FLORIDA OLIVE COUNCIL, LAA

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Olive (Olea europaea) Basics

Olives and olive oil are basic constituents of the heart-healthy Mediterranean diet. Spain, Italy, Greece, Turkey, Syria and Tunisia are the world's major olive oil producing countries, accounting for 90% of world olive oil output.

In the last few years olive cultivation is steadily expanding to more geographical zones, in response to increased olive oil consumption owing to its nutritional value and recognized health benefits. The olive oil consumption is steadily increasing in the world, while main olive oil producing countries are also the main olive oil consumers.

European Union accounts for 71% of the world consumption. Mediterranean basin countries represent 77% of the world consumption. Other important consuming markets are United States, Canada, Australia, Japan and increasingly the BRIC nations.

The crop is mainly distributed between 25° – 40° North & South latitudes and flourishes well in Mediterranean region characterized by mild, rainy winter and a hot, dry summer.

The crop requires a winter chilling period of two months with average temperatures varying between 1.5°C to 10°C (34.7°F.-50.0°F.) for flower bud differentiation. Some cultivars thrive in areas with higher winter temperatures but reduced flowering is noted under these conditions.

High temperatures and dry winds cause poor fruit setting and excessive drop of young fruits with remaining fruits shriveling on the tree. Areas receiving a mean annual rainfall of 400 to 700 mm (25 in.-43 in.) are most suitable for olive growing.

Supplemental irrigation during summer increase fruit yields by 30 to 50 %. A long, sunny, warm summer results in a high oil content of the fruit. Olives perform well with humidity varying between 40 – 65 %. High humidity, above 80%, at flowering causes flower drop and infestation of sooty mold. Olive is a long-day plant and benefits from prolonged sunlight (2400 to 2700 sunshine hours annually) and warm environment.

Olive trees will grow and readily adapt to a wide variety of soil types: deep, well drained, clay loam, sandy loam, silt loam & silt clay loam with an optimum soil pH of 5.0 – 7.5. The crop produces acceptable yields even on poor soil as long as it is deep, well-aerated and free from water logging. Under waterlogged conditions damage through lack of oxygen and fungal diseases increases sharply. The olive tree is moderately tolerant to soil salinity.

Olives can be propagated in several ways – from seeds, cuttings, truncheons and from tips of branches, but the most popular system for modern olive growing is propagation by

rooted cuttings. In practice olives are cultivated in three main production systems according to tree density.

Traditional (7 – 20 m spacing with a density of 30 – 200 trees/ha), intensive (intra-row spacing of 3 – 4 m & inter-row spacing of 6 – 8 m with densities of 250 – 600 trees/ha) and super-intensive (inter row spacing of 3 – 4 m and intra-row spacing of 0.9 – 1.5 m to achieve a desired plant population of 1655 – 2990 trees/ha) production systems.

Adoption of drip irrigation and fertigation in olives proved to be technically feasible and economically viable and beneficial in many ways in several countries of the world. Drip irrigation in many diverse agro-ecological situations registered higher olive oil yield (30 to 50%), saving in water (30 to 45%), and improving oil qualitative characteristics, in comparison to rain fed and surface flood irrigation methods.

Under Israeli arid environment conversion of 7-year old 80 ha of rain fed olives to subsurface drip irrigation registered an average increase of 172% in fruit yield and 115% increase in oil yield over rain fed crop.

Likewise appreciable improvement was observed in peroxide value and fruitiness as well as lowered fruit bitterness and pungency. For high yields, the seasonal crop water requirements for olive crop were estimated to be 350 to

600 mm/ha for intensive and 600 to 800 mm/ha for traditional orchards under range of climatic conditions with a peak daily evapotranspiration rate of 2 to 3 mm/day. Olive is a heavy feeder of nutrients.

Root system is shallow and fibrous, hence fertigation is recommended for higher nutrient availability and use efficiency. The aim of the fertigation program is to cover the difference between crop demand and supply. The nutrient requirements of drip irrigated olives are relatively high.

Other best management practices include pruning and training of trees, monitoring and protection of crop from pests and diseases, need based weed control, mechanical harvesting and post harvesting operations to minimize oil yield losses.

Editor's Note: This information has been gleaned from many sources. While every attempt is made to communicate factual information; within science there are understandable differences with regard to what is fact and what is not. The Council encourages everyone to carefully verify all information presented here, particularly that to be used for financial and business decisions.