



SNS COLLEGE OF TECHNOLOGY
Coimbatore-36.
An Autonomous Institution

COURSE NAME :BIOLOGY FOR ENGINEERS

IV YEAR/ VII SEMESTER

TOPIC:BIO ENERGY

Dr.A.Sumithra
Associate Professor
Department of Computer Science



Introduction

- Biomass is organic matter from plants, micro-organism grown on land and water and their derivatives.
- The energy obtain from biomass is also called the biomass energy.
- It is a renew-able energy source.
- Because organic matter generated everyday.
- Coal, petroleum, natural gas are not come in biomass category because they produce from dead, burried biomass under high pressure and temperature during several millions of year.



TYPES OF BIO MASS

- Biomass are classified in three group.
 1. Biomass from cultivated like fields, crops, forests etc.
 2. Biomass derived from wastes like municipalwaste, animal dung etc.
 3. Biomass converted into liquid fuels.In first group the biomass is directly converted into energy by burning the biomass.



ANEROBICALLY

- Naturally occurring bacteria breakdown organic material (such as agricultural energy crops like Giant King Grass) in the absence of oxygen resulting in the creation of methane and carbon dioxide, which make up the composition of biogas.
- This process is called anaerobic digestion and occurs in large enclosed tanks.
- The biogas is collected from the anaerobic digestion tanks and processed through a generator to produce renewable electricity.



BIOMASS CONVERSION PROCESS

1. Direct combustion
2. Thermochemical conversion
3. Biochemical conversion



DIRECT COMBUSTION

- Combustion is the oldest and most frequently applied process to extract the energy content from solid biomass.
- During combustion, most of the energy is released in form of heat.
- Different thermodynamic processes can be used to transform part of this heat into electric power.



THERMOCHEMICAL COMBUSTION

- Thermochemical conversion the process convert the biomass.
- Its residues to fuel, chemicals and power using gasification heating of biomass with about one third of oxygen is necessary for complete combustion produce mixture of CO and hydrogen known as syngas.
- Pyrolysis heating biomass in absence or produce a liquid pyrolysis oil.
- They both are use as fuel.



BIOCHEMICAL CONVERSION

- Biochemical conversion by micro-organic biomass to biofuel are slow process taking place low conversion temperature.
- The principle process is fermentation.
- Fermentation is a process of decomposition of organic matter by micro-organism.
- Example fermentation, decomposition of sugar to form ethanol and carbon dioxide by yeast and ethanol forming acetic acid in making vinegar.

