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# Plant biodiversity and values of cultural landscapes in Cyprus

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ABSTRACT

The Mediterranean region is one of the richest regions in the world for wild and cultivated species. It also represents an area formed from diverse cultural, historical, geographical and climatic conditions. Cyprus is the third largest island within the Mediterranean Basin. It harbors a variety of ecosystems including pine forests, garrigue, maquis, rocky areas, and coastal dunes. The island has hosted many different cultures and it is known for the natural beauty of its rural areas. Traditional rural landscapes in Cyprus are shaped by geographical setting, natural processes and cultural modifications over many years. Traditional rural landscapes are combined of agricultural, cultural and natural uses of the land. Both residents (Traditional houses) and their gardens are interconnected, reflecting regional social cultures. Traditional house landscape designs should be compatible with local ecological and cultural heritage. In this research, ornamental plants and edible plant varieties were identified in the Güzelyurt (Morphou) region of Cyprus during 2015. A total of 60 traditional house gardens were visited and 81 different ornamental plant species have been recorded. The most commonly used ornamental plant species were *Rosa* spp. L., *Jasminum officinale* L. and *Cycas revoluta* Thunb. According to results a total of 35 different types of edible plants were recorded growing within the home gardens of Güzelyurt region, from these most of them was fruit trees. With this research, we found that traditional house gardens reflect the characters and culture of the local people, small scale gardening or kitchen gardens are part of the culture.



## 1. Introduction

Cyprus is the third largest island in the Mediterranean region with its diverse flora and fauna, and it is harboring rich history and culture. The vegetation of Cyprus is formed by typical Mediterranean types: The coniferous forest, the maquis, and the garrigue together with salt marshes, sand dunes, natural wetlands, stone walls and mountain streams. It is known that in Cyprus about 2000 plant taxa were recorded as native or naturalized (Della et al., 2006).

There are several definitions for the term “cultural landscapes” (Wu, 2010). However cultural landscapes can be defined as long term interactions between people and landscape. Cultural landscapes have resulted in valued landscapes which can be characterized by unique agricultural systems and these are also called traditional cultural landscapes. There is an increasing concern on characteristics and values of traditional cultural landscapes which have been slowly disappearing or are threatened in many places of the world (Bürgi et al., 2017). Understanding the characteristics of rural settlements and their relationship with nature-culture is fundamental. It is known that landscapes are changing by years due to the expression of dynamic interaction between natural and cultural forces within their environment (Antrop, 2005). There is an increasing recognition of the necessity to include the values and priorities of people in any activity of natural or cultural resources conservation. Likewise, cooperation between actors of nature and cultural heritage conservation has been increasing recently (Plieninger et al., 2006). Recent decades have observed unprecedented landscape change. Most of these changes have been brought by human impact on the environment, and immoderate exploitation of resources (Vaz, 2016).

Cultural landscapes are at the interface between nature and culture, tangible and intangible heritage closely woven net of relationships, the essence of

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culture and people's identity. Cultural landscapes are a focus of protected areas in a larger ecosystem context, and they are a symbol of the growing recognition of the fundamental links between local communities and their heritage, humankind and its natural environment (Rössler, 2006). It is also known that the quality of life and well-being of humans can be increased by ornamental plants around the living area (Hall and Dickson, 2011).

One of the most important components of cultural landscapes is home gardens. Home gardening can be defined as "cultivation of small portion of land which may be adjacent to the household or walking distance of family home (Laleci and Özden, 2017; Galhena et al., 2013). It is known that home gardens are subject to "heritage value of home gardens and associated with traditional ecological knowledge, also it is "place for creating and enhancing social networks" (Calvet-Mir et al., 2012). Home gardens are supplying food for garden owners; also gardening helps people to recover from everyday life's stress, anxiety and fatigue (Kaplan and Kaplan, 1990). In addition, the interaction with nature has potential benefits on human health (Frumkin, 2003; Yeh et al., 2008).

Cyprus flora is not only shaped by its topography or geographical position; it is also affected by regional social culture. There are a few researches on edible plant species in Cyprus and also there has been few researches on home gardens in Cyprus (Özersoy and Fuller, 2016; Gökçebağ and Özden, 2017; Laleci and Özden, 2017; Ciftcioglu, 2017). Considering lack of knowledge on rural home gardens in rural areas of Cyprus, this research has been conducted in Güzelyurt region, which is one of the most important rural area within the north-western part of the Cyprus Island. Accordingly, the aim of this research was to document ornamental plants and home growing edible plant varieties in traditional house gardens within the Güzelyurt area.

