施用不同生質來源生物炭對砂質土壤團粒作用之影響

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摘　要　團粒穩定度為評估土壤品質之一重要土壤物理性質，尤其於熱帶及亞熱帶地區。本研究添加稻殼炭與木質炭兩種不同生質來源炭資材於砂質土壤中，目的在於評估生物炭對土壤團粒之影響。本試驗中添加生物炭之土壤且於 16 周長期培育後，分析並評估各粒徑土壤團粒及團粒平均重量粒徑之變化。實驗結果顯示，十六周後，土壤團粒平均重量直徑顯著較控制組增加 0.5 - 17 倍。培育期間內，各粒徑間之比例變化主要由 0.25 mm - 0.5 mm 轉變為 2 mm - 5 mm 為主；其中以添加 4%稻殼炭+60 噸堆肥與添加 2%木質炭+60 噸堆肥之處理變化最為顯著。此外，本試驗結果指出，2%生物炭添加量較 4%添加量對促進土壤團粒作用更為顯著；此外，稻殼炭又較木質炭具有較佳之效果。

關鍵詞：團粒穩定度、生物炭、平均重量直徑。

Effects of Different biochars Application on Aggregate Stability of a Sandy Soil

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ABSTRACT　Soil aggregate stability is one of soil physical properties to evaluate soil quality, particularly in subtropical/tropical regions. This study applied two biochars made of different biomass stocks, rice husk and wood pieces of the white lead tree, into a sandy soil to evaluate dynamic changes of different size fractions and mean weight diameter (MWD) of soil aggregate in the amended soil after 16 weeks. The results indicated that the MWD of aggregates of the amended soil were increased by 0.5 – 17 times as comparison with the control. The dominant size of aggregate fraction changed from 0.25 mm - 0.5 mm to 2 mm - 5 mm implicating macro-aggregate formation in the biochar-amended soil. The 2% of biochar application rate obviously facilitated formation of macro-aggregates rather than 4% does. In addition, rice husk biochar seems bring better efficiency of aggregate growing than wood biochar..

Key Words : Aggregate stability, biochar, mean weight diameter.

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