

Why Biochar is a Game Changer in Achieving Sustainable Agriculture in Rural Kenya



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For a long time, our communities, whether in small scale or large scale, have heavily depended on chemical fertilizers in their farms for high yields. While the effects of these have been visible in terms of high produce, particularly in the early years of usage, the long-term impact on the soil fertility has been undeniably visible.

Intensive use of inorganic fertilizers tends to erode soil value over time, leaving farmers with farms that can barely yield any significant output. The impact of this declining soil fertility is reducing productivity, exposing households and communities to food insecurity. More than ever before, our communities are at a threat of hunger due to poor crop yield, posing the question, what sustainable solutions are available for farmers to address this undesirable situation. Biochar is one of such sustainable solutions.

So, what is Biochar?

Biochar is a stable, porous substance created by heating organic materials in a low-oxygen environment. The [International Biochar Initiative](#), describes it as a fine-grained and highly porous material made from biomass such as agriculture byproducts, forestry residues and solid waste. These materials are subjected to low-oxygen heating, creating a stable and porous

charcoal-like substance that serves multiple purposes from cooling a boiling planet to supporting agricultural systems in adapting to climate change, and offering carbon-negative materials as alternatives in the built-environment.

What are some of the benefits biochar is offering to farmers?

- Biochar enhances soil fertility, which in turn improves productivity: According to a study by the [Agronomy for Sustainable Development](#), the addition of biochar into the soil is a solution to soil erosion and nutrient leaching, helping improve soil fertility, enhance crop yield, and promote plant growth. The report also highlighted how the use of biochar enhances soil structure, improves water retention, and supports nutrients development through the created environment for microbial activities, boosting farm productivity.
- Biochar is an important substance in addressing climate change through carbon sequestration. The production and application of biochar offsets carbon emissions. Rather than let biomass decompose and release carbon dioxide (CO₂), the CO₂ is sequestered and stored in the biochar for hundreds to thousands of years. According to the [International Biochar Initiative](#), biochar is one of the most stable substances that can stay in the soil for thousands of years. Its stability makes it ideal in mitigating long-term climate change.

Beyond the agricultural space, biochar is a valuable product for use in decarbonizing the built environment. It is useful in creating carbon-negative materials in packaging and construction. From these benefits, biochar is an antidote to sustainable farming practices, particularly in Africa that is agriculture-reliant as a source of livelihoods for many households. While the effectiveness of biochar in achieving these has been tested, most parts of Africa are still lagging behind in embracing the new alternative to enjoy its full benefits.

[Women in Cold Chain Agriculture & Renewable Energy \(WICCARE\)](#) is stepping up to bridge this gap through its operations in Suna West Sub-County, Migori County, Kenya. As a pioneering social enterprise in the clean energy and circularity space, the company is processing biomass from agricultural wastes to make biochar for local use, directly addressing the issues of farm productivity and climate change, whose effects are visible in that part of the world. WICCARE through its biochar will make households self-sufficient with the increased crop yield. The innovative response to climate change also promises Migori County as a sustainable future where generations to come can thrive.