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# Friability and aggregate stability of loamy soil after 5 years of biochar application

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The effect of biochar application on soil friability and aggregate stability of loamy soil was studied at Brawijaya University field experimental station, Jatikerto, Malang, Indonesia. The soil has been planted with cassava for 4 years continuously and 1 year planted with maiz. The biochar applied was made from cassava stem and farm yard manure. It was found that biochar application, either made from cassava stem or farm yard manure improved soil qualities. Soil applied with biochar was more friable compared to that of the no biochar soil, although biochar application did not influence Atterberg limits. It seems that the higher friability of biochar applied soil was associated with the higher soil organic matter. It was found that until 5 years application, the biochar treated soil had a higher soil organic matter content. Soil applied with biochar possessed a better soil aggregate stability, both dry and wet stability. This was shown by the higher aggregate mean weight diameter (MWD) of biochar applied soil. The cassava biochar applied soil had MWD of 2.22 mm (dry stability) and 1.56 mm (wet stability), whereas the control soil had MWD of 1.45 mm (dry stability) and 1.25 (wet stability). There was a significant positive correlation between soil friability and dry aggregate stability. The biochar applied soils also had higher soil permeability.

Key words: soil qualities, soil physical properties, Atterberg limits, hydraulic conductivity