

The Effects of Irrigation Levels on Olive Oil Chemical and Sensorial Properties

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Olives for oil production in Mediterranean climates where almost all precipitation occurs during winter months, have traditionally been nonirrigated. In the modern dense orchard water application during the dry seasons has been shown to substantially increase yields, leading to the spread of irrigation systems in established orchards in traditional regions of olive cultivation. In this work, we sought to determine the response of mature 'Souri' and 'Barnea' olive (*olea europaea*) trees, to different irrigation level, in terms of oil properties. In the first years applying irrigation we found negative effects on the basic oil quality measures: Lower quality oils were produced from fruit of irrigated trees as compared to rain fed trees: Higher levels of free fatty acids and a lower levels of polyphenolics were measured. Furthermore, when the sensorial quality of the oil produced from fruits of low irrigated trees higher values of positive organoleptic attributes including "fruity", "pungent" and "bitter" were found, as compared to oil from fruit of trees receiving maximal irrigation return. The apparent decrease in the quality of oil produced from fruits of highly irrigated trees will be discussed as it relates to technological practices: harvest, crushing, malaxing and separating or as it relates to the tree physiology and fruit biochemistry.