

Natthaphong Srikhomkhag 2014: Carbon Credit Assessment from Biogas Production in Small and Medium Pig Farm. Master of Science (Environmental Science and Technology), Major Field: Environmental Science and Technology, Division of Sciences. Thesis Advisor: Miss Prapa Shosalam, Ph.D. 74 pages.

The carbon credit was assessed from swine farm, small and medium size, by using simple biogas fermentation system. Biogas quantity was studied from treatment of swine farm wastewater compare with mixed swine farm wastewater with cafeteria wastewater. Increasing of hydraulic retention time (HRT) and reduction of organic loading rate (OLR) gave the highest methane content at OLR of 0.130 g COD/L.day and HRT of 120 day. The highest methane content was 40.37% and methane yield of 110.4 ml methane/g COD.

The influent BOD was in range of 7,500 - 10,500 mg/L. This biogas fermentation system could reduce BOD into range of 2,100 - 2,340 mg/L. Comparison of BOD treatment efficiency with HRT, the result showed that increasing of HRT was also increased BOD treatment efficiency. At HRT of 120 days showed the highest BOD treatment efficiency at 76.87%.

Swine farm in Thailand produce the high strength organic wastewater which can be produced biogas. There are 5,445,627 pigs from small and medium farm in Thailand that discharge wastewater of 147,031,929 m<sup>3</sup>/day. This amount of wastewater can be treated by using the simple biogas fermentation system which can produce 233,745 m<sup>3</sup> of biogas per day equal to electric power of 280,497 KW-hr/day. Green technology applying in swine farm can increase carbon credit 347 CO<sub>2</sub> ton/year which equal to 166,560 bath/year.

---

Student's signature

---

Thesis Advisor's signature