

# BIOCHAR

## Jordan Biochar Research Initiative (JBRI)



المبادرة البحثية الاردنية للفحم الحيوي

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### What is Biochar?

Biochar is a soil amendment with the potential to revolutionize soil management, biomass waste and carbon sequestration. Biochar has been used in traditional agricultural practices for millennia, as well as in modern horticulture. Biochar's unique properties make it exceptional for sustainable soil management, effective conversion of biomass to energy and long term sequestration of carbon.

### What does it do?

Biochar has outstanding characteristics significant to climate change and soil fertility.

**Nutrient and Water Affinity:** Organic matter added to soil significantly improves soil functions, including retaining nutrients essential to plant growth

**Persistence:** It is undisputed that biochar is much more persistent in soil than any other form of organic matter that is commonly applied to soil. Thus, all associated benefits with respect to nutrient retention and soil fertility are longer lasting than with alternative management or common fertilizers.

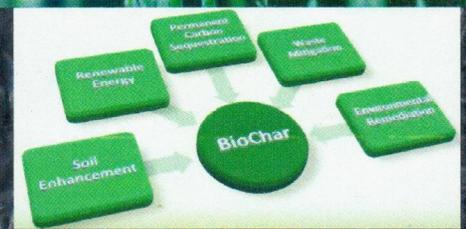
### How is Biochar made?

Biochar is made by pyrolysis: heating biomass (wood chips or pellets, bark, manure, crop residues, etc.) with limited oxygen. Energy crops, such as short-rotation woody plants or grasses, can be grown for biomass, or biomass waste can be collected.



### How is Biochar is a Carbon-negative?

Biochar can store carbon in soil for thousands of years, improving soil fertility and stimulating plant growth, which then consumes more CO<sub>2</sub> from the atmosphere. Heat produced from making biochar can be used or turned into electricity. Captured gas and liquid by-products can be used as fuels. Under decomposition or open burning, most CO<sub>2</sub> from biomass would be released back into the atmosphere. Biochar captures 50% of the original carbon in the biomass and stores it in soil. The net amount of CO<sub>2</sub> in the atmosphere from this process is thus reduced while enhancing soil fertility and displacing the use of fossil fuel based fertilizers, making the biochar process carbon negative as long as biomass production is managed sustainably.



### What's it cost?

Biochar production is completely scalable in mobile or stationary ovens. Demonstration projects are active throughout the world.

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The Jordan Biochar Research Initiative (JBRI) was initiated in Jordan on 2014 by Dr. Osama Mohawesh at Mutah University, with "Support Research and Technological Development and Innovation initiatives and Strategies in Jordan" funding from the European Union (EU-SRTDII). A number of researchers with related expertise have joined the research efforts of JBRI, which is aimed primarily at improving our understanding of how biochar functions in modern agricultural systems.

Sustainable agriculture and water productivity in Jordan need enhancement by integration of innovative methods, knowledge, and extension that allow stakeholders and farmers to evaluate the feasibility of new, user-friendly, and cost-effective technologies. The main objective is to start a research program that aimed to implement biochar use in agriculture to evaluate the benefits of biochar as a soil amendment to enhance nutrient and water use efficiency for different cropping systems in Jordan, and demonstration activities related to the use of biochar as a possible strategy to improving crop yield and reduce economic and health vulnerability to climate change

#### Contact:

Dr. Osama Mohawesh, Group leader  
Water Resources and Environmental Engineering  
Department of Plant Production, Faculty of Agriculture, Mutah University, P.O. Box: 7, Karak, Jordan  
Tel. 00962-3-2372380, Fax. 00962-3-2323154, Mobile: 00962-0797408855  
E-mail: [osama.mohawesh@gmail.com](mailto:osama.mohawesh@gmail.com) E-mail: [osama@mutah.edu.jo](mailto:osama@mutah.edu.jo)



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