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EMISSION OF CH₄, N₂O AND NH₃ FROM VEGETABLE FIELD FERTILIZED WITH ANIMAL MANURE COMPOSTS

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Abstract

Greenhouse gas (GHG) emissions from vegetable land are of great concern because agricultural land is one of major sources contributing to global GHG emissions. In this study, the emission of GHG (methane, CH₄; nitrous oxide, N₂O; and ammonia, NH₃), as well as the factors affecting GHG and NH₃ emission were investigated in land planted with *Lactuca sativa L.* and treated with different animal manure composts in a greenhouse located in Beijing. Methane emission flux was significantly affected by soil temperature and humidity, and N₂O emission flux was related to soil temperature, surface temperature and humidity. The emission fluxes of CH₄, N₂O and NH₃ were mainly affected by soil moisture, but there was little relation between emissions of CH₄, N₂O, NH₃ and ambient temperature in the greenhouse. Results showed that emission factors (EFs) of CH₄ from the treatments investigated – NRM (application with swine manure compost without red mud), RM (application with swine manure compost with red mud) and CF (application with commercial organic fertilizer) – were 0.20%, 0.027% and 0.004%, respectively; EFs of N₂O from these three treatments were 0.18%, 0.63% and 0.74%, respectively, and EFs of ammonia were 2.00%, 3.98%, 2.53%, respectively.

Key words: animal manure compost, ammonia, emission factor, greenhouse gas, *Lactuca sativa L.*

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