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Grassland, land management and landscapes

## ***Importance of orchards in urban planning according to landscape management in Mediterranean: the case of Konyaalti region***

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### **Abstract**

Orchards which have importance in terms of the sustainability of urban ecosystems are essential for the planning of the Mediterranean cities. Urban vegetation in orchard increase property values improve privacy and provide many environmental benefits. They reduce heating and cooling costs, reduce pollution, take up carbon dioxide, produce oxygen, provide habitat for wildlife, hold water and reduce soil erosion. Orchards, mainly of citrus, olive and pomegranate trees, are located in the Mediterranean cities.

Konyaalti region is developed last decade in Antalya. Antalya is the Mediterranean city in Turkey. It has been the centre of culture, art, architecture and mythology throughout its history. With its nature made up of dark blue seas, spectacular Taurus mountains, fervent waterfalls and world known holiday villages is what makes Antalya the capital of Tourism. There are too many hotels and holiday village and new tourism facilities have still being built in the city. The rise of the building sector affects all the planning actions all over the city. Because of this, in urban areas hard surface density is rising and by the conclusion of this process affects the urban areas. Under these conditions, the identities of the cities are lost and decrease of the green areas like orchards affect life quality of the public. The main problem of this situation is that the managing of the city development or master plans cannot be applied as it should be.

Human impact on natural landscapes through urbanization era is becoming more and more dramatic and is the cause of serious environmental problems in Konyaalti region as well as in Turkey. In this research orchards which are valuable for urban ecosystem were defined on urban structural plan for Konyaalti settlement. Furthermore importance of orchards maps in sustainable urban planning evaluated from the standpoint of landscape architecture profession. It was proposed some suggestions for protecting and using orchards. Orchards are also found in close proximity to the region where they form a band along the periphery of Konyaalti. Cypress tree boundaries in association with orchards are common feature of the traditional Mediterranean landscape. The orchards are an important landscape component, especially in Bogacay riverside. However, the areas that are represent of the agricultural Mediterranean vegetation are facing extinction in urban because of rapid urbanization in Antalya Konyaalti region. At the end of this study was to determine the protecting principles to existing Agricultural areas and to put some suggestions for landscape management principles to sustainable Mediterranean landscape in the Antalya Konyaalti region.

**Keywords:** Orchards, Mediterranean, urbanization, protection, landscape management.

## 1 Introduction

Orchards which have importance in terms of the sustainability of urban ecosystems are essential for the planning of the Mediterranean cities. In addition to nutritional benefits, urban vegetation in orchard increase property values improve privacy and provide many environmental benefits. They reduce heating and cooling costs, reduce pollution, take up carbon dioxide, produce oxygen, provide habitat for wildlife, hold water and reduce soil erosion.

Fruit orchards, mainly of citrus, olive and pomegranate trees, are located in the Mediterranean cities. Fruit orchards constitute an integral and significant part of Mediterranean environment and culture, on their ecological importance has only recently been acknowledged. Considering that 16% of the total cultivates land of the Mediterranean area is occupied by fruit orchards (Olesen and Bindi, 2009). Olive (*Olea europaea* L.) finds the best climatic conditions for its growth in the Mediterranean Basin countries where it is the most widespread fruit tree crop (FAOSTAT, 2012).

According to Östergren and Ohlsson (2009) the following areas should be highlighted:

- Environmental management in terms of the atmosphere, oceans, freshwater, land, forests, cultivated land, extinctions, biological invasions
- Management of human consumption in terms of energy, water, food, materials, toxic substances, waste
- Decoupling environmental degradation and economic growth
- Nature as an economic externality
- Economic opportunity
- Peace, security, social justice
- Human settlements
- Human relationship to nature.

Konyaalti region is developed last decade in Antalya. Antalya is the Mediterranean city in Turkey. Human impact on natural landscapes through urbanization era is becoming more and more dramatic and is the cause of serious environmental problems in Konyaalti region as well as in Turkey. In this research orchards which are valuable for urban ecosystem were defined on urban structural plan for Konyaalti settlement. Furthermore importance of orchards maps in sustainable urban planning evaluated from the standpoint of landscape architecture profession.

