

ENVIRONMENTAL ASPECTS OF PIG INDUSTRY IN GAMPAHA DISTRICT
AND
ROLE OF MICRO-ORGANISMS IN PIG WASTE MANAGEMENT

PERMANENT REFERENCE

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Abstract

Pig is a major component of the livestock sector in Sri Lanka and there is good demand for pork throughout the country. In addition, pig meat is highly sought for meat processing industry. Majority of the pig population is concentrated in the coastal belt extending from Puttlam to Kalutara, known as the pig belt. As a result lot of piggeries are found in densely populated districts in the country. Therefore, this study was carried out to find the environmental aspects of pig management in Gampaha district and to investigate the use and the performance of commercially available microbial cultures in pig waste management.

The field survey revealed that 48% farmers maintained their piggeries in a land less than 80 perch extent. 74% of farmers should have obtained Environmental Protection Licensee (EPL) and only 17% had obtained. According to the regulations, the minimum distance that should maintain from pig pen to the fence is 228 m, but 26% farmers had violated this regulation. Composting, biogas generation and use of septic tanks for piggery wash water are the accepted methods of disposal of pig waste and 2%, 10% and 20% farmers used these methods respectively. Burrying (11%), direct soil application (18%) and collected in un cemented pit (27%) were the other methods used for waste disposal which were not matched with the regulations. However, 48% farmers did not use pig waste for any purpose. Although pig pens should be washed twice a day, only 43% followed this regulation. Sixteen percent piggeries were warned by the regulation authorities and finally 2% of them were closed.

Sensory Evaluation revealed that the Effective Microorganism (EM) reduce the malodors of pig waste significantly. The results of the performance of EM on the reduction of BOD experiment revealed that 70.68% and 65.36% reduction within 80 days period with EM treated and untreated slurry respectively. Fifty percent of BOD reduction had been achieved by EM treated slurry in 4 weeks and whereas it has taken 6 weeks by untreated slurry to achieve the same result. However, treatment means were statistically not significant. The highest biogas production had been received by 26 days with EM treated slurry and 36 days had taken to achieve the peak biogas yield with untreated slurry. Mean values for weekly methane production of EM treated and untreated slurry were 1532 mL and 1297.21 mL respectively. Mean CO₂ volume produced per week by EM treated slurry was 2228.87 mL and 1934.73 mL by untreated slurry. The effect of EM on CO₂ volume, CO₂%, CH₄ volume and CH₄% was statistically not significant. A significant interaction was observed between time and biogas volume, CO₂ volume, CH₄ volume, CO₂ % and CH₄%.

The estimated daily pig waste production is 91.511 tons amounting annual volume of 3.34×10^4 tons. It is observed that 69% of the farmers are adopting anaerobic or anaerobic related methods for pig waste treatment. The estimated annual CO₂ and CH₄ volumes of these practices are amounting $9.84 \times 10^4 \text{ m}^3$ and $6.60 \times 10^4 \text{ m}^3$ respectively.