

Olive Cultivation (Marginal Lands and Grey Water)**Authors:** George Bourazanis**Affiliation:** *Agricultural Economy and Veterinary Medicine of the Peloponnese Region*gbourazanis@windtools.gr

Olive cultivation and products are documented in Minoan and Mycenaean civilizations through Linear B tablets, processing facilities, and storage vessels. Over time, population growth, rising education levels, technological advances, and evolving social conditions led to a shift from dry to irrigated agriculture, and from extensive to intensive olive cultivation. More recent trends include dense and ultra-dense linear plantings, mechanized harvesting and pruning, and the application of precision agriculture in irrigation, fertilization, and plant protection. Expansion into marginal lands—sometimes reaching the upper limits of the olive-growing zone—has occurred through legal interventions in specific forest areas or through encroachments. However, the high cost of making these lands cultivable, combined with legal requirements for investment sustainability, has made irrigation essential. This has led to drilling deep boreholes, in some cases 450–500 m deep. Climate change, overexploitation of underground and surface water, and the shift toward green technologies and sustainable development now add financial pressure to primary production. Water scarcity is felt nationwide and is especially severe in drought-prone coastal areas, where aquifers are vulnerable to overuse and salinization. These conditions have made it technically and economically necessary to treat water as a paid public good rather than a free one. The concept of opportunity cost has therefore become central, particularly in coastal regions where mass tourism develops. In such areas, summer population surges increase water demand for both visitors and local food production. To address this, various scientific solutions have been proposed: dams, extra-river and intra-river reservoirs, desalination, and especially the treatment, recovery, and reuse of degraded water from urban and agricultural sources. These water streams vary in pollutant load, requiring different technologies for purification. Most degraded water is in coastal areas, where major urban centers exist and agricultural drainage networks end. Treating and reusing these resources is a high priority because it:

- Reduces environmental pressure by limiting the pumping of clean water
- Lowers the acquisition cost of irrigation water compared to groundwater
- Recycles nutrients present in treated water
- Decreases pumping and distribution costs through collective irrigation networks
- Reduces the energy and environmental footprint of irrigated agriculture

No single solution is a panacea; each requires careful study, implementation, and monitoring to ensure it benefits producers rather than harms them.

Keywords: Olive trees; drought; biostimulants technology.