## 2 Materials and methods

**Study area:** Antalya has become a world known city with the rapid development in the recent years. This rapid development brings a lot of problems like density of the population and building areas. Because of this rapid development, suburban and rural areas located near the city fringe have become urban areas such as Konyaalti district which is most significant town with its new buildings, urban open spaces and park areas. Konyaalti settlement (*Figure 1*) which is known famous beach in the world is west of the Antalya city center. There are too many hotels and new tourism facilities have still being built in the region. The rise of the building sector affects all the planning actions all over the city. Because of this, in urban areas hard surface density is rising and by the conclusion of this process affects the urban areas. Under these conditions, the identities of the cities are lost and decrease of the green areas like orchards affect life quality of the public. The main problem of this situation is that the managing of the city development or master plans cannot be applied as it should be.

**Plant Material:** Orchards include many of the cultural species that are suitable for Mediterranean arid climate conditions. Orchards of Antalya consist of different kinds of fruit trees (*Table 1*). The most wide spread species characteristics are described below.

The citrus family includes some of the most marvelous small evergreen trees to be found anywhere in the world. They are beautiful at all times of year, but especially in winter and spring when they are covered in delicious fruits or fragrant white blossoms.

The loquat (*Eriobotrya japonica*) is a small pretty evergreen with large ribbed and toothed leaves. These are light greenish-grey when young, turning dark green and rusty beneath later on. Clumps of white, furry fragrant flowers emerge in early winter and swell to testy orange fruit with large brown seeds in early summer. These may be of an acceptable size and taste on seedlings but are much bigger and better on named loquat varieties (Latymer, 2001).

The edible fig (*Ficus carica*) is curious tree. Though the wood is pithy it lives to a great age and becomes attractively gnarled in old specimens. It is one of the few deciduous members of a predominantly evergreen genus. The fruit, enjoyed since antiquity, is delicious, and comes in two crops.

The olive (*Olea europea*) exist in three very different forms, all evergreen and hardy to  $-8^{\circ}\text{C}$ : the cultivated gnarled tree, sometimes very ancient, that produces the olives that are eaten or pressed for oil; the wild olive with narrower pointed leaves and much smaller worthless fruit; and the odd little tree that is hardly recognizable as an olive at all, dense and often only a few centimeters high (Latymer, 2001).

The fruit of the pomegranate (*Punica granatum*) is more pip than apple, but the tree is well worth planting for its ornamental value. The red-bronze color of the new spring foliage and the clear yellows of the dying leaves in autumn are delightful. This tree also has beautiful, though not abundant, brilliant red flowers in early summer. These are followed by the large round colorful fruits Latymer, 2001) (*Figure 2*).

**Method:** In this research orchards which are valuable for urban ecosystem were defined on urban structural plan. Furthermore importance of orchards maps in sustainable urban planning evaluated from the standpoint of landscape architecture profession. It was proposed some suggestions for protecting and using orchards.

This study is conducted to three steps. The orchards areas which will be held in the future as a park in the Konyaalti urban region are determined in the development map (*Figure 3*). At second phase, the area which is suitable for protected as a orchard park in the future is identified. At the third phase, all the data about this have been investigated, detailed site analysis has been done and finally prospects for future have been determined and sustainable management ideas have been evaluated under these ideas.

### 3 Results and Discussions

In the urban areas, protection of the green areas and natural vegetation is a conventional planning and design approach and natural or ecological design based on the protection of the natural vegetation. Natural vegetation areas are negatively affected by the building blocks but a proper design attitude, which keeps peace between buildings and vegetation, can give to the area an unique characteristic. With its surrounding designed green area, these natural vegetation areas have a role as an ecological corridor and this helps to improve bio-diversity. Rather than structural/ hard-surface based design approach, semi naturalistic or naturalistic design approaches can sustain natural vegetation and natural landscape characteristic of the areas. A previous study about recreational preferences of public in Konyaalti region showed that hard/surface based designs are the most preferred but natural and semi natural designs are the second preferred design approach (Oktay, 2011). In this point in this study that was aimed for the protection of the fruit orchards areas passive recreational uses has been selected to build a suitable and sustainable design for this area, as orchards that are under the danger of the extinction.

From this point of view in this study, some design proposals are offered for green areas of Konyaalti development plants which has orchards. These design proposals consist of pas-

sive recreational areas to protect to orchards. It is primary matter to discuss the protecting green areas like orchards which is under the threat of extinction in the city in the every kind of person in the community. This is the best possible way to occur common language for ecological means. Şahin (2009) said that this common language is the success key of environment planning disciplines to the using, developing and management of ecological resources. This success is hands on experiences provided to social and natural requirement in the sustainability.