## 2. Material and methods

### 2.1. Study area

This research has been carried out for the detection of ornamental plants located in residential gardens in the Güzelyurt (Morphou) area in Cyprus. Cyprus has a typical Mediterranean climate condition. Güzelyurt (Morphou) region is situated in the western part of Northern Cyprus. The area is surrounded by citrus groves and it is famous for citrus fruits. Güzelyurt (Morphou) area comprises agricultural ecosystems, semi-urban areas, rural areas and coastal zone. It is known that around 56 % of the area is covered with agricultural land (MANRSPD, 2011). There are around 5712 residential homes in Güzelyurt region, this number includes Güzelyurt center and surrounding villages. According to 2011 population census there are 30037 inhabitants are living within the area (SPO, 2013). Map showing the Güzelyurt region were shown in Fig. 1.


**Fig. 1:** Map showing the Güzelyurt region

### 2.2. Methods

Observation of home gardens and interviews of home garden owners are the sources of data for this study. A questionnaire is used to collect data from the homeowners. A total number of 60 residential gardens were visited. Home gardens were usually comprised small front gardens which were consist of small sitting area together with ornamental vegetation and larger size back yards together with edible plant vegetation. The surveys were conducted in central Güzelyurt and in surrounding five different villages. Research has been carried out in September 2015 until January 2016. Ornamental plants identified by using Johnson (2002). During the survey homeowners were asked about the common name of each plant species. All the plant species for each residential garden has been entered data sheets, the most common plant species determined after the data analysis. Additionally, homeowners were questioned about their home growing edible plant species and their culinary or medicinal value.

## 3. Results and discussion

A total of 81 different species of ornamental plants were determined in during the surveys (Appendix 1). The most commonly used plant species were rose (*Rosa* spp. L.), Jasmine (*Jasminum officinale* L.) and Cycas (*Cycas revoluta* Thunb.) plants. During this research, edible plant species were also recorded. According to results a total of 35 different types of edible plants were recorded growing within the home gardens of Güzelyurt region. From the edible plant recordings eight different vegetable species, 21 different varieties of fruits and six different types of herbs were recorded. The most common vegetables were lettuce (*Lactuca sativa* L.) (18.3 %), green pepper (*Capsicum* spp.) (10%) that were shown in Table 1.

Most widely used herb species in home gardens of Guzelyurt region, which are also used in local cuisine, were mint (*Mentha spicata* L.) (15 %) and parsley (*Petroselinum crispum* (Mill) Fuss) (10 %) that were shown in Table 2. Almost all home garden owners who were growing mint were aware of the health benefits of the mint.

**Table 1:** List of commonly grown vegetables, their botanical name and their use

| Vegetables | Botanical Name | Family Name | Use Category |
|---|---|---|---|
| Onion | *Allium cepa* L. | Amaryllidaceae | Food |
| Lettuce | *Lactuca sativa* | Asteraceae | Food |
| Eggplant | *Solanum melongena* | Solanaceae | Food |
| Pepper | *Capsicum annum* | Solanaceae | Food |
| Carrot | *Daucus carota subsp. sativus* | Apiaceae | Food |
| Spinach | Spinacia olareceae | Amaranthaceae | Food |
| Pumpkin | *Cucurbita spp.* | Cucurbitaceae | Food |
| Garlic | *Allium sativum* | Amaryllidaceae | Food/Herb |

**Table 2**: List of commonly grown herbs, their botanical name and their use

| Herbs | Botanical Name | Family Name | Use Category |
|---|---|---|---|
| Mint | *Mentha spicata* L. | Lamiaceae | Herb/Tea |
| Parsley | *Petroselinum crispum* (Mill.) Fuss | Apiaceae | Herb |
| Sage | *Salvia officinalis* L. | Lamiaceae | Herb/Tea |
| Cress | *Lepidium sativum* L. | Brassicaceae | Herb |
| Thyme | *Thymus* spp. | Lamiaceae | Herb/Tea |
| Coriander | *Coriandrum sativum* L. | Apiaceae | Herb |

