

MICROBES IN PRODUCTION OF BIOGAS

introduction

We have seen many useful macroscopic plants and animals around us .Are microbes helpful in human welfare? which microbe produce biogas?

we knew that microbes not only cause diseases but they are also useful in curd making, fermentation, biogas production e .t .c . There are many steps followed that take place in biogas plant. Let's explore more about how microbes are helpful in the formation of biogas



Biogas

- *Biogas is a mixture of gas produced by microbial activity
- *A biogas is a facility that provide oxygen free condition where anaerobic digestion can occur
- *It consists of methane carbon dioxide hydrogen sulphides produced from raw materials such as agricultural waste plant materials sewage green waste and food scrapes
- *Used as fuel renewable energy source
- *Microbes produce different type of end products during growth and metabolism
- *Type of gas produced depends upon the microbe and the organic substance they utilize
 - *Fermentation of dough cheese making and production of beverages the main gas produced was CO_2 .
 - *Certain bacteria which grow anaerobically on cellulosic material produce large amount of methane along with CO_2 and H_2 . these bacteria are called methanogens.
Eg: methanobacterium
- *The excreta(dung)of cattle commonly called gobar is rich in these bacteria dung can be used for generation of biogas.

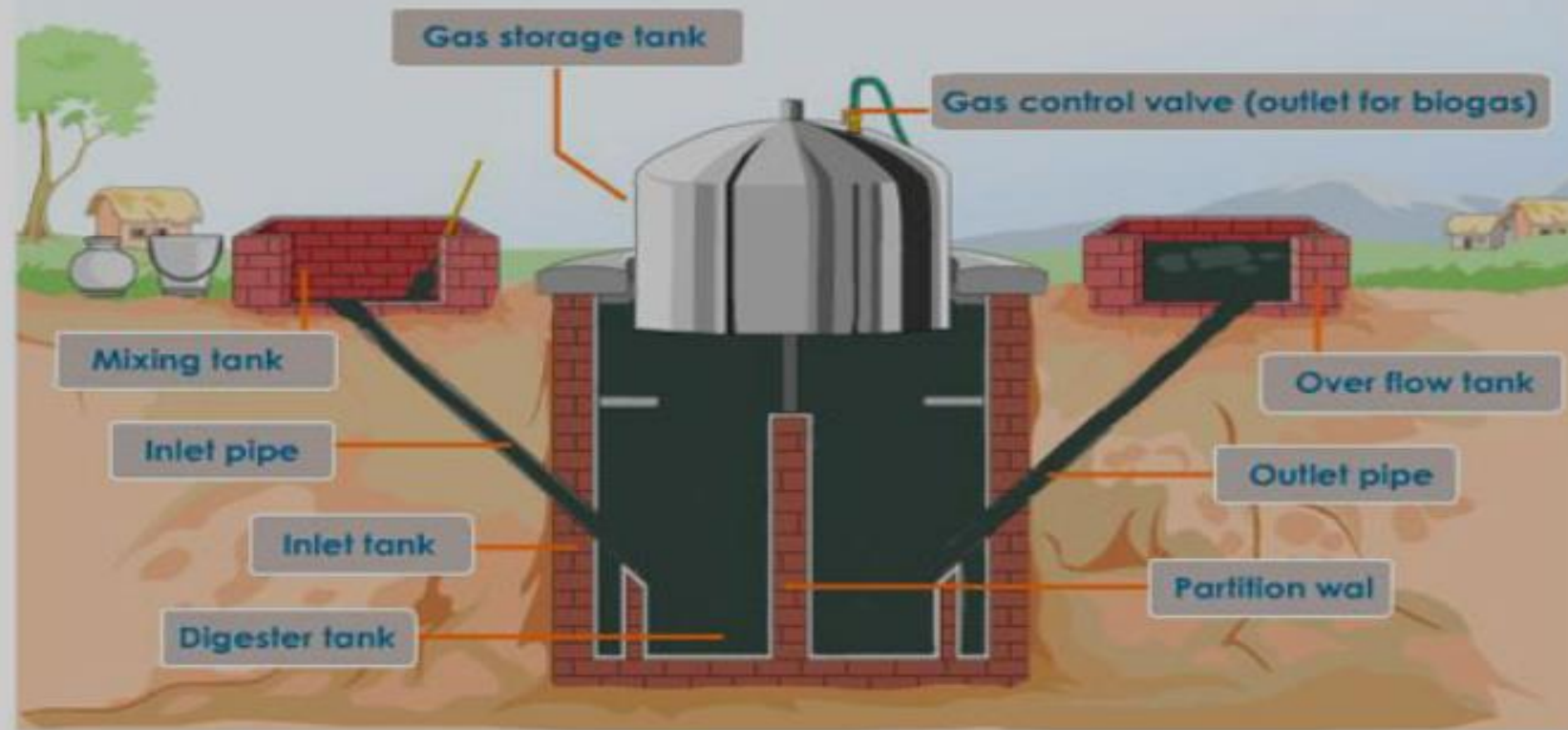
Composition of biogas

	Percentage
Methane	50 -70%
Carbon dioxide	30-40%
Hydrogen	5-10%
Nitrogen	1-2%

Biogas plant

*consist of concrete tank(10-15 feet deep) in which bio wastes are collected and slurry is fed. A floating cover is placed over the slurry which keeps on rising as the gas produced in the tank due to microbial activities . The biogas plant has an outlet which is connected to the pipe to supply biogas to nearby house .the spent slurry is removed through another outlet and may be used as fertilizer. cow dung is highly available in rural areas and therefore biogas plant is largely build in rural areas . The biogas thus produced can be used for cooking and lighting

Biogas plant : model



Fixed Dome type Biogas Plant



IIARI ,KVIC

The technology of biogas production was developed in India mainly due to the efforts of INDIAN AGRICULTURAL RESEARCH INSTITUTE and KHADI AND VILLAGE INDUSTRIAL COMMISSION.

Role of microbes in production of Biogas

- 1, Microbes compose various types of end products.
- 2, Microbes decompose organic materials anaerobically producing biogas
- 3, methanobacteria is commonly found in anaerobic sludge during sewage treatment
- 4, These in rumen help in breakdown of cellulose and play an important role in cattle

Advantages of biogas

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graph LR; A[Advantages of biogas] --- B[Cheap and safe]; A --- C[CAN BE USED AS ENGINE FUEL]; A --- D[REMAINING SLURRY CAN BE USED AS FERTILISER]; A --- E[REDUCE POLLUTION]; A --- F[ECO FRIENDLY AND RENEWABLE ENERGY]
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Cheap and safe

ECO FRIENDLY AND
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REDUCE POLLUTION

summary

Microbes are an extremely important component of the life on earth. Not all organisms are infectitious. Many micro organisms are very useful to mankind. Methanogens produce methane while degrading plant waste.

Biogas plants mainly consists of 5 main parts Biogas produced by micro organisms is used for cooking , lighting ,and many more . They are not harmful like LPG gases since they soon dilute in the atmosphere . The usage of biogas helps in redusing the enviornmental pollution.



The background features a light gray base with large, soft-edged organic shapes in muted red and sage green. A thin white line outlines a shape on the right. In the top left, there is a faint, stylized illustration of a leafy branch.

Thank you