

Wanida Suebsaiprom 2010: Managing Dunging Wallow in Pig Housing for Biogas Production.
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Generally, dunging wallow has been commercially accepted using as one of efficient method for pig farm waste management. However, such quantitative and qualitative of the wastewater released from the dunging wallow on various managements has not been apparently investigated in Thailand, yet. These three experiments were carried out in a big commercial pig farm. The objective of the experiment 1 was to study the characteristics of wastewater produced from dunging wallow at different draining frequencies. CRD with 3 replications was employed in this the results showed that everyday (T1), every two days (T2) and every three days (T3) drainage produced total wastewater (house of 750 pigs) of 32.10, 30.44 and 31.16 m³ respectively (p>0.05), and the average wastewater produced/day were 32.10, 15.22 and 10.72 m³, respectively. BOD₅ of T1, T2 and T3 were 1,792, 2,529 and 3,107 mg/l, while COD were 7,779, 8,463 and 8,980 mg/l. Further, TS were 11.27, 20.70 and 26.44 g/l, as well as TVS were 2.90, 5.42 and 6.80 g/l, respectively (p<0.01). Interestingly, there was nonsignificant in pH, i.e., 7.06, 7.16 and 7.14 (p>0.05). These figures are important and needed in selecting and designing types and sizes of wastewater treatment systems.

A specific objective of experiment 2 aimed at a management of dunging wallow for odor control and efficient biogas production. 2x3 Factorial in CRD with 2 replications was used in this experiment. The factors included in the study were every two days and every three days draining of dunging wallow and non addition, addition of effective microorganism (EM) and addition of Bio-extract (BE) in dunging wallow. The results showed that every two days and every three days drainage effected biogas production/day, pH, TVS, BOD₅, and COD of effluent, % TS removal and macro nutrients (p>0.05). The drainages effected in average wastewater produced/day, TS of influent, % BOD₅ removal (p<0.05), BOD₅ and COD of influent and % COD removal (p<0.01) respectively. The addition of BE or EM increased the biogas production/day and %CH₄, % COD removal, BOD₅ and COD of effluent and reduced pH (p<0.01) and COD of influent (p=0.05).

A specific objective of experiment 3 aimed at a management of dunging wallow in a big commercial pig farm for efficient biogas production. Group Comparisons with 2 replications was used in this experiment. The results showed that the addition of EM increased the work hours of generator, BOD₅ of effluent, % BOD₅ removal and % COD removal (p<0.01) and COD of effluent (p=0.05)

Student's signature

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