Water has become a key element and an important resource in last decade. Water conservation and saving for irrigation have become important factors in planting design applications. Because of them, to reuse rainwater from houses for irrigation of orchards is good way to protect water source. The sustainable orchard management appeared also more environmentally friendly. The use of treated wastewater, as irrigation source, together with organic material recycling allowed to provide fruit trees with essential nutrients along the annual cycle.

To protect orchards and using citrus, olive, punica, grape species in park areas can be a good planting design model for other Mediterranean cities. Degraded or semi degraded orchards area should be remediated to their natural conditions in a planned public project. Design of these areas should arouse some human senses such as curiosity, mystery, resting, excitement etc. With these feelings, public can be aware of natural beauty, natural protection and ecological living.

The green environment of a orchards area is a suitable playscape for children to express their physical competences as well as socialization ones. Familiar environment, comfortable environment, closeness, and variety of natural elements in orchards settings afford multi-affordances for children to experience and play. Children's playing activities in this setting involved high performatory and exploratory performances including climbing and sliding down the slippery slopes, picking fallen fruits, plucking leaves from trees, collecting pebbles from stream bed and throwing the pebbles of stream surface, and many more. In sum, nearby orchards are ecological systems comprising of a diversity of vegetation and animals as well as topographical and stream variations. They allow children to explore and discover the elements of nature through physical and social participations (Fjortoft and Sageie, 2000, Said, 2012. If orchards near the Bogacay design with soft landscape elements, they can give very benefit conditions to children. Kids playground equipments made from natural materials should be used in the orchards. The urban orchard park in the community is an important teaching tool. We can demonstrate the competitive, interdependent, cyclic nature of living things in the environment by focusing on some animals and their habitats; examine how soil compaction affects water flow and tree health; and create maps indicating the type of trees present at a location and the amount of canopy cover it provides. Students can use the scientific method to hypothesize the effect the urban orchard might have on stormwater runoff, air particulates, and ground temperature.

In Orchards parks, natural material like gravel, mulch and compacted soil should be used for pedestrian ways and bicycle roads and design of these roads should be made in the term of mature tree protection. In the parks some areas should include open spaces for sports, active recreation and kids play area. In these areas should be replaced kids play tools which are made from natural material. Small scaled selling places for ecological markets are replaced for selling of natural productions. In these parks should be placed some knowledge cards to inform visitors about orchid and other natural trees and movement cards should be placed suitable areas. There should be designed and placed wood pergolas and gazebos for hanging grapes. Wooden decks and banks should be placed for sitting and recreating for users.

The citrus museum should be established in the park. It can house an exhibit on the citrus industry in Antalya. Antique citrus grove equipment can display around the park. The visitor center can house a citrus museum.

Healthy mature trees should be protected and maintenance of tree should be sustained, old trees should be replaced. Gene resource species should be protected terms of in situ protection. In the harvest time of orchards, there should be some organizations for local people for collecting of fruits. For all of these works, municipality, schools and none governmental organizations should work together.

#### 4 Conclusions

In Antalya to protect of city identity, understanding of soft landscape works for designing parks is important protecting of green areas of this city.

Traditional park design are severely disadvantaged because they are characterized by exotic ornamental plants and unproductive trees, small and fragmented surfaces, set in areas often of high landscape value and sensitive to environmental degradation. Under our orchard concepts, the orchard parks appeared more socially sustainable and more environmentally friendly, more productive and profitable. The increased benefit of orchards as a park people could persuade them to remain in the territory limiting the urgent phenomena of orchard abandonment, preserving typical landscape, and carrying out an ecological control role against land degradation processes. Orchard parks concept for Bogacay can be good example to other Mediterranean cities.

#### 5 Acknowledgements

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Table 1: Plants in the orchards in Konyaalti.

