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Effect of olive mill wastewater application on soil water repellency mitigation

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Olive mill wastewater (OMW) is a by-product of olive oil production and it is generated in large quantities in the Mediterranean region. Waste disposal is a growing problem and therefore there is an increasing interest in sustainable (economical and environmental) reuse of this material. In this study OMW was applied in water drops on a water repellent sandy soil and the time until complete penetration was recorded. For this reason different dilutions of OMW were used while comparison was made with the standard procedure of the water drop penetration time (WDPT) using de-ionised water. The results of this study showed that with increasing OMW concentration the lower the water penetration time was. Analyzing the OMW samples using Capillary Gas Chromatography revealed increased concentrations of low molecular fatty acids (mainly acetic, propionic, butyric and valeric). Direct application of OMW on the field combined with the rapid infiltration into the soil matrix, is an interesting option to mitigate soil water repellency and deplete hydrophobic compounds.