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## Effects of biochar addition into intensive-olive orchard soils under deficit irrigation

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Agriculture is facing the challenge of providing food for a growing world population in a context of climate change. The Mediterranean region is characterized for a semi-arid climate. Thus, water scarcity is coupled with the development of intensive crops that require irrigation, such as olive orchards. Recently, biochar –the solid aromatic carbonaceous product of the pyrolysis of residual biomasses– has been proposed as an amendment for reducing soil water loss [1] and increasing plant productivity [2]. The main objective of this study was to compare the effects of the application of biochar and green-compost (the organic amendment traditionally used) on soil properties and crop productivity at a super-intensive plantation of *arbequina* olive trees under deficit irrigation located at “La Hampa” field station (Coria del Río, Seville, Spain). Thus, soils were amended with 40 t ha<sup>-1</sup> of olive-waste biochar, green-compost or a biochar-compost mixture (50 % w/w). Un-amended plots were used as control. On a monthly basis, soil pH, water holding capacity, humidity and penetrability resistance, as well as TC and TN contents of soils were determined. Finally, the total weight of produced-olives per tree was measured.

Results showed that biochar application was the most effective amendment in increasing soil water holding capacity and moisture. All the organic amendments reduced the soil penetrability resistance. Olive production increased about 15 % at the biochar amended plots. Thus, the application of organic amendments, especially biochar, improved soil physical properties and led to a higher crop production.

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References:

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