Greenhouse gas emission from the composting process of broiler litter [1]

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The purpose of this study was to evaluate the green house gas emission factors (EF) and the effect of aeration condition on the EFs of the composting process of broiler litter and propose strategies for reducing GHG emission. The broiler litter was piled in the composting plants with 3, 0.5 and 0 min/hr of aeration, respectively. The composting temperature was recorded daily. The GHG from the compost was measured triple a week. The composition of compost was analyzed once weekly. Total amounts of the green house gases emitted during the composting processes were calculated by the GHG concentration of headspace gas of compost plants. The results showed the EFs of nitrous oxide were 0.62, 1.27 and 1.23% N_2O-N/initial N and 1.59, 1.96 and 2.04% CH_4-C/initial C, respectively. The more aeration time it was given, the less amount of methane emitted. Taking the power consumed into account, the total carbon dioxide equivalent of were 0.32, 0.43 and 0.42 kg/kg initial dry matter for the aeration condition of 3, 0.5 and 0 min/hr, respectively. The results of this study showed 3 min/hr of aeration could reduce 24% of the GHG from the broiler litter composting process.

Key words: Broilers litter, Compost, Greenhouse gas.

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