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EFFECTS OF DIFFERENT TYPES OF ORGANIC MANURES ON EVOLVED CO2 IN SALINE AND NON-SALINE SOILS AT DIFFERENT INCUBATION PERIODS

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I   In Sri Lanka, salinization of agricultural lands is a serious problem prevailing in arid and semi-arid regions of the country. A laboratory incubation experiment was conducted at Eastern University of Sri Lanka, from July to September 2017 to investigate the CO_2-C evolved dynamics of salt-affected soils, amended with four different organic manures. A bulk soil sample was collected at 0-20 cm depth from a salt-affected area at Vaharai. Factorial combinations of saline and non-saline soils with four types of organic manures namely, Poultry Manure (PM), Farm Yard Manure (FYM), Glyricidia and Partially Burnt Paddy Husk (PBPH), were used at the rate of 10 t/ha. At the Lab trapped CO_2 content was measured by recommended absorption and titration method. Data were analyzed using Statistical Analytical System (SAS) and means were separated by Duncan Multiple Range Test (DMRT). Results revealed that under saline condition (at EC=7.13 dS/m), the highest amount of CO_2-C released (352.00 mg/100g soil) was observed in Glyricidia amended soil, followed by FYM (289.62mg/100g soil), PM (205.70mg/100g soil) and PBPH (96.43mg/100g soil). The amount of CO_2-C evolved under non (or very lower) saline condition (at EC=0.35dS/m), ranged from 54.23mg CO_2-C/100g (PBPH) to 498.13mg CO_2-C /100g (Glyricidia amended) soils. The results of this study suggested that the application of glyricidia leaves proved to be the best organic manure (of the four considered) to improve the microbial activity by releasing the larger amount of CO_2-C in saline environment. Hence, incorporation of glyricidia could be used as an ameliorative way in improving saline soil.

Keywords: salinity, decomposition of organic manures, microbial activity.