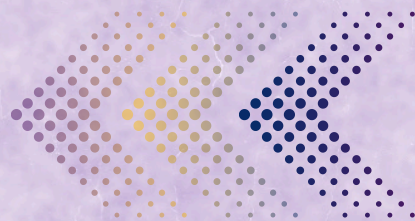




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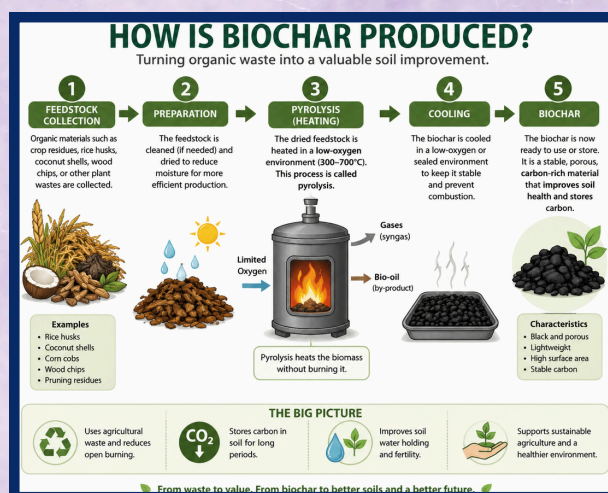
NEWS AND ARTICLES

BIOCHAR: TURNING AGRICULTURAL WASTE INTO A SUSTAINABLE SOLUTION

Authors: Suraiya Mahdian and Azizu Soteh Ali

In recent years, sustainable agriculture has become increasingly important as farmers and communities seek environmentally friendly ways to improve crop production while protecting natural resources. One innovation that has gained attention worldwide is biochar. Although the term may sound technical, biochar is actually simple and highly beneficial for agriculture and the environment.

Biochar is a black, charcoal-like material produced from organic waste such as rice husks, coconut shells, wood chips, palm residues, or plant waste. Unlike ordinary charcoal used as fuel, biochar is specially produced for agricultural and environmental purposes. It is produced through a process called pyrolysis, in which organic materials are heated to high temperatures under limited oxygen. During this process, the biomass does not fully burn, but instead transforms into a stable carbon-rich material.



Producing biochar helps convert agricultural waste into a valuable product rather than allowing it to be openly burned or discarded. For example, crop residues that are normally considered waste can be transformed into biochar and returned to the soil. This practice not only reduces waste but also supports a circular agricultural system that efficiently reuses resources.

One of the main benefits of biochar is its ability to improve soil quality. Biochar contains many tiny pores that help retain water and nutrients in the soil. This is especially useful in sandy soils or during dry weather conditions. With better water retention, plants can grow more effectively and may require less frequent irrigation. Biochar also improves soil structure, making it more suitable for root growth and the presence of beneficial microorganisms.

In addition, biochar can improve fertiliser efficiency. Nutrients such as nitrogen and potassium are less likely to leach from the soil when biochar is present. As a result, crops can absorb nutrients more effectively, potentially reducing fertiliser losses and lowering farmers' production costs.

Beyond agriculture, biochar also contributes to environmental sustainability. Since biochar stores carbon in a stable form, it helps reduce the amount of carbon dioxide released into the atmosphere. This means biochar has the potential to support climate change mitigation efforts aligned with Sustainable Development Goal 13 (Climate Action). At the same time, using agricultural residues for biochar production can reduce open burning, which often contributes to air pollution, thereby addressing the Environmental, Social, and Governance (ESG) frameworks.

Today, biochar is increasingly recognised as an important component of sustainable agriculture. It promotes better soil health, improves crop productivity, reduces agricultural waste, and supports environmental conservation. As awareness grows, biochar may become one of the practical solutions for creating a greener and more sustainable future for agriculture and society.

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