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Response of Soil Properties to Different Tillage Methods and Wood-Ash Application on Productivity of Castor (*Ricinus cumunis* L.)

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Abstract: A field experiment was conducted in 2016 and 2017 cropping seasons to evaluate the effect of different tillage practices amended with wood ash on soil properties, growth and yield of castor oil plant in a Typic Haplustult in South eastern Nigeria. The treatments were mound + 4 t ha^{-1} wood-ash, flat + 4 t ha^{-1} wood-ash, ridge + 4 t ha^{-1} wood-ash, flat, mound and ridge. The highest seed emergence was observed in wood-ash amended tillage practices compared to those without any amendment. Significantly lower bulk densities and higher volumetric moisture content values of soil were observed in tillage practices while higher values of pH, Ca, Mg, Na and Kin wood ash amended tillage practices. Plant height was significantly higher in tillage practices amended with wood-ash compared to tillage practices receiving amendment. At harvest higher castor seed yield was obtained in wood-ash amended tillage practices compared to tillage practices receiving no amendment. These results suggests that tillage practices amended with wood-ash provide a better soil and superior edaphic environment for castor performances than tillage practices receiving no amendment .

***Keywords*:** Liming material, Crop yield, Healthy growth, Soil quality, Acidic soil