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Long-term measurements of temperature of the fermenting slurry within the biogas digesters at Vele secondary school

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Abstract :

On the issue of biogas production, irrespective of how digesters of different designs are installed (i.e., off-ground or underground) or how different feedstock are used to feed such digester systems, researchers around the globe deepened their most focus on the influence of temperature on the production of the gas. Variation in biogas production has been correlated to the temperature of the slurry inside the digester by a number of researchers. Heating the bio-digester to a temperature of about 35°C is important for mesophilic bacteria growth and activity, in order to obtain optimum biogas production. In view of the above, an attempt has been made to study the variation of temperature within the digester and its correlation with the ambient and surround soil temperature. Three brick built biogas digesters have been partially built underground. Since these digesters are underground, the energy to heat them can only be associated with solar radiation falling to the specific locations where the systems are. Thus an incoming amount of solar radiation striking the soil surface can affect the internal temperature of the digester installed. Each individual digester is fitted with a K-Type thermocouple positioned at the center of individual digester to measure the slurry temperature, one measuring the ambient, and another in the soil at a properly selected position near the digesters. Results of this study are presented in details and answer some of the questions that have been raised by researchers. This study is also useful for biogas researcher who are intending to heat household biogas digesters. Keywords: Biogas digester, Thermocouple, Mesophilic , Bacteria

Award :

YES

Level :

PhD

Supervisor :

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Paper :

NO

Permission :

No

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