

Optimization of Olive Irrigation with Modern Technologies (ICT)**Authors:** Kostas Chartzoulakis**Affiliation:** *Institute of Olive and Subtropical Plants of Chania, str. "Leof. Karamanli" Nr. 167, 73134 Chania, Greece*
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Proper management of irrigation water is a necessity in drought conditions. Irrigation planning tools play an important role in helping farmers to increase the efficiency of irrigation water, minimizing environmental risks and contributing to the sustainability of the olive sector. The Intelligent Irrigation Water Management (IWW) combines an irrigation advisory software (ZEN-IRRIWARE), which considers soil characteristics, crop, water availability and quality, irrigation method, weather forecast and soil moisture, with smart solenoid valves. It was applied to a 30-year-old drip-irrigated olive grove in Chania within the framework of the project M16SYN2-00167 AGROWATER for 2 years. Information regarding irrigation (when and how much water to apply) was provided to the smart solenoid valve and/or to farmers via SMS or a special application for smart phones with feedback capability. The olive grove was divided into two almost equal parts, one irrigated empirically and the other according to the advice of EDNA, while the evaluation was based on production, olive oil quality and water saving. The number of irrigations per irrigation period was increased in EDNA compared to empirical irrigation. The average amount of irrigation water applied in the period 2023 and 2024 was 10.5% less in EDNA compared to empirical. Production per hectare was higher or equal in EDNA depending on the year, while the irrigation water use efficiency (WUE) was 5.6 kg/m³ in EDNA, higher than 4.7 kg/m³ in empirical irrigation. Fruit quality (fruit size, moisture, oil content, acidity) was not significantly affected by irrigation management. Considering the results to date of water consumption, soil moisture, fruit quality and irrigation water use efficiency, EDNA has significant irrigation water savings compared to empirical irrigation.

Keywords: Intelligent irrigation water management (IWW); olive grove water use efficiency; smart irrigation systems (EDNA / ZEN-IRRIWARE); water use efficiency (WUE).