Familia	Species
Rutaceae	<i>Citrus aurantium</i>
	<i>C. deliciosa</i>
	<i>C. grandis</i>
	<i>C. limon</i>
	<i>C. medica</i>
	<i>C. nobilis</i>
	<i>C. sinensis</i>
	<i>C. unshiu</i>
	<i>C. paradisi</i>
	Rosaceae
Moraceae	<i>Ficus carica subs. carica</i>
	<i>Morus alba</i>
	<i>M. alba ,pendula‘</i>
	<i>M. nigra</i>
	<i>M. rubra</i>
Musaceae	<i>Musa acuminata</i>
Myrtaceae	<i>Myrtus communis subsp. communis</i>
Oleaceae	<i>Olea europea var. europea</i>
Cactaceae	<i>Opuntia ficus-indica</i>
Rosaceae	<i>Prunus cerasifera</i>
Punicaceae	<i>Punica granatum</i>
Vitaceae	<i>Vitis vinifera</i>



Figure 1: Location of study area (Google map, 2014)

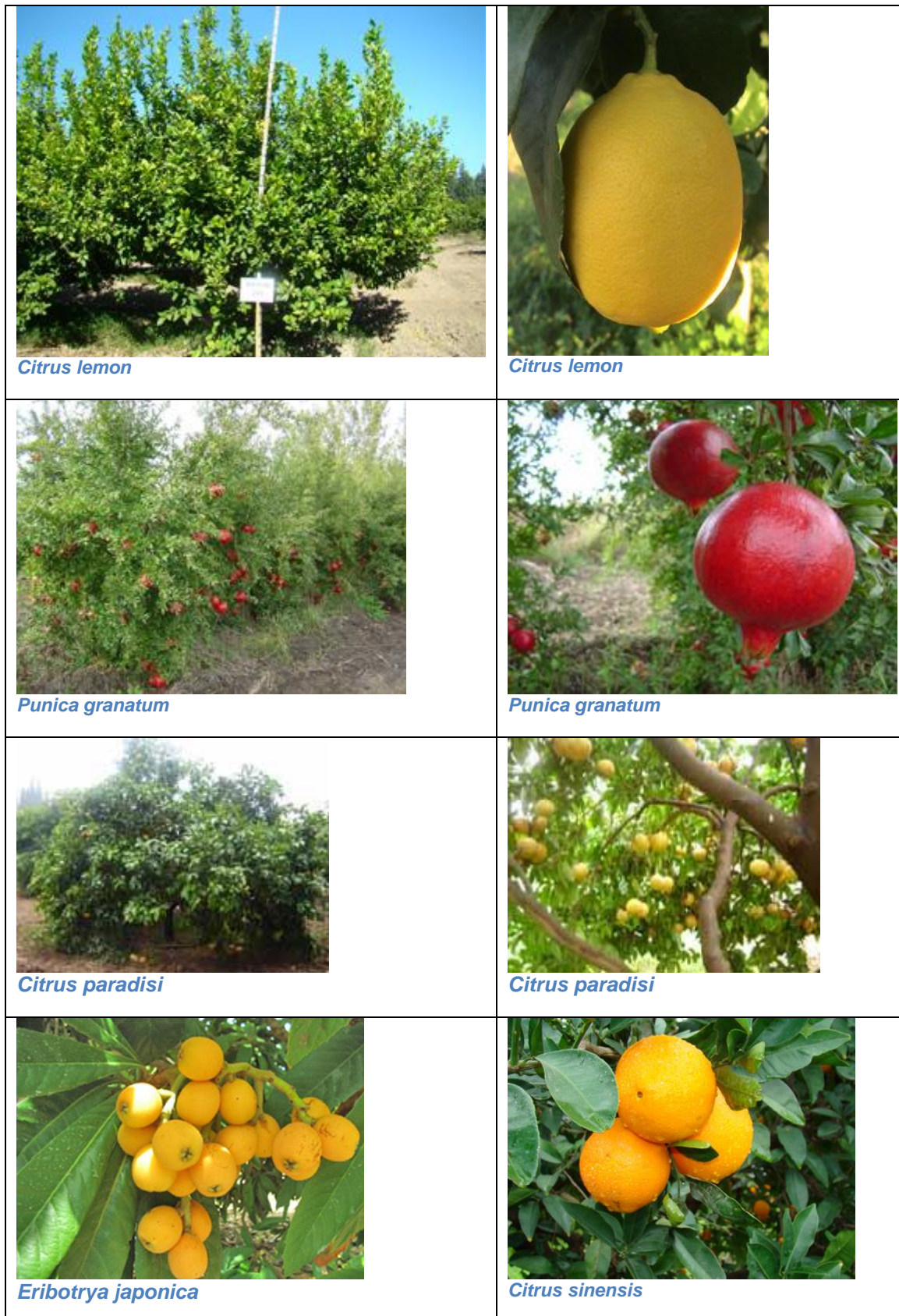
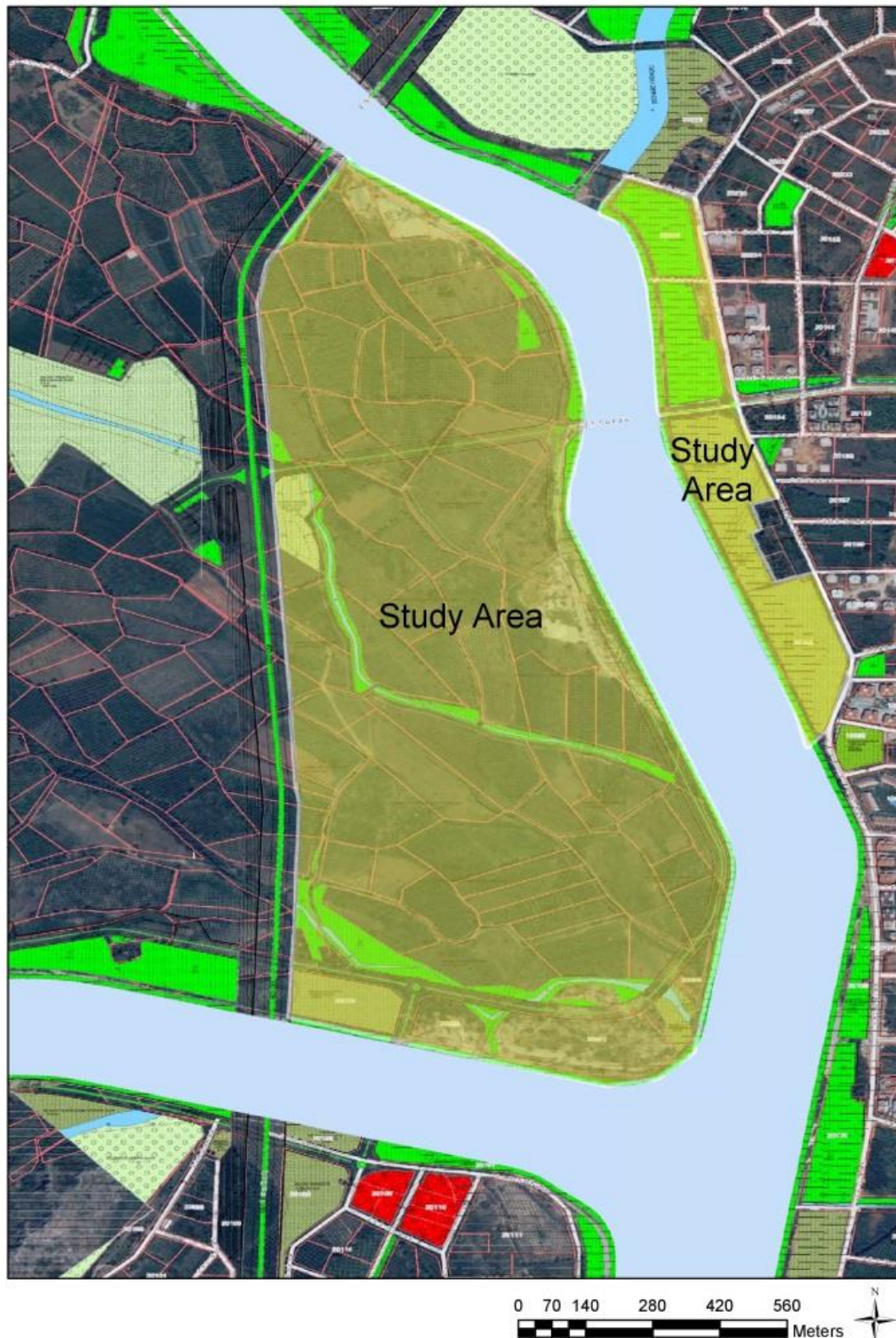


Figure 2. Some fruit trees examples



*Figure 3: Urban green areas which have got orchards and should be protected for sustainable urban planning.*