

Green innovative biodegradation of polyphenols in oil mill wastewaters to produce first class soil conditioner

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Greece lies among the top three main olive oil producers worldwide accounting for the 93% of the European olive oil production [1] and devotes about 60% of its cultivated land to olive growing. During olive oil extraction, a large amount of solid and aqueous residues known as olive oil mill wastewater (OMW) arises as by-product containing (by weight) typically 83-94% water, 4-16% organic compounds and 0.4-2.5% mineral salts [2]. The most dangerous pollutant is the phenolic residue (2-15% of the organic fraction), which, when discharged in the aquatic receivers, deteriorates natural water bodies, affect soil quality, are toxic to plants and create odor nuisance.

The innovation presented compared with the traditional composting of OMW, involves the addition of a biocatalyst [3], extremely rich in microorganisms, which accelerates the biodegradation of phenols, thus, affecting decisively the composting process. The product obtained was further evaluated regarding its soil-conditioning and biofertilizing properties. The aim is to utilize degraded and toxic remains to produce eco-friendly compost with higher added value compared with those obtained from the conventional methods of waste management. The results show that the product can be classified as a first class soil conditioner, important for establishing a clean-up technology in oil mills and also demonstrated that olive oil extraction can be considered as IPPC (Integrated Process Pollution Control).

Additionally the whole process meets the requirements of ECOLABEL and the product can be used in Organic farming.

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