Olive trees (*Olea europaea* L.) (46.6 %), citrus trees (*Citrus* spp.) (30 %) and fig (*Ficus carica*) (26.6) were the most common fruits trees in home gardens of Guzelyurt that were shown in Table 3. It is known that olive and olive oil are the historically important agricultural product for Cyprus Island (Makhzoumi, 1977; Kapellakis et al., 2008; Özden and Hodgson, 2017) and olive growing is part of the Cypriot culture. During the surveys, it is noted that the homeowners were aware of cardiovascular benefits of olive oil. Also, the residents were aware of the Vitamin C content and health benefits of citrus trees.

When we look at the results, fruit trees are more commonly produced within the traditional home gardens. The vegetables and herbs were much less planted than the fruit trees. In general, most of the homeowners were producing fruits due to their characteristics of vitamin and mineral resources. Most of the fruit trees were subtropical and there were also tropical fruit trees growing in Cypriot rural villages.

**Table 3:** List of commonly grown fruits, their botanical name and their use

| Fruits | Botanical Name | Family Name | Use Category |
|---|---|---|---|
| Apple | *Malus pumila* Miller, 1768 | Rosaceae | Food |
| Apricot | *Prunus* spp. | Rosaceae | Food |
| Banana | *Musa* spp. | Musaceae | Food |
| Fig | *Ficus carica* L. | Moraceae | Food |
| Grape | *Vitis vinifera* L. | Vitaceae | Food |
| Grapefruit | *Citrus x paradisi* | Rutaceae | Food/Juice |
| Plum | *Prunus* spp. | Rosaceae | Food |
| Guava | *Psidium guajava* L. | Myataceae | Food |
| Lemon | *Citrus limon (L.) Osbeck* | Rutaceae | Juice |
| Loquat | Eribotrya japonica (Thunb.) | Rosaceae | Food |
| Mulberry | *Morus* spp. | Moraceae | Food |
| Olive | *Olea europaea* L. | Oleaceae | Food/Oil |
| Orange | *Citrus x sinensis* | Rutaceae | Food/Juice |
| Peach | *Prunus persica* (L.) | Rosaceae | Food |
| Pear | *Pyrus* spp. | Rosaceae | Food |
| Pomegranate | *Punica granatum* L. | Lythraceae | Food |
| Prickly Pear | *Opuntia* spp. | Cactaceae | Food |
| Quince | *Cydonia oblanga* Mill. | Rosaceae | Food |
| Strawberry | *Fragaria x ananassa* Duchesne | Rosaceae | Food |
| Tangerine | *Citrus tangerina* Tanaka | Rutaceae | Food/Juice |
| Walnut | *Juglans* spp. | Juglandaceae | Food |

Analyzing the past and the present of the rural area landscape, including the physical environment and effects of social and economic factors is necessary for the rural area conservation (Plieninger et al., 2006). In this research we have conducted preliminary study of residential home gardens located in Güzelyurt (Morphou) region. With this research the existence of rich ornamental plant diversity was determined. Rich biodiversity of ornamental plants is probably because of the effect of migration. Island is middle of Asia, Africa and Europe. In addition, because of the war many Cypriots immigrated to Australia and many relatives visiting the island brining Australian ornamentals. We believe that this study will enlighten the future landscape researches within the region.

## 4. Conclusion

Gardens are not only places for leisure, they are important study area for ethnobotanists. This research indicated interesting results of composition of home gardens in Cypriot rural areas. Owners of home gardens have knowledge of plants and their uses. Their knowledge is not only important for cultural heritage; it is also important for conserving agrobiodiversity in traditional home gardens. Additionally, home gardening can be act as social

networks between the neighbors. Studying home gardens presents an excellent opportunity to use different techniques to collect qualitative and quantitative data. Many more tools and methods can be used for studying home gardens, such as mapping, transect walks, group interviews ext. Exploring the conservation potential of many diversified home garden systems reveals opportunities for interdisciplinary studies which may involve botanists, ecologists, anthropologists and sociologists. This present article will encourage further studies on home gardens, culture and diversity within the rural areas of Cyprus.

## Compliance with ethical standards

## Conflict of interest

The authors declare that they have no conflict of interest.

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