trips for particularly, primary school pupils might be effective in arousing interest in them on the nature; in familiarising them with agricultural activities and on ensuring the grapery culture be transferred to the next generations.

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