

## History of The Olive Tree - Growing and Propogating-00-371

Olive trees, &#39;Olea europaea,&#39; are the oldest fruit trees and certainly are one of the most important fruit trees in history. Olive tree culture has been closely connected to the rise and fall of Mediterranean empires and other advanced civilizations throughout the ages. Because olive trees offered wealth and future food supplies to established civilizations, the agricultural nations became stable societies, resulting from a secure expectation from past experience of an uninterrupted food and olive oil supply. This factor was a necessary requirement for population growth and increase. Dependable fruit production and olive oil production means that olive trees must exist in a stable society and a peaceful environment. That stability must extend for many years, since most ancient seedling olive trees required eight or more years before ever producing the first crop of fruit. Productive orchards of olive trees meant that a foundation of the great empires of Greece and Rome had arisen and developed into complex economic and political forces.

It is interesting to note that the historical decline of these empires corresponded to the destruction of their olive tree orchards that reduced the available supplies of olives, olive oil, olive wood, and olive soap. In connection with the destruction of olive orchards, it is interesting to note that in the Israeli wars with Palestine, 50,000 olive trees were destroyed by Israeli bulldozers. That act of agricultural destruction resulted in considerable anger and unrest along the Gaza strip and the West Bank, because the economic livelihood of many Palestinian farmers depended on their products from the uprooted olive trees. Additionally, the olive tree was historically a &#39;peace and goodwill&#39; symbol, and when the olive trees were leveled near the city of Bethlehem, the birthplace of Jesus and the Cradle of Biblical History," that elimination of olive trees seemed like a deliberate provocation to end the &#39;peace&#39; with the Palestinian settlers and farmers.

The Greeks recognized that in their vast empire they must avoid hostilities and war during the period that the Olympic Games were being conducted, and they declared a worldwide armistice so that their complete attention could be directed toward their athletic events and games.

Medical properties of olive oil were reported by many ancient Greek writers and philosophers, their importance in creating nutritional benefits and wealth for Greek citizens continues abundantly today--some Greek olive tree orchards containing a million or more trees. Aristotle wrote extensively about the accepted methods of successfully growing olive trees.

Greek mythology records that Athena, the Goddess of wisdom and peace, struck her magic spear into the Earth, and it turned into an olive tree, thus, the location where the olive tree appeared and grew was named Athens, Greece, in honor of the Goddess, Athena. Local legend tells us that the original olive tree still stands growing after many centuries at the ancient sacred site. Citizens still claim that all Greek olive trees originated from rooted cuttings that were grown from that original olive tree. Homer claimed in his writings that the ancient olive tree growing in Athens was already 10,000 years old. Homer stated that Greek courts sentenced people to death if they destroyed an olive tree. In 775 BC Olympia, Greece, at the site of the ancient Olympic stadium, athletes competed and trained, and winners were triumphantly acclaimed and crowned with a wreath made of olive twigs. Ancient gold coins that were minted in Athens depicted the face of the Goddess, Athena, wearing an olive leaf wreath on her helmet holding a clay vessel of olive oil. The Greeks began olive cultivation in 700 BC. The sacred lamp that was used in ancient Greek culture for lighting dark rooms at night was fueled by olive oil.

Aged olive oil was also used in sacred anointing rituals of the church at weddings and at baptisms. Herodotus wrote in 500 BC, that the growing and exporting of olives and olive oil were so sacred that only virgins and eunuchs were allowed to cultivate orchards of olive trees. The first documented plantings of olive trees may have occurred during the Minoan civilization on the island of Crete and are believed to have been growing around 3500 BC. That civilization predates the discovered Mycenae olive fossils from 1600 BC and later in the Greek empire. Sturt Manning, an archeologist from Cornell University, reported in Live Science Magazine (Apr 28, 2005) that the most devastating volcano in 10,000 years occurred on the Greek Island of Thera, after which the city of Akrotiri was totally buried by the falling ash. The finding of olive wood and olive seed fossils buried near the site has shown through carbon dating that the volcanic eruption occurred between 1660 and 1600 BC and may have contributed to the total destruction of the advanced Minoan civilization (Atlantis) on the isle of Crete and may have led to the formation of the Sahara desert in North Africa after vaporizing the native forests there.

