

Environmental load gas emissions from fattening swine breeding and its waste treatment

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Summary

Recently, great concern has gathered in generating from the livestock farm of environmental load gases, such as ammonia (NH_3), nitrous oxide (N_2O) and methane (CH_4). In order to calculate the total amount of each gas per capita which occurs from swine waste, three processes considered to be the main generation sources of each gas was examined.

According to the results of those experimental studies, 1) The NH_3 ($\text{NH}_3\text{-N}$), N_2O ($\text{N}_2\text{O-N}$) and CH_4 emissions from pig units during a full fattening period of 8 weeks were estimated at 149,5.8 and 302g/head respectively. 2) The NH_3 ($\text{NH}_3\text{-N}$), N_2O ($\text{N}_2\text{O-N}$) and CH_4 emissions from swine wastewater purification were estimated at negligible, 1.8~7.4g and 10.7~37.5g/head respectively. 3) The NH_3 ($\text{NH}_3\text{-N}$), N_2O ($\text{N}_2\text{O-N}$) and CH_4 emissions from compost were estimated at 133~325g, 0.2~129g and 0.7~6.4g/head respectively. 4) The $\text{NH}_3\text{-N}$, $\text{N}_2\text{O-N}$ and CH_4 emissions from the swine keeping unit and its manure contributes (a full fattening period of 8 weeks) were estimated at 271~438, 16.5~49.4 and 270~438g/head respectively.

And, 5) Those emission could be reduced by adequate manure contributes, such as ; weekly discharge of slurry in swine unit, employment of intermittent aeration process for wastewater treatment and keeping of aerobic condition during swine manure composting.

Keywords: Ammonia, Nitrous oxide, Methane, Composting, Wastewater treatment