



Contribution ID: 11

Type: not specified

Energy recovery from low-value agricultural residues for biochar production during cooking using a multifunction family oven

Friday, 27 October 2023 14:00 (15 minutes)

The main source of energy for many African families is firewood. Exploitation of this resource is at the root of deforestation, leading to accelerated environmental degradation, with its corollaries of climate change and soil impoverishment. The approach proposed in this paper has a dual objective, namely to provide an alternative energy production technique for household needs, and to contribute to the sustainable management of soil fertilization. The device used is a multifunctional furnace comprising three chambers: a combustion chamber, a pyrolysis chamber, and an insulation chamber. This simplified pyrolysis system for biomass with no market value (cotton stalks, maize cobs, rice husks) produces energy for cooking and, at the same time, biochar for soil improvement. The biochar obtained after pyrolysis is a vegetable coal that differs from energy coal. Biochar is produced at a temperature in excess of 500°C, whereas energy coal is produced at less than 300°C. Biochar helps to improve agricultural yields, as it contains macropores that enable it to house nutrients and then release them slowly to the plant. It also has a high-water absorption capacity thanks to its pores. This paper presents the process optimization approach and highlights the benefits of the proposed technology for sustainable soil and environmental management.

Primary author: Dr TARPILGA, Moussa dit Corneille (Laboratoire de Matériaux, Héliophysique et Environnement (LAMHE))

Co-authors: Prof. NAON, Betaboalé (Laboratoire de Matériaux, Héliophysique et Environnement (LAMHE)); Dr OUEDRAOGO, François (Laboratoire de Matériaux, Héliophysique et Environnement (LAMHE)); Mr SALIF OUE-DRAOGO, Salif (Laboratoire de Matériaux, Héliophysique et Environnement (LAMHE))

Presenter: Dr TARPILGA, Moussa dit Corneille (Laboratoire de Matériaux, Héliophysique et Environnement (LAMHE))