In the Old Testament of the Hebrew Bible (Gen 8:11), Noah was given an olive branch by a dove after the great flood as a symbol of peace and love of God, which it remains today. In the book of Exodus, Moses explains that God expected olive oil to be used in various rituals that were performed by priests of Israel. Olive oil was used as an anointing oil to be poured over the heads of Kings and priests that acknowledged their authority as an agent of God. Many other references to olives are given in the Bible. Psalms 52:8 But I am like the green olive tree in the house of God, I trust in the steadfast love of God forever and ever." Finally, Jesus was to spend his last day praying at the mount of olives garden of Gethsemane, in Jerusalem before his crucifixion. Jesus was arrested there, tried, convicted, crucified and later ascended to heaven, after his resurrection from the tomb.

Impressionist artists were stunned by the antique age and beauty of olive trees and their productiveness that resulted in masterpiece paintings by Van

Gogh, Cezanne, Renoir, and Matisse. The world's great Biblical reporters, literary writers, and poets immortalized the olive tree, such people as Jesus, Milton, Shakespeare, and Lord Byron.

Thomas Jefferson wrote "The olive tree is the richest gift of heaven." The U.S. Department of Homeland Security has reported Benjamin Franklin and Thomas Jefferson, who traveled abroad, brought plant material such as olive trees and rice back to the U.S. to develop United States agricultural production." Thomas Jefferson was the U.S. ambassador to France during the Revolutionary War, and he began to import olive trees and seeds into the southern U.S. The excessive humidity of South Carolina and Georgia did not allow profitable olive tree orchards to develop properly in those areas. Jefferson wrote "The greatest service which can be rendered to any country is to add a useful plant to its culture." He ranked his introduction of the olive tree and dry rice into South Carolina as two of his top lifetime achievements. Thomas Jefferson wrote to James Ronaldson on January 13, 1813, "it is now twenty-five years since I sent them (southern planters) two shipments of about 500 plants of the olive tree of Aix, the finest olive trees in the world."

The fragrant flowers of olive trees are small and creamy white, hidden within the thick leaves. Some cultivars will self pollinate, but others will not. The blossoms usually begin appearing in April and can continue for many months. A wild, seedling olive tree normally begins to flower and produce fruit at the age of 8 years. The fruit of the olive tree is a purplish-black when completely ripe, but a few cultivars are green when ripe and some olives turn a color of copper-brown. The size of the olive fruit is variable, even on the same tree, and the shape ranges from round to oval with pointed ends. Some olives can be eaten fresh after sun-drying and the taste is sweet, but most olive cultivars are bitter and must be treated by various chemical solutions before developing into edible olives. If the olives are thinned on the limbs of the trees to 2 or 3 per twig, the ultimate size of the olives will be much larger. The fruit is gathered in mid October and should be processed as soon as possible to prevent fermentation and a decline in quality.

The leaves of olive trees are gray-green and are replaced at 2-3 year intervals during the spring after new growth appears. Pruning yearly and severely is very important to insure continued production. The trees have the unproductive limbs removed, so that it will be more fruitful" John 15:2. An olive tree can grow to 50 feet with a limb spread of 30 feet, but most growers will keep the tree pruned to 20 feet to assure maximum production. New sprouts and trees will emerge from the olive tree stump roots, even if the trees are cut down. Some olive trees are believed to be over a thousand years old, and most will live to the ripe old age of 500 years.

Olives generally are beaten off trees with poles, harvested mechanically or by shaking the fruit from the trees onto canvas. Most ripening olives are removed from the trees after the majority of the fruit begins to change in color. It is important to squeeze out the olive oil within a day after harvesting or else fermentation or decline in flavor and quality will occur. The olive oil can be consumed or used in cooking immediately after its collection from the press. Olive oils are unique and distinct, each brand of olive oil having its own character, as determined by many factors, like those unique flavor differences found in fine wines. Prepared commercial olive oils can vary greatly in aroma, fruit flavor; whether the taste is, flowery, nutty, delicate, or mild, and the coloring of olive oil is quite variable.

Olive oil produces many health benefits when used in cooking or when poured over salads. The use of olive oil can improve digestion and can benefit heart metabolism through its low content of cholesterol. Experts claim that olive oil consumption will cause a person to grow shiny hair, prevent dandruff, prevent wrinkles, prevent dry skin and acne, strengthen nails, stop muscle aching, lower blood pressure and cancel out the effects of alcohol.

Olive trees can survive droughts and strong winds, and they grow well on well drained soils up to a pH of 8.5 and the trees can tolerate salt water conditions. In Europe, olive trees are normally fertilized every other year with an organic fertilizer. Alternate bearing can be avoided by heavy pruning and generally the trees respond to this very quickly and favorably.

Olive trees should be purchased that have been vegetatively propagated or grafted, because the seed grown trees will revert to a wild type that yields small olives with an insipid taste. Olive trees are more resistant to diseases and insects than any other fruit tree and, therefore, are sprayed less than any other crop.

The Romans conquered Greece in 146 BC, and the victors took olive secrets to Rome, but since then Greece has remained the greatest exporter of olive oil during the centuries. The olive tree seems to be perfectly adapted for growing in the mild climate of the Mediterranean countries. The trees grow well in dry areas with mild winters and long hot summers, even enduring drought conditions or high winds. The European area of the Mediterranean produces 98% of the world olive oil supply. Olive seed are believed to have been brought to California in 1769 to grow into trees hardy to 12 degrees Fahrenheit. Those olive trees were cultivated in the Franciscan Spanish monasteries.

Even though commercial production of olives in the United States is only 2% of the world market, great interest in growing olives throughout the South has been stimulated by the recent introduction of promising cold hardy olive trees from European hybridizers. Many European immigrants to the

United States grow their own olive trees in large pots, that can be moved in and out of the house during seasonal changes.

## Growing and Propogating Olive Trees

### Adaptation

The olive requires a long, hot growing season to properly ripen the fruit, no late spring frosts to kill the blossoms and sufficient winter chill to ensure fruit set. Home grown olives generally fruit satisfactorily all over Southern Europe including Turkey and in the warmer coastal valleys of California (USA). Virtually all U.S. commercial olive production is concentrated in California's Central Valley, with a small pocket of olive acreage outside Phoenix.

The tree may be grown as an ornamental where winter temperatures do not drop below 12 F. Green fruit is damaged at about 28F, but ripe fruit will withstand somewhat lower temperatures. Hot, dry winds may be harmful during the period when the flowers are open and the young fruits are setting. The trees survive and fruit well even with considerable neglect. Olives can also be grown in a large container, and has even appeared in shows as a bonsai.

### Growth Habits

The olive is an evergreen tree growing to 50 ft. in height with a spread of about 30 ft. The tree can be kept to about 20 ft. with regular pruning. The graceful, billowing appearance of the olive tree can be rather attractive. In an all-green garden its grayish foliage serves as an interesting accent. The attractive, gnarled branching pattern is also quite distinctive. Olives are long-lived with a life expectancy of 500 years. The trees are also tenacious, easily sprouting back even when chopped to the ground.

### Foliage

The olive's feather-shaped leaves grow opposite one another. Their skin is rich in tannin, giving the mature leaf its gray-green appearance. The leaves are replaced every two or three years, leaf-fall usually occurring at the same time new growth appears in the spring.

### Flowers

The small, fragrant, cream-colored olive flowers are largely hidden by the evergreen leaves and grow on a long stem arising from the leaf axils. The olive produces two kinds of flowers: a perfect flower containing both male and female parts, and a staminate flower with stamens only. The flowers are largely wind pollinated with most olive varieties being self-pollinating, although fruit set is usually improved by cross pollination with other varieties. There are self-incompatible varieties that do not set fruit without other varieties nearby, and there are varieties that are incompatible with certain others. Incompatibility can also occur for environmental reasons such as high temperatures.

### Fruit

The olive fruit is a green drupe, becoming generally blackish-purple when fully ripe. A few varieties are green when ripe and some turn a shade of copper brown. The cultivars vary considerably in size, shape, oil-content and flavor. The shapes range from almost round to oval or elongated with pointed ends.

Raw olives contain an alkaloid that makes them bitter and unpalatable. A few varieties are sweet enough to be eaten after sun drying. Thinning the crop will give larger fruit size. This should be done as soon as possible after fruit set. Thin until remaining fruit average about 2 or 3 per foot of twig. The trees reach bearing age in about 4 years.

### Location

Plant olive trees in full sun and away from sidewalks to avoid stains from fallen ripe fruit. Non-fruiting trees are available which can be planted in areas where fruit may be a problem. Strong winds will "sculpt" the trees, but otherwise they are quite wind-tolerant.

### Soils

Olives will grow well on almost any well-drained soil up to pH 8.5 and are tolerant of mild saline conditions.

### Irrigation

Irrigation is a necessity in California with its dry summers. A monthly deep watering of home grown trees is normally adequate. Because of its small leaves, with their protective cuticle and slow transpiration, the olive tree survives even extended dry periods.

### Fertilization

Fertilizing olive trees with additional supplies of nitrogen has proved beneficial. In California farmers systematically apply fertilizers well ahead of the

time flowers develop so the trees can absorb the nitrogen before fruit set. Many growers in Mediterranean countries apply organic fertilizers every other year.

### Pruning

Proper pruning is important for the olive. Pruning both regulates production and shapes the tree for easier harvest. The trees can withstand radical pruning, so it is relatively easy to keep them at a desired height. The problem of alternate bearing can also be avoided with careful pruning every year. It should be kept in mind that the olive never bears fruit in the same place twice, and usually bears on the previous year's growth. For a single trunk, prune suckers and any branches growing below the point where branching is desired. For the gnarled effect of several trunks, stake out basal suckers and lower branches at the desired angle. Prune flowering branches in early summer to prevent olives from forming. Olive trees can also be pruned to espaliers.

### Propagation

None of the cultivated varieties can be propagated by seed. Seed propagated trees revert to the original small-fruited wild variety. The seedlings can, of course, be grafted or chip budded with material from desired cultivars.

The variety of an olive tree can also be changed by bark grafting or top working. Another method of propagation is transplanting suckers that grow at the base of mature trees. However, these would have to be grafted if the suckers grew from the seedling rootstock.

A commonly practiced method is propagation from cuttings. Twelve to fourteen inch long, one to three inch wide cuttings from the two year old wood of a mature tree is treated with a rooting hormone, planted in a light rooting medium and kept moist. Trees grown from such cuttings can be further grafted with wood from another cultivar. Cutting grown trees bear fruit in about four years.

### Pests and diseases

The olive tree is affected by some pests and diseases, although it has fewer problems than most fruit trees. Around the Mediterranean the major pests are medfly and the olive fruit fly, *Dacus oleae*. In California, verticillium wilt is a serious fungal disease. There is no effective treatment other than avoiding planting on infested soils and removing damaged trees and branches.

A bacterial disease known as olive knot is spread by pruning with infected tools during rainy months. Because the olive has fewer natural enemies than other crops, and because the oil in olives retains the odor of chemical treatments, the olive is one of the least sprayed crops.

### Harvest

Olive fruits that are to be processed as green olives are picked while they are still green but have reached full size. They can also be picked for processing at any later stage up through full ripeness. Ripe olives bruise easily and should be handled with care. Mold is also a problem for the fruit between picking and curing. There are several classical ways of curing olives. A common method is the lye-cure process in which green or near-ripe olives are soaked in a series of lye solutions for a period of time to remove the bitter principle and then transferred to water and finally a mild saline solution.

Other processing methods include water curing, salt curing and Greek-style curing. Explicit directions for various curing and marinating methods can be found in several publications including Maggie Blyth Klein's book, *Feast of the Olives*, and the University of California Agricultural Sciences Publications Leaflet 21131. Both green-cured and ripe-cured olives are popular as a relish or snack. For California canned commercial olives, black olives are identical to green olives. The black color is obtained by exposure to air after lye extraction and has nothing to do with ripeness. Home production of olive oil is not recommended. The equipment required and the sheer mass of fruit needed are beyond most households.

### About the Author

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