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# PRODUCTION AND PERFORMANCE STUDY OF BIOGAS FROM ARECA WASTE

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## ABSTRACT

Anaerobic digestion is an exceptionally encouraging answer for the treatment of areca waste, forestalling contamination and prompting energy creation. It is fundamental to explain the best conditions to treat the areca waste and make this data accessible to ranchers. This strategy is by all accounts alluring for ranchers who will have the option to treat areca waste with other natural substrates. They have twofold benefit in this since they treat appropriately their own deposits, taking advantage of the use of biogas just as the use of settled bio manure. This paper gives an idea of biogas plant projects based on areca waste.

**Keywords:** Biogas Production, Bio-Fertiliser, Bio-Fuels, Green Energy.

## I. INTRODUCTION

In India areca nut production is more in the coastal districts and furthermore in some other non-coastal front zones of India. Areca nut is one of the tropical yield, is commonly known as betel nut. It comes under the palm tree species. It has business significance in India yet in addition in different nations like China and Southeast Asia.

The production of areca nut in India is the largest in the world, accounting for 49.74 % of its world output (as per FPO), and is exported to many foreign countries. In India, Karnataka state produces 62.69% of the areca nut. Karnataka, Kerala and Assam combines to produce 88.59% of areca nut production. It is extensively grown in the Uttara Kannada District of Karnataka. This paper shows that the areca waste can be utilized as a centralized source for the production of biogas.

Energy is generally divided into two types namely renewable and non-renewable. Biogas comes under renewable energy source. Renewable energy can be characterized as energy delivered from natural assets. Other forms of renewable source of energy include wind, and solar energy. Anaerobic digestion is a characteristic deterioration of organic wastes by microorganisms without oxygen. Bacteria are the major organisms can decompose the waste producing biogas and sludge. Biogas contains 50-70% of methane, 30-40% of carbon dioxide, 1-2% of nitrogen, 5-10% of hydrogen, and small amount of other molecules.

One of the serious issues the present world confronting is the correct administration of wastes. The investigation of this paper gives a thought regarding the correct removal of areca waste and use of slime as a bio-compost. The production of biogas is a complex biochemical cycle under some microbial exercises without oxygen.

Biogas can supplant kindling as an energy asset for cooking and lighting. Today fossil-based fuels become more costly, the biogas is economically more favourable. Biogas is a natural energy resource that can reduce greenhouse gas emission. Biogas plant can help to reduce global warming by burning methane from organic waste of agricultural farm, instead of leaving if free to atmosphere where it involve in greenhouse effect.

## II. MATERIALS AND METHODOLOGY

Areca waste can be gathered from Areca ranches. In the wake of gathering Areca waste, its size ought to be diminished which builds the surface zone. Sewage water and starch can be added to upgrade microbial activity to build yield by lessening production time.

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**Figure 1:** Different types of Areca Waste

Now, for planning digester feeding material, Take areca wastes from close by ranch and decreased its size. After that a combination of a wide range of areca nut squanders and sewage water is set up with expansion of starch powder for the growth of microorganisms. Accordingly a feeding material for the digester tank is readied. This feeding material is taken care of into the digester tank. Likewise, the digester tank can made impermeable with the help of brisk glue.

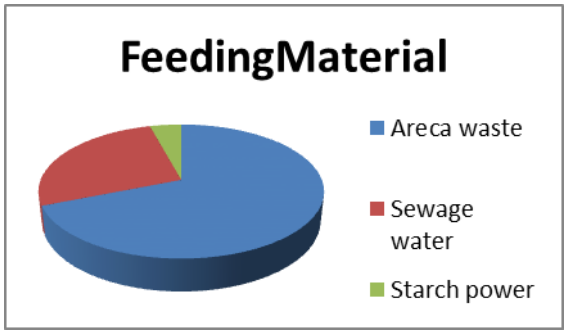


**Figure 2:** Feeding Material Composition

The exploratory arrangement incorporates a digester tank, biogas storing tank, pipe to interface digester tank and gas storing tank and gas valve. Associate the digester with influent channel, storing tank and effluent channel. On the off chance that the digester tank is transparent, at that point it ought to be held under dark condition. Since, within the sight of light algal growth may develop which causes the creation of oxygen. Anaerobic cycle works under the nonattendance of oxygen.

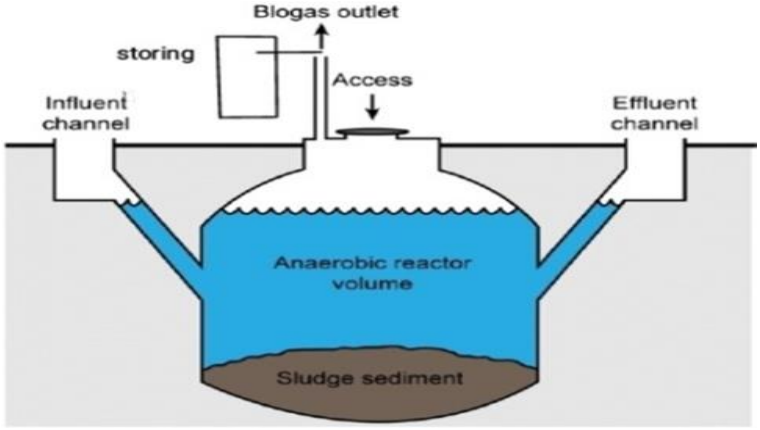


**Figure 3:** Biogas Plant

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## III. RESULTS AND DISCUSSION

The test ought to be directed for a time of 30 days. After the finish of 30 days the gas to be gathered in the storing tank, following 15 days gas production will increment exponentially. When at regular intervals measure of gas produced is to be noted, following 30 days aggregate sum of gas produced to be stamped.

**Table 1.** Total gas obtained in all 3 stages

| SN. | Duration (Days) | Gas Obtained (Grams) | Total Gas Obtained (Grams) |
|---|---|---|---|
| 1 | 00-10 | 28.50 | 28.50 |
| 2 | 10-20 | 44.00 | 72.50 |
| 3 | 20-30 | 77.50 | 150.0 |

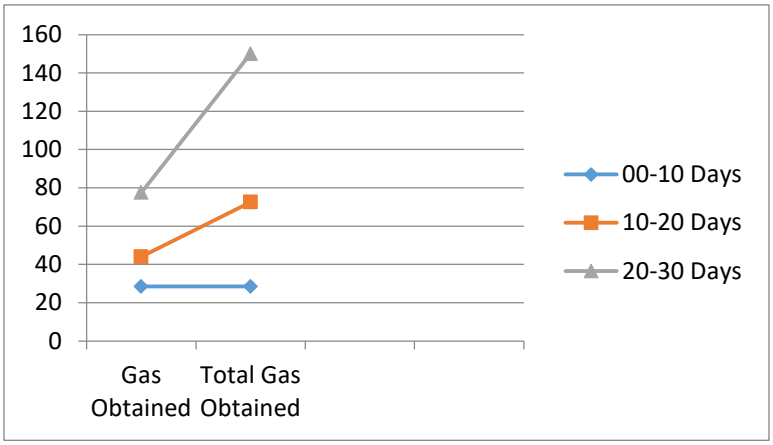


**Figure 4:** Total Gas Obtained

This exploration speaks to a significant advance towards the production of renewable energy. In general, the examination will widen our comprehension of biogas production from areca squanders. For the field of sustainable power, this exploration will deliver another model that can produce biogas. The examination will lay an information base for the utilization of different areca wastes.

## IV. CONCLUSION

As biogas is produced from organic waste, the fundamental expectation of this paper is to deal with the natural wastage from agricultural ranches. Rather than disposing these squanders, combustible energy can be produced. And furthermore the expense of this technique is exceptionally low. Henceforth biogas is a minimal effort technique to produce sustainable power.

## V. FUTURE SCOPE

In the future, this strategy for the generation of biogas can be option to the non-inexhaustible source of energy. By this technique alongside biogas, bio-compost also acquired. The sort of compost obtained is improved and helpful for crops. This type of bio-manure will build the fertility of soil. This must be use at a bigger scope so that utilization of non-sustainable power can be decline. This technique for energy production is eco-accommodating. In India, soil richness is diminishing routinely. This strategy additionally assists with improving soil ripeness.

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