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Impact of renewable technology on lignocellulosic material of physic nut shell: Strategy for climate change and adaptation


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Agricultural residues have the potentials to be used as energy and chemical source and meet its deficit in the country. Physic nut shell is a residue of *Jatropha curcas* which is a good source of biofuel. This study aims to explore low temperature and pressure to extract the lignocellulosic content of physic nut shell and pyrolyze it for energy (bio-oil) and chemical feedstock productions as alternative technology to improper disposal causing environmental pollution as strategies for climate change and adaptation. The main properties of solid (lignocellulosic) materials were tested and the bio-oil produced was analyzed using GC-MS. Results show proximate analyses (volatile, ash and fixed carbon contents) and ultimate analysis (carbon, oxygen, nitrogen, magnesium, phosphorus and zinc). The pH value of the

bio-oil from the residue increased with increase in temperatures. The density, viscosity and calorific value of the physic nut residue oil are 947.5kg/m³, 1.58cPa at room temperature and 14.169kJ/g, respectively. Physic nut shell oil contains aromatic ethers, cyclic ethers, secondary amides and organic halogen compound which are important chemical feedstock. Conversion of these residues to useful products will alleviate the energy supply deficit, improve social and economic development, promote clean and healthy atmosphere of the nation and significantly contribute to global climate change mitigation. Therefore, this study is recommended for policy making on proper disposal and bio utilization of residues in the nation.

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