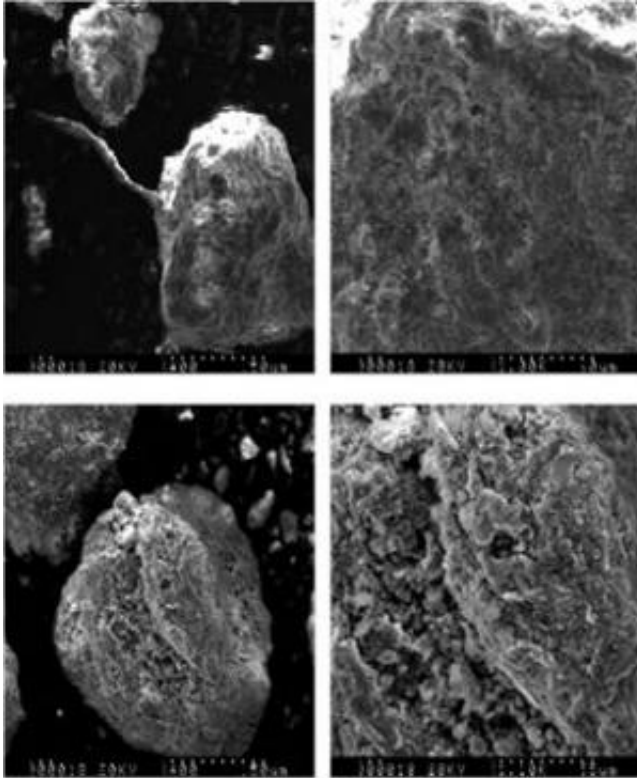


# New material to enhance crop yield

December 16 2013

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Images of a biochar structure taken with a scanning electron microscope. Credit: A. Méndez, M. Terradillos, G. Gascó

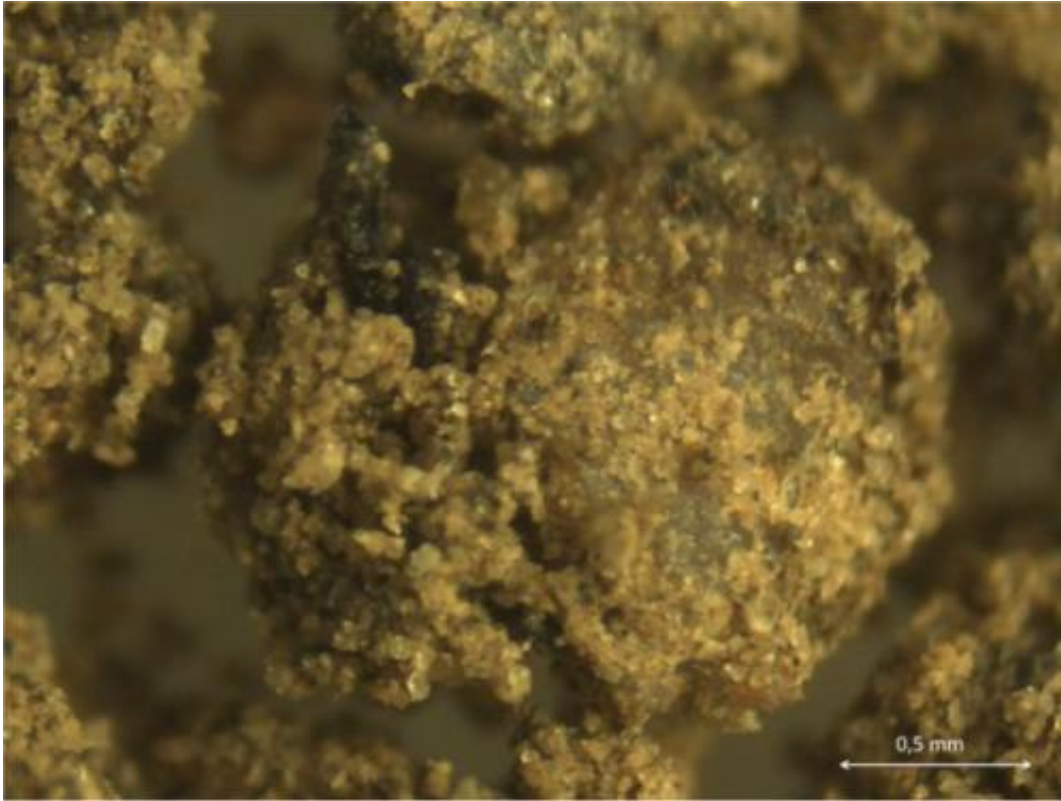
Researchers at the UPM have developed a carbonaceous material from sewage sludge that when applied to soil can help to improve its quality.

The material is called biochar and was prepared and characterized by the research group of Resource Exploitation of the Technical University of Madrid (UPM). The biochar has promising effects because its addition

can enhance the quality of [soil](#), and consequently it can enhance crop yields. In addition, it has beneficial properties for the environment.

The generation of [sewage sludge](#) is increasing and its management and treatment have been studied over the last years. Among the different usages of the sludge in countries such as Spain, where soil has a low content of organic material, we should stress its direct addition to soil. However, there are some factors that threaten this practice due to high level of salts, metals and organic compound which can even be toxics.

Researchers at the group of Resource Exploitation of the UPM have been working on the preparation and characterization of the biochar for several years. They also worked on the biochar from sewage sludge and also the effect of physical, chemical and biological properties of the soil, as a result improving this material. The obtained results so far are quite encouraging as they show how the addition of biochar to soil can enhance its quality (for example, its ability for moisture retention, pH or biological activity) and therefore, to enhance [crop yields](#).



Aggregate formation in soil after addition of biochar. Credit: A. Méndez, M. Terradillos, G. Gascó).

Other positive effects of the biochar use from sewage on the environment are, firstly, the reduction of the solubility of the existing metals in sewage sludge. Secondly, it allows a [soil carbon sequestration](#) thanks to the higher stability of the biochar which reduces its degradation and contributes to reduce emissions of greenhouse gases.

The researchers of the UPM are currently extending these studies for its application in the field of biochar from sewage sludge and other types of organic residues susceptible to be changed into [biochar](#). This research is a joint collaboration between the group of Treatment and reuse of organic wastes of the Institute of Agricultural Sciences at the CSIC, the department of Department of Environmental Engineering of the

Technical University of Crete (Greece) and the Institute of Applied Ecology, Chinese Academy of Sciences.

**More information:** A. MÉNDEZ, A.M. TARQUIS, A. SAA-REQUEJO, F. GUERRERO, G. GASCÓ. "Influence of pyrolysis temperature on composted sewage sludge biochar priming effect in a loamy soil". *Chemosphere* 93 (2013) 668-676.

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