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Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	2013_BJAST_5662
Title of the Manuscript:	BIOGAS PRODUCTION: AN ALTERNATIVE PANACEA FOR ENERGY CRISIS IN NIGERIA
Type of the Article	Research Paper

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<u>Compulsory</u> REVISION comments	The manuscript does not include any novel information except the microbiological part. It is very obvious that in anaerobic reactors (when operated under batch conditions); biogas production increases at first and declines as the digestion proceeds according to the applied hydraulic retention time. Besides, if a reactor includes more substrate, it is clear that more biogas would be generated. In such studies when anaerobic digestion is applied; biogas results would be better correlated with some other conventional parameters like total and soluble COD removals, total and suspended solid removals, volatile organic material removals, methane content of the produced biogas, etc. Hence, biogas potential of different reactors operated at different conditions would be better evaluated (i.e. why the combined substrate has given the best biogas yield, etc.). Above all, the initial solid contents of the reactors should be known especiall in the reactor with the poultry droppings. Because, it was reported that, a high concentration of poultry manure with solids content of more than 20%, and a large content of ammonia and organic nitrogen makes this substrate difficult to digest. It is also reported that total $\text{NH}_3\text{-N}$ concentrations may be up to 4000 mg-N/L especially when digesting raw poultry manure due to high ammonia contents in this waste. Hence, anaerobic digestion of the poultry manure without dilution has previously been shown to be unsuccessful because of free ammonia inhibition especially at high pH levels.	These observations have been noted for future studies



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	It would also be better to define the amount of substrate by its organic content rather than defining the substrate with its weight (like 1, 2, and 3 kg). Moreover, the authors should have explained why 45-day digestion time was selected and why they have ceased the operation although biogas production still occurring in the reactors. Again starting-up the anaerobic reactors with seed addition is vital for an effective operation.	This would have introduced bias in the work. This is just a pilot experiment and we needed not keep it longer, especially as we observed that beyond 20th day, biogas yield declines. It was commented in our discussion section that instead of keeping the reactor running, it would be better more substrate is added for cost effectiveness.
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<u>Minor</u> REVISION comments	• There are some errors regarding the citations in the text. It would be better if the authors have written 'inoculum' or 'seed' instead of 'starter culture' at the first place where it appears. • It would be better if the title of the manuscript is changed emphasising more on the microbiological part of this study.	Done the topic of the manuscript has been modified to read "microbial analysis and biogas yield of water hyacinth, cow dung and poultry dropping fed-anaerobic digesters"
<u>Optional/General</u> comments	• The 'Materials and Methods' part; especially the biogas part, should be re-written. Here it should be more clearly explained; (i) the operational mode (batch), (ii) the operational temperature (mesophilic, ambient (room) temperature, etc.), (iii) if the reactors were continuously mixed or not, (iv) the initial characteristics of the substrate(s) such as the moisture content, the volatile ratio, pH, etc. • pH monitoring in anaerobic systems is very important especially when digesting raw poultry manure due to high ammonia contents in this waste. Hence, anaerobic digestion of the poultry manure without dilution has previously been shown to be unsuccessful. • Moreover, the 'Conclusion' part should include more findings so that the reader may understand the main structure of the paper with only reading this part. Thus, 'Conclusion' part should be widened.. • In the 'Discussion' part (between the lines 312-330), it would be better if the authors have mentioned some important characteristics of the poultry manure like the chicken wastes. Because,	We have incorporated as reviewed. Done Done



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	digestion of poultry manure as the sole substrate has previously been shown to be unsuccessful due to the potential of free ammonia inhibition. During anaerobic digestion of chicken manure, the concentration of endogenous ammonia-nitrogen rises considerably. Although some members of the anaerobic microorganism population can use ammonium ions, an excess of ammonium can inhibit the destruction of the organic compounds as well as the productions of the volatile fatty acids and the methane gas. Moreover, the presence of ammonium ions also contributes to a corrosively high pH and leads to handling, storage and disposal problems. Hence, decreasing the ammonia content is desirable for an effective anaerobic treatment of the poultry litter; i.e. dilution and/or co-digestion of chicken manure with other types of organic substrates such as cattle slurry etc.	It is very clear that the reviewer was only making suggestions for further, which our research team has taken note of. However, we have also included the suggestions in the discussion section.
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