



UNIVERSITY OF
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Oleo-Ceratonion



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Structure

The *Oleo-Ceratonion* as part of the Thermomediterranean zone

Olea europaea L.

Ceratonia siliqua L.

Companion species

Human impact

Oleo-Ceratonion as part of the Thermomediterranean zone

The *Oleo-Ceratonion* is an alliance of plant communities after Braun-Blanquet appearing in the Thermomediterranean zone.

It is located in coastal areas starting at sea level up to an elevation of 400 to 600 meters a.s.l. The annual mean temperature is 17°C, the mean minimum temperature is 5°C.

Ecological adaptation to heat and dry conditions is highly important for the vegetation. The primary types of the vegetation are *Olea europaea* L. and *Ceratonia siliqua* L.



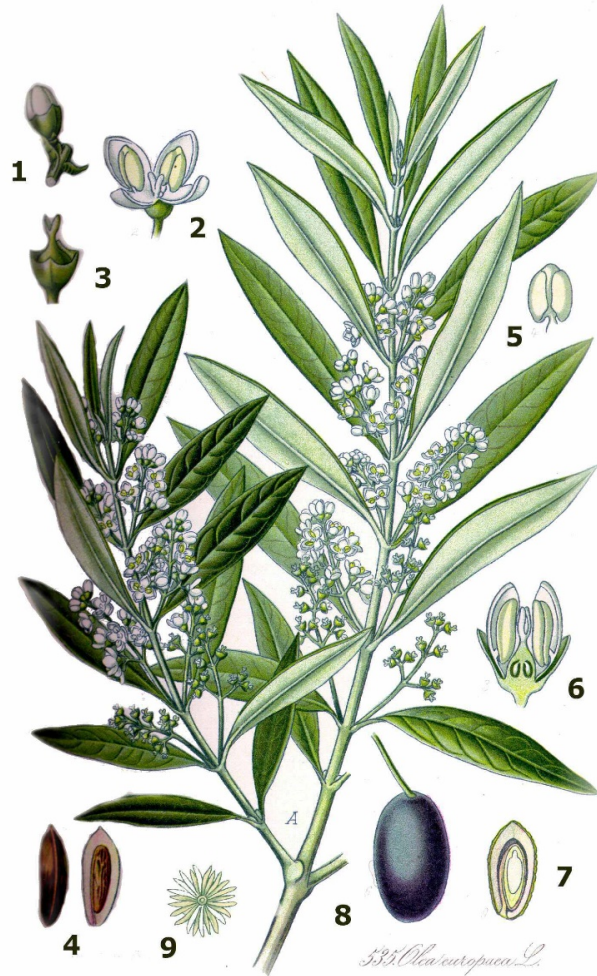
Typical vegetation of the *Oleo-Ceratonion* [1].

Olea europaea L. – Common olive



Order: Lamiales
Family: Oleaceae
Genus: *Olea*

Ancient olive grove [2].



Olea europaea [3].

Habitus:

evergreen tree or shrub
height: 8-15/20 meters
twisted and gnarled trunk

Leaves:

narrowly elliptic, opposite
adaxial surface: greyish green
abaxial surface: silvery grey

Blossom:

blooming in May/June
small, white, feathery flowers
mostly axillary inflorescences

Fruits:

small drupes 1-3,5 cm long
first green, at harvest in
November/December
brownish or black



Leaves upside/bottom side [4].



Olive blossoms [5].

General Information

The common olive is one of the most characteristic cultivated plants in the Mediterranean region. Its distribution area is spread all over the Mediterranean climate zone.

The cultivated and the wild olive (*Olea europaea* var. *sylvestris*) can be distinguished by their appearance. The cultivated form has fewer spiny branches, bigger leaves and fruits and a higher yield of oil than var. *sylvestris*.

Additionally, the wild olive is much smaller than the cultivated form, rather a shrub than a tree.

Olive trees can survive several hundred years.



Olea europaea var. *sylvestris* [6].

History

It is certain that *Olea europaea* L. has been cultivated in the Mediterranean Region since 6000 B.C. In the Old Testament, there are plenty references to the olive tree, its wood and its oil.

It is assumed that it was first cultivated in the so called “Fertile Crescent”, an area around the Red Sea in the Middle East.

There is more than one possible origin of the cultivated olive. Presumably, it was first cultivated at several locations around the Mediterranean Sea. Possible locations are for instance North Africa, the Middle East and Cyprus.

Especially in the Greek culture, the olive has always been a very important part of the culture. The oil was considered sacred and was not only used for cooking but also for the anointments of kings, Olympic athletes and other important personalities. Leaves and fruits were an important component of religious ceremonies.

Furthermore, the olive tree has long been a symbol for peace, wealth, honour and purity.

Cultivation

For flower induction, the olive needs cold temperatures between 0-10 °C. Even though sudden frost can be a threat, it can gradually adapt to colder temperatures in autumn. However, longer frosty periods are leading to dieback of the trees. The olive prefers poor, calcareous soils. Reproduction is accomplished by propagation through grafting.

The first yield is expected in the age of 8-10 years. It is alternating and can reach up to 60-65 kg fruits per tree. Maximum yields can be accomplished in the age of 60-100 years. The mean oil yield is 14-16 l per 100 kg fruits.



Harvested olives in a net [7].



Olives on a tree [8].

Uses

The main product gathered of the cultivated olive tree is the olive oil. About 90 % of the harvested olives are turned into olive oil which is mainly used as cooking oil (cold-pressed, extra virgin olive oil; warm-pressed, native olive oil). Olive oil is not only tasty but is also known for its several beneficial health aspects as for example in the prevention of cardiovascular diseases. Rarely, olive oil (hot pressed) is also used for technical purposes.

Since the ancient world, it is an important component of cosmetics. 10 % of the fruits are used as table olives (green, black) and are consumed as a starter or as ingredient in salads. The olive wood is used for furniture, musical instruments etc.



Table olives at a market [9].



Olive oil and table olives [10].



Olive wood [11].

Oleiculture in Cyprus

The cultivation of olives in Cyprus is located from the coastal areas up to an altitude of 900 m a.s.l. Most of the cultivation area is situated in the Mesaoria.

Oleiculture covers 9,5 % of the cultivated land (about 12611 ha in 2004).

Every year about 23.000 t of olives are harvested. The major part is consumed in Cyprus itself.

Olives are mainly cultivated by part-time-farmers.

Ceratonia siliqua L. – Carob tree



Order: Fabales

Family: Fabaceae

Subfamily:

Caesalpiniaceae

Genus: *Ceratonia*

Large Carob tree [12].

Habitus:

evergreen tree or shrub, height 10-20 m, thick trunk, brown rough bark, sturdy branches, broad crown.

Leaves:

sclerophyll, alternate, pinnate, 10-20 cm long, 4-10 terminal leaflets, thick single-layered epidermis, shedding of the leaves every two years in July, only partial renewal of the leaves in spring.

Blossom:

August-October, flowers numerous and small, dioecious, cross-pollinated, 6-12 mm long, green-tinted red, spirally arranged, borne on branches and even on the trunk (cauliflory).

Fruits:

pod, 10-30 cm long, 2-3 cm wide, about 1 cm thick, brown, wrinkled surface, leathery when ripe, very hard black seeds.



Ceratonia siliqua L.[13].

History

The centre of origin of *Ceratonia siliqua* is not clear. Presumably, it is located in the Middle East (Fertile crescent). The distribution area is located in the Mediterranean area and the Arabic peninsula as well as North Africa.

A wild occurrence in the western Mediterranean is doubtful. It was introduced already as a cultivated plant.

In contrast to the olive tree, *Ceratonia siliqua* is not mentioned in the Old Testament. It is therefore a relatively young cultivated plant in the Mediterranean basin that has only been cultivated since Roman times.

It has been used as a shade plant and for fruit production for about 2000 years.

The most effective cultivation is through vegetative propagation – the selection of desired characteristics like big, succulent pods is possible.

Cultivation

The carob tree is well adapted to infertile soils and harsh climatic conditions.

It can be grown up to an altitude of 600 m a.s.l. because its tolerance to temperatures below the frost point is limited.

The first harvest can be expected 5-7 years after planting. Its productivity life is about 80-100 years. All in all, it can live up to 200 years.

The pods need 8-10 months to mature. The ripening period starts in early August. It is a gradual process which is taking about 60 days.

Because *Ceratonia siliqua* belongs to the nitrogen fixating plants and therefore provides improvement to the soil fertility, it is well suited for programs for sustainable agriculture.

Cultivation in Cyprus

Carob used to be the main export product of the island which was already named in medieval travel reports. It was even referred to as “the black gold of Cyprus”.

In the course of the conflicts between Greece and Turkey there were serious losses of acreage.

Uses

The pods contain up to 50 % sugar and are therefore often used as calorie-rich animal nutrition.

The roasted pods are popular as healthy substitutes for coffee and cocoa. The powdered form is increasingly utilised as thickening agent and stabiliser. The sap is processed to syrup and beverages.

The seeds have a nearly constant weight of around 0,18 g (ca. 1 carat). That is why they are used to function as weights for gold and jewellery. The term “carat” originates from *Ceratonia*.

The wood can be used for coal production.



Carob wood [14].



Carob pods [15].



Carob “chocolate” [16].

Companion species

Pistacia lentiscus L.

Family: Anacardiaceae

Mastic is an evergreen shrub or tree which reaches heights of 1-3 m. It has alternate and pinnate leaves with oblong leaflets.

The fruits are drupes which are at first red and later on turn to black.

Blooming period is from March to July.

Pistacia lentiscus L. is cultivated for the resin which can for example be used as substitute for sugar.



Mastic foliage and flowers [17].

Myrtus communis L.

Family: Myrtaceae

The common myrtle is an evergreen shrub with a height of 3-5 m.

Its blooming period is from June to August. *Myrtus communis* L. is an important part in the mythology of several countries. The oil is utilised in medicine and cosmetics.



Foliage and flowers of *Myrtus communis* L. [18].

Arbutus andrachne L.

Family: Ericaceae

The Greek strawberry tree is an up to 5 m high shrub with red, even bark which peels off in sheets.

The leaves are evergreen and sclerophyll.

Its whitish flowers are arranged in panicles. Blooming period is from February to April.

The baccate fruits are orange-red.



Greek strawberry tree [19].

Human impact

The whole Mediterranean region is under the influence of human civilization.

There is nearly no natural vegetation left. Especially olive and carob were bred and distributed by humans. That's why it is hard to define their distribution areas.

Many types of vegetation are influenced by agricultural depletion. Pasturing and erosions are leading to degradation.

In the course of climate change, water availability is an increasingly important factor. Even cultivates with a good adaptation to dry conditions are having trouble to satisfy their